Purposing Digital Media for Education:

Critically Exploring Values and Expectations in Applying Digital Media for Children's Learning and Development

Philip Wilkinson

Submitted in partial fulfilment of a DProf to be awarded by Bournemouth University

This DProf was fully funded by Bournemouth University

Submitted June 2019

Copyright Statement

Abstract

This thesis explores the impact of expectations of technology on educational practices and the challenges in researching these impacts. Expectations of technology are not universal, but there is a prevalent solutionist perspective that provides a simplistic account of technology. The critical issue that will be explored within this thesis is the way in which underlying ideological values inform constructions of what does, or does not, constitute legitimate educational practices with technology. Further, it will also highlight the impact of these constructions of legitimate practices on parents and educators. Overall, it will present an account of technology in education that is influenced by powerful forces of legitimation that lead to presumptions of deficiency. This is a portfolio thesis that explores the role of technology in children's learning and development across three research settings. To begin, in *Mediating Family Play* I investigate the perceived impact of digital technology on parents' presumed role in cultivating developmentally appropriate forms of play. In *Game Makers* I discuss the production of digital games for social change as a constructionist pedagogy and the ways in which different systems of meaning intersect in the classroom. Finally, *Digital Families* explores the imbalanced influence of school-based educational practices on the home. In presenting this thesis I draw heavily on my professional experience through a reflective account of my research trajectory. In doing so I document and highlight the uncovering of these underlying critical issues, and the subsequent development of a reflexive, critical stance. In presenting the thesis in this way, along with the content covered, the contribution made is two-fold. First, it contributes to existing critical discussions of educational technology. Second, it presents a transparent account of researching educational technology in practice that will be of use for other early career researchers, or researchers and practitioners transitioning from technical backgrounds.

Contents

Table of Figures

Acknowledgements

To my life partner Zadi Green, you have been stalwart in your support. I owe where I am to you.

To my supervisors Mark Readman and Jacqui Taylor, your patience has been invaluable. Without you both I would not have become the researcher I wanted to be.

To my father Kevin Wilkinson, your kindness, industriousness, and creativity have inspired me in ways I am still discovering.

Introduction

This is a portfolio thesis that has retrospectively reframed three research projects. In doing so, it presents a reflective account of the challenges and necessitated considerations when researching how expectations of technology influence educational practice. Typically, discussions of technology in education start with bold opening statements, highlighting the scale of technology's ubiquity, and the significance of its impact. Such is the perceived impact of technology there is an emergence of a pseudo-industrial, at-times pseudo-academic, production of neologisms attempting to capture this impact.

There is a persistent issue of simplistic expectations of technology and the influence of this on educational practices. As will be explored in this thesis, however, mapping the source of these expectations is not simple. Perceptions of technology are historically rooted and intertwined with intangible, but still persuasive, notions of progress (Winner 1977, Nyes 2007). In contemporary society, technology is treated as a totality, something akin to globalisation as a defining mechanism of post-modern society (Latour 1993). Further, technology is presumed to provide ideologically desirable affordances such as efficiency, transparency, or interconnectedness.

Most importantly for this research is the ideological roots of justifications - or related discourses - of technology's use in education. The simplistic presentation of technology, and the expectations of progress that it represents, can often hide underlying socio-cultural values that legitimate its usage. When considering perceptions of technology in education, there is a familiar solutionistic and simplistic rhetoric present in discussions of technology more broadly. Educational practices are frequently problematized as archaic, existing within an educational system that is broken and in need of revolutionary change that - of course - technology can provide (Selwyn 2013).

Discussion of the applicability of technology in education - its uses, affordances, and potential issues - can miss underlying ideological values. For instance, what a teacher *should do* with technology is influenced by an instrumentalized standard curriculum, itself a reification of broader socio-cultural expectations of the purpose of education. Further, what a parent *should do* with digital devices in the home is in part influenced by socio-cultural expectations of the "*parent as teacher*" (Schaub 2010, p. 49) . The development and introduction of technology into spaces for learning introduces additional conflict into spaces that are already contentious.

What a teacher *should do* according to institutional pressure may be different to, say, what academic theory deems as legitimate under a Dewian model of student empowerment (Dewey 1938), or Freirean pedagogy of student emancipation (Freire 1970). For parents, in western cultures at least, play is seen as serving a developmental purpose – however, not all forms of play are seen to serve the same, or any, developmental purpose. Introducing technology into this play taxonomy creates further potential contention between different expectations of practices. This thesis is situated here, in the uncomfortable contested space between the debated impacts of technology in education, the subsequent expectations placed upon practices, and the broader socio-cultural values these practices exist in.

The contribution of this thesis draws heavily on my professional reflections. When starting this research, I held my own expectations regarding technology's positive impact. Through the three research projects presented I increasingly saw the necessity of considering wider socio-cultural contexts and ideologies. In doing so, I present a research trajectory that, through significant reflection, documents the development of a critical, reflective research stance. The significance of this research is two-fold as captured by my two overarching research questions, which retrospectively cohere the three research situations:

To what extent do underlying socio-cultural assumptions and values manifest in expected uses of technology in educational settings?

In what ways does the interplay of academic rigour and practice orientated research create conflict or tension?

First, there are numerous socio-cultural values, ideological justifications, and erroneously over-simplified discussions informing educational practices with technology. Research is needed in this area to unpack this conflict and, crucially, to highlight underlying assumptions that shape practices. Especially as discussions of technology, and the subsequent expectations of educational practices, are mediated by issues power that can lead to teacher deprofessionalization, parent disempowerment, and forms of oppression. Second, there is a need to reconcile the necessity to undertake research that critically explores complexity and the translation of this research into practice.

An issue in the field of educational technology is the pre-eminence of simplistic discourses and the practices they legitimate. So critical research is needed, that is integrous to complexity, but reconcilable with the pragmatic considerations and frame of reference pre-eminent in practice. This tension is well represented in the award I submit this document for, as the Doctor of Professional Practice in Digital Media requires a theoretically rigorous contribution to practice.

The contribution of this thesis is two-fold. First, it contributes to existing discussions of socio-cultural and critical complexity in educational settings. Second, it contributes insights into the challenges and complexities of undertaking research in this field. This second contribution draws heavily on my reflections and is likely to be of particular relevance to researchers and practitioners entering this field, especially those who follow a similar trajectory to my own.

A Recursive Approach

To frame the structuring of this thesis I opportunistically borrow a useful term from computer science - recursion. Recursion refers to an approach to 'problem solving' "*in which the solution to a problem depends on the solutions to smaller instances of the same problem.*" (Graham 1988, p. 1). Here, the problem of my research is to understand the expectations of technology in educational settings, and to document the challenges and considerations in researching these expectations. Each research project explores this problem in a specific context. Collectively, the three research projects in this thesis are presented as vignettes, given their use as relatively brief - but illustrative - typifications of expectations of technology. Individually, each research situation is presented as a self-contained study.

To begin, in *Mediating Family Play* I explore the development of a mobile application to 'encourage' parents and children to play together more often. That is, to encourage the forms of socially interactive, real world play that are expected to serve a developmental purpose. Second, *Game Makers* presents the production of digital games as a pedagogic practice in a classroom setting. This research project discussed different expectations of 'legitimate' educational practices with digital media. Finally, I present *Digital Families* as an exploration how expectations of learning practices within the school, and by the school, impact parents' expected uses of technology in the home.

I present these three research projects as a portfolio of professional practice and research that maps a research trajectory. In doing so I highlight the lessons that I have learnt as a researcher in relation to the wider field. That is, where appropriate I relate the development of my thinking to common issues within the field of educational technology, and subsequent challenges in doing research. This will be discussed further in the following chapter as I rationalize the research philosophy I have reflectively and retrospectively developed and applied.

As self-contained projects, I refer to them as 'situations' with two reasons in mind. First, to invoke an idea of a 'situation' as an active, presently unfolding context or event worthy of note. Second, as a conscious acknowledgement of my retrospectively enforced boundedness of these projects, and the criticism this invites (Burnett et al. 2014). The presentation of each research situation includes literature relevant to that project, the specific methodology adopted, and the findings of that project. Preceding and following each research situation is a reflective account of my approach, my findings, and how this informed my future research and final perspective.

Structure and Outline

To begin I present the chapter Research Philosophy and Methodology. This chapter presents discussions of epistemology, ontology, and axiological reflections. I justify my adoption of a critical, social constructivist perspective and the interdisciplinary-bricoleur nature of my overarching methodology. I start this thesis discussing my research philosophy for three reasons. First, as a starting point for the meta-discussion and research trajectory that will be documented through this thesis. Second, to demonstrate a retroactive consistency of analytical approach in presenting this *portfolio* thesis. Finally, I am conscious of presenting this thesis with a 'typical' pattern of reviewing the literature then developing an immutable research philosophy, as this would be potentially disingenuous and undermine my intended contribution.

I open with my philosophical self-antagonisms as they inform my analysis of the literature, the research situations presented, and my final discussion. In addition, I open with discussing my researcher position to justify the reflective, transparent approach I adopt in writing this document. On the surface I write this thesis instrumentally for the award of a doctorate. I also reflect on the nature of undertaking research as it speaks to the contribution I wish to make. The rationale for this is to reflect on the various assumptions and expectations that I held, if only because to not include this self-reflective account would be hypocritical given my

critical exploration of the assumptions of others. In addition, it is my intention to present this internal unpacking, challenging, and ongoing negotiation of my assumptions in support of the central focus of this thesis.

Following this reflective discussion, my Literature Review discusses the emergence of 'technology' as a term, and its subsequent evolution into a 'totality'. From this literature review I draw out *some* of the assumptions that inform expectations of technology, including technological determinism, essentialism, and solutionism. I then focus specifically on the adoption of technology in educational settings, drawing on recent history to highlight inherited issues. Primarily, my discussion of educational technology highlights the uncritical prioritisation of the 'digital' (Selwyn 2013) or educational technology 'fetishization' (Watters 2015). With this general literature backing, I then move into the first research situation.

In *Mediating Family Play* I present my time embedded in a digital media development studio to facilitate the development and evaluation of a mobile application. This mobile application was designed to encourage parents and children to engage in real-world play. The goal of the development studio and their partner organisation was to use technology to encourage parents to play more with their children, and as such foster a culture of real-world, socially interactive, family play. Studying the 'effectiveness' of this application through quasi-naturalistic observations and parental questionnaires at 'play sessions' hosted in child-centric organisations revealed inherent negative assumptions towards 'screen-based' play. Crucially, it speaks to broader notions of children's play having a developmental purpose (Cohen 2007) and the subsequent implications of parental deficiency for those parents who do not curate 'legitimate' playful practices.

From this first research situation, I developed a less 'screen-centred', holistic, and explorative perspective in wanting to understand the impact of technology. In *Game Makers* I investigated the development of digital games for social change as a constructionist pedagogy (Papert 1993, Kafai 2006, Li 2010, Robertson 2012). Over 10 weeks I taught a class of 13- and 14-year-old learners,

who worked in teams to design a digital game with a social issue as a central theme. They chose the social issue, undertook research, and designed their game with support from me and their regular ICT teacher. This research unpacked a tension in the teaching of digital *skills* and digital *literacies* justified through instrumentalist and socio-critical perspectives respectively.

Moving to my final research project, *Digital Families* explored the development of a programme of activities to engage parents and their children in the co-construction of digital media within a school setting. Workshops were hosted within an academy for parents and their children to attend. Ostensibly, this was justified due to a desire to encourage parental engagement with the academy, and to support parents in using technology in the home with respect to their children's learning. Perhaps inevitably, this research highlighted a similar notion of parental deficiency to that illustrated in *Mediating Family Play*, and highlighted the role of the academy in legitimating certain constructions of learning and related practices, as also discussed in *Game Makers.*

Finally, I conclude by drawing together the various assumptions discussed in each research situation, highlighting commonalities. However, rather than attempt to present these assumptions as universal, I use them as a means of illustrating the different perspectives on what constitutes legitimate practice. From here, I conclude by presenting legitimation theory – drawing heavily on Berger and Luckmann (1966) – as an explanatory framework for educational practices with technology. This is used to capture the horizontal, conflicting legitimation processes of different institutions or groups. Additionally, and crucially for my contribution to practice, I use legitimation theory to illustrate the process of translating complex research into practice[1].

[1] My final discussion in this thesis speaks to the multiple legitimation processes that can shape educational practices. It is perhaps inevitable then that I would apply this thinking to the production of this thesis as an exercise in instrumentalist sincerity.

Research Paradigm

Introduction

This chapter outlines the research paradigm I arrived at when reflecting on the findings and my experiences from the three research projects presented in this thesis. As such, the axiological, epistemological, and ontological position I present here is the research position I arrived at in the conclusion of this thesis. Indeed, the discussion here informs the final contribution through reflecting on my research trajectory. The purpose of this chapter is to provide a robust rationale in support of the ontological and epistemological lens I used to recontextualize the three research projects within this thesis.

To structure this chapter I will refer to Denzin and Lincoln's definition of a research paradigm as constituting four considerations – axiology, epistemology, ontology, and methodology (Denzin and Lincoln 2018a). I will begin by discussing my axiological position and relevant background biographical context. From this I will then outline the critical social constructionist epistemology adopted with reference to a desire to capture the situated nature of this research. I will then discuss how these epistemological considerations have been utilized in the retrospective analysis and reflective assemblage of my three research projects. Following the discussion of methodologies, I then justify the adoption of thematic analysis as a reflective approach for critically synthesizing the three research situations. Finally, I will discuss my intentions for this research stance and how it informs my contribution.

The specific methodologies and methods adopted within each research setting will be discussed within their respective chapters. Where there is significant methodological divergence between my position now and at the time of conducting my research in the field, I will signpost and discuss this divergence within each respective research chapters. The cause of this divergence will of course also be

reflected upon and discussed. Here I outline the assembled lens I use to present a coherent account of my research trajectory, and how this has been used to inform my conclusion and contribution - a contribution centred on the practice of researching and applying technology in educational settings.

To structure my thinking and discussion through the rest of this chapter I present a research framework (or research *stack*[2]) informed by the work of Michael Crotty (1998) and Guba and Lincoln (1994a). This chapter justifies this critical social constructionist epistemology with reference to a desire to capture the situated nature of this research. It then discusses how these epistemological considerations were consistently operationalised through a bricolage of research methodologies. Following the discussion of methodologies, I then justify the adoption of discourse analysis as an approach for both analysing findings from the individual research situations and for the meta-discussion that brings together the three research findings in the final chapter of this thesis. To begin, however, I would like to present a brief biographical account to contextualise my entry point to this doctorate.

The Proto-Researcher

As will be discussed throughout this thesis, my personal and professional reflections form a key part of my contribution. Especially as I reflect upon the development of my critical engagement with the educational field and reify my axiological position. Therefore, it is worth a quick and purposeful biographical account of my entry point to this doctorate. Initially, I had graduated with a degree in Computer Science which had primarily prepared me for a role as a software engineer. On paper I was more qualified to be developing computer software than

[2] As with this and Crotty's Foundation of Social Research (1998) there is an interesting parallel between the need for a research framework and technology stacks. In web development terms a 'technology stack' refers to a series of a technologies that build upon each other - moving from front-end, user-facing tangibles, to increasingly computer-orientated and abstracted foundational technologies. This mirrors the shift from increasingly discrete operationalized, practical research methods, to more diffuse, abstracted, foundational philosophical epistemological and ontological considerations.

researching its effectiveness, or critically unpacking the social construction of technology.

I had always had an interest in education, and this something I chose to pursue after graduating. Initially, this involved a 6-month fellowship with the Institute for Digital Innovation at Teesside University. During this time, I was given funding and support to establish a 'social enterprise' that would develop educational software. Though this was before I started my doctorate, it can be argued that this was part of the formative process of developing a critical perspective. In exploring the current use of technology in education I developed the sense that the domain of education was too complex for me to meaningfully contribute to.

Having established a lack of expertise in the field of education, I chose to pursue a doctorate to better understand, and therefore support, educational practices with technology. There is perhaps an irony here then. I started this doctorate to seek clarity over complexity, only to offer a contribution predicated on the need to embrace this complexity. Therefore, even though much of the reflective discussion will be framed around an incremental development and transformation to a critical researcher, there was an axiological consistency throughout as I simply, and perhaps naïvely, sought to understand educational practices.

Axiology: Transparent and Reflective

> "[W]hat we face is not a choice of which label—interpretivist, constructivist, hermeneuticist or something else best suits us. Rather we are confronted with choices about how each of us wants to live the life of the social inquirer." (Schwandt A. 2000, p. 205)

Schwandt articulated that when we are engaging with considerations of our research philosophy, we are not doing so instrumentally. Indeed, epistemological,

ontological, and methodological decisions are all rooted and shaped by the individual beliefs and values of the researcher. As Stephen Ball argues that, in ethnographic studies at least, "[t]he presence, the effect, and the biases and selections of the researcher cannot be removed" from research (Ball 1993, p. 43). This is why for Denzin and Lincoln, the axiological position of the researcher is a key consideration that is foundational to research paradigm considerations (Denzin and Lincoln 2018a).

As becomes apparent and will be reflected upon in this and later chapters, the values of the researcher manifest in numerous ways throughout a research project – typically in the form of what choices are made. Here, I articulate my axiological position for three reasons. First, as an explicit demonstration of reflexivity and critical self-appraisal to, not necessarily validate, but add credibility to contributions presented. Second, to make explicit the connection between my analysis and coherent theoretical underpinning. Finally, to support the framing of the contributions posited by this thesis through a post-hoc assemblage that is commensurable through its axiological coherence (Denzin and Lincoln 2018a).

There is parallel to be drawn here between Pring's discussion of values in teacher-researcher practices, and the practices of myself as a researcher. In his discussion of action research Pring elucidates the embodiment of teacher's values in informing their practice such that:

> "when teacher-researchers are putting into practice a particular strategy or implementing a curriculum proposal […] they are testing out the value as much as the efficaciousness of the strategy or proposal." (Pring 2010, p. 135)

The approach to the analysis presented in this thesis embodies the values that I hold, such that these values are being tested alongside the 'efficaciousness' of this research strategy. This raises the question then, what do I value? As will become increasingly apparent, I hope, throughout this chapter and the rest of the

thesis, I value transparency,[3] agency, and reflectivity in both research and education. Transparency because of the potential insights - and reassurances - offered by honest accounts of our own educational research and practice.

In practising this transparency, and in my use of footnotes, I take inspiration from two sources. First, Pierre Bourdieu's *"reassurance that the difficulties that we attribute to our own idiosyncratic awkwardness or incompetence are universally shared"* (Bourdieu and Wacquant 1992, p. 218) and second Cathy Burnett's observation of the value of "*the laughter as we talk about ourselves, our practices and thoughts, and the sometimes absurd contexts we find ourselves in*" (Potter and McDougall 2019, p. 8). There is value in this transparency as it speaks to a disconnect between the complexities of research in practice and the neat, systematic ways research is written-up and presented. As will be discussed throughout this thesis, it is perhaps the most honest parts that have the most to offer in terms of my contribution.

In this context agency refers to both my agency and that of other educational practitioners. What became frequently apparent over the course of this research was the various pressures that educators and parents face to enact 'legitimate' practices with technology. As will be discussed, these pressures are also permeated by issues of power – including that of myself as a researcher. This issue of agency, as will be discussed later in this chapter and in my final conclusion, can be said to be an issue of 'control' according to Denzin and Lincoln (Denzin and Lincoln 2018a). That is, who is able to control the agenda of a research paradigm and decide salient research questions, appropriate samples, and intended impacts. On this issue, there is the is a necessity within educational research to be conscious of:

[3] As exemplified by these footnotes to share my non-instrumentalist reflections and to provide additional context where I feel it is appropriate.

> "illegitimate questions: questions that have no meaning because the frames of reference are those for which they were never intended." (Denzin and Lincoln 2018a, p. 202)

Given the different constructions of what does or does not constitute legitimate educational practices, and therefore the questions associated with these practices, adopting a reflective approach is a practical necessity in the research presented here. Reflectivity leads to transparency, and ensures that the agency I have as a researcher is expressed fluidly with reference to values of those I conduct research with. As Ball argues, the research role needs to be:

> "constructed responsively and appropriately in relation to the setting under study. The researcher must achieve a compromise between an ideal self-as-researcher and an acceptable and possible self in the field setting." (Ball 1990, p. 158)

Ball here refers to the practicalities of managing a persona when undertaking 'embedded' research. Of course, in this thesis there is an additional need for reflexivity as it constitutes a retroactive assemblage of research situations. This is reflected by Tricia Le Gallais in her reflections of her experiences of undertaking embedded research such that:

> "there is a fluidity about the research stance which should be embraced for the richness of insights it offers." (Le Gallais 2008, p. 153)

Le Gallais' work is of particular relevance here as she frames this research positionality in terms of potential practical limitation, such as a participant's willingness to speak freely dependent on perceptions of the researcher (Ball 1990, Le Gallais 2008) but also she refers to a fluid positionality as affording richer insights. Fluidity's impact on research findings is perhaps a culmination of the influence of the researcher on "*the research arena, the research participants and upon [the] interpretation of the data*"(Le Gallais 2008, p. 153). Therefore, when

discussing reflexivity in this thesis I use the term to refer to three considerations when undertaking and presenting this research.

Firstly, as above there is a need to be reflexive in my role, and representation of this role, to account for the inherent 'messiness' of undertaking research in the various contexts explored in this project (Le Gallais 2008, Pring 2010, Burnett and Merchant 2016a). Secondly, there is a need to adopt a reflexive position to account for the multiple perspectives that will be captured here, such that there is conscious positioning of perspectives. Thirdly, there is a need to acknowledge the intended contribution to practice through my analysis of the research presented here.

Contributing to Practice

In describing any social phenomena or expectation of technology, the description becomes formative of the phenomena itself. As posited by Burr:

> "does a researcher ever have the right to speak about or for other groups, no matter how well intentioned their research might be?" (Burr 2015, p. 176)

This central question is the source of my most self-flagellating reflections. It has influenced the critical and reflective discussions within my research, the contribution of this research, and the formatting of the thesis itself. For some meta-theorists, the notion of 'reflexivity' has become a means of justifying objective research. As Latour bitingly describes it, reflexivity can have "*a deleterious [meaning] when taken as an epistemological virtue protecting the sociologist from a breach of objectivity*" (Latour 2007, p.33). That is, researchers use the term 'reflexive' to validate their position by, even if only superficially, acknowledging theirs is one position of many (Burr 2015).

Hammersley (2003) argues that researchers should 'restrict' themselves to being informative - though he acknowledges that those who are researchers may

often adopt other 'educative' roles[4]. I share Hammersley's distinction and my intention is to make an informative contribution to professional practice through providing "*knowledge that one believes will be of interest or use to an audience*" (Hammersley 2003, p. 21). To some degree I have already decided what will be of interest to an audience of educational researchers and practitioners. However, this research is exploratory and focusses on particular social phenomena "*rather than setting out to test hypotheses about them*" (Atkinson and Hammersley 1994, p. 203).

This thesis makes its informative contribution through its reflective and critical engagement with socio-culturally situated influences on educational practices, especially as these influences may legitimize some practices whilst dismissing others. Again, this critical reflection is operationalized with a sense of transparency and with the belief that there is value in this honest account of my research trajectory. The reflexivity I present is perhaps best illustrated by a key juncture in my research trajectory. Initially, I was registered as an Engineering Doctorate researcher following a positivistic linear 'pipeline' approach to research, before embracing complexity and recognizing the necessity for critical inquiry and transferring to a Professional Doctorate.

The intended contribution to practice presented in this thesis is rooted in this reflectivity. However, I as a researcher am not the central focus. It is my intention to use my experiences in conjunction with broader observations and analysis of discourses and practices relating to technology and education. Taken together they demonstrate the power mediated complexity of the educational field, and as a result the issues that researchers following a similar trajectory should be aware of. With this said, then, there is a need to clearly articulate my epistemological and ontological considerations which is concordant with the values

[4] I am now undertaking an educational role based on the findings of this research to provide Continued Professional Development training for community volunteers and teachers. Even in this capacity however, I am conscious of being overly didactic.

presented here, but is focused on external assumptions, values, and expectations of educational technology.

Epistemology: Social Constructionism

Epistemology is concerned with understanding knowledge - it is about "*how we know what we know*" (Crotty 1998, p. 8). Further, Alan Bryman states that epistemological considerations are concerned with "*what is (or should be) regarded as acceptable knowledge in a discipline*" (Bryman 2015, p. 26). Constructionism and constructivism share a common philosophical position; knowledge is actively constructed by an individual (Berger and Luckmann 1966, Guba and Lincoln 1994a, Crotty 1998, Burr 2015). The difference is a matter of focus.

Constructivism is concerned with individual knowledge construction or meaning making as outlined in Piagetian development theory (Piaget 1977). *Social* constructivism then is interested in the socio-cultural context that informs this individual construction of knowledge (Bruner 1961, Vygotsky 1978). Paralleling this, social constructionism is concerned with the knowledge or meaning that is socially produced (Burr 2015). Crotty, again, has significance here – if only to clarify the difference:

> "It would appear useful, then, to reserve the term constructivism for epistemological considerations focusing exclusively on 'the meaning-making activity of the individual mind' and to use constructionism where the focus includes 'the collective generation [and transmission] of meaning." (Crotty 1998, p. 58)

Useful indeed, and as such the adoption of social constructionism highlights the focus of this research on the shared perceptions of technology's role in learning as:

> "[i]t is the view that all knowledge and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of

interaction between human beings and their world, and developed and transmitted within an essentially social context." (Crotty 1998, p. 48)

This conception fits with this thesis' discussion of exploring the shared perceptions of technology for learning. Further, according to Vivien Burr, Social Constructionism "*insists that we take a critical stance toward our taken-for-granted ways of understanding the world and ourselves*" (Burr 2015, p. 2). It is this notion of critical inquiry on the world, and ourselves, that is important for the contribution in this thesis. Through unpacking the socially constructed and reinforced expectations of technology in learning and development I intend to contribute to practice through illustrating the ways in which this practice is influenced, and how to research this influence. Further, it is the intention of this thesis to use the three research situations to illustrate the necessity of critical discussions of, and in, research and educational contexts.

It is difficult to attribute critical theory to a single consistent paradigm (Kincheloe 2011a) given its self-reflective dynamism and the multitude of "*idiosyncratic take[s] on the nature of critical theory*" (Kincheloe and McLaren 2011, p. 287). In Kincheloe and McLaren's (2011) reification of critical theory they, tentatively, define a critical theorist as "*a researcher who attempts to use her or his work as a form of social or cultural criticism*" (Kincheloe and McLaren 2011, p. 299) before then identifying common assumptions across the different interdisciplinary and transdisciplinary manifestations of critical theory.

The socio-cultural mediation of meaning through power dynamics and 'situatedness' (Burnett and Merchant 2016a) of knowledge directly speaks to my interest in the social construction of perceptions of technology. Moreover, it addresses the role of the researcher in carrying expectations and meaning that affect their interpretive practices (Lather 1986, Kincheloe et al. 1995). Here, I am interested in critical theory's positioning of research as a transformative practice, primarily focussing on the emancipation of the oppressed, however this notion of

emancipation invokes a self-consciousness[5] here when referring to my work as critical theory. Max Horkheimer argues that:

> "It is the task of critical theory to see "the human bottom of nonhuman things" and to demystify the surface forms of equality." (Horkheimer 2002, p. xiii)

Throughout his writing, and as reflected by others, there is a positioning of critical theory serving an emancipatory role (Freire 1970, Shor 1993, Kincheloe and McLaren 2011, Bohman 2016). To frame my work as adopting critical theory implies that the heterogenous group of parents and teachers I will be working with are in some way oppressed. My self-consciousness then stems from a disingenuous essentialism of diverse groups and an appropriation of critical theory that is potentially dismissive of other marginalised groups or minorities facing oppression. That is, is it reasonable to say that parents and teachers are oppressed through current constructions of educational technology and subsequent expected practices?

As discussed in this thesis' conclusion there are indeed groups oppressed and marginalised people are represented – especially in relation to notions of 'class'. In addition, as will be discussed the expectations of technology's role in learning and education are mediated by wider, powerful, forces. This includes government mandated instrumentalist constructions of education, within a wider increasingly neo-liberalized educational system, that is also paralleled by naïve capitalist constructions of the educational technology industry. That is to say, naïve in the assumption that technology - and, critically, the commercial companies producing this technology - can unproblematically and apolitically provide educational solutions (Buckingham 2007a, Selwyn 2013, Morozov 2014).

[5] According to Kinchloe and McClaren *"research in the critical tradition takes the form of self-conscious criticism".* I do appreciate irony of declaring this research too self-conscious in regards to 'appropriating' critical theory at the risk of potentially minimising the importance of critical research for those facing oppression according to religion, gender, or ethnicity.

According to Iris Young, in the 1960s and 1970s there was a shifting conception of oppression away from its traditional usage as referring to exercising of power through some tyrannical ruling group[6]. Instead, now:

> "oppression" designates the disadvantage and injustice some people suffer not because a tyrannical power intends to keep them down, but because of the everyday practices of a well-intentioned liberal society." (Young 1988, p. 271)

Young's articulation of oppression here captures the reinforcement of certain educational practices, and expectations of teachers and parents, through social relationships and 'everyday' practices. The well-intentioned nature of the various organizations, people, and government bodies contributing to discourses of educational technology will be a key focus of my final discussion - especially as these discourses do reinforce an oppression of certain groups, through a reinforcement of powerlessness (Young 1988, Young and Allen 2020). Here, however, it is sufficient to understand that issues of power are apparent here, and they are manifest in everyday educational and research practices.

One of the key criticisms levelled at critical theory is an implication of 'elitism' – that the researcher is in the position to be a catalytic agent of change. As discussed by Kincheloe and McClaren there is an "*arrogance that may accompany efforts to emancipate 'others'*" (Kincheloe & McLaren 2011, p.289). This role of the 'researcher-saviour' is something I am very conscious of, especially as it is reflective of the same externalised influences on educational practices that I am investigating here. This is not to say that I am unable to enact change, but I do so by contributing a perspective with recommendations on undertaking educational research, without being overly prescriptive.

[6] I include this here as it speaks to my perception of the term 'oppression' before reconsidering its usage and whether it would be appropriate in this context.

As an external 'expert', it would be easy for me to argue that educational practices should be different as the justifications for technology's use is based more in ideology than pedagogy. However, it is difficult for the "*suppress[ed] subordinate actors*" (Feenberg 2017, p. 17) to enact this change due to the situated pressures they face. Therefore, though I adopt a critical perspective here, I do so reflectively and self-critically, mindful of overstating the power dynamics at play and conscious that these power dynamics are potential mitigating factors when advocating for change.

Ontologically Critical

So far, I have discussed social constructionism as my epistemological perspective informed by critical theory. Following the research-framework put forward by Crotty (Crotty 1998) and Guba and Lincoln (Guba & Lincoln 1994), it is necessary to address my ontological perspective. Though at times epistemology and ontology are often folded into one another (Denzin and Lincoln 2018a) I want to address them separately here. Of course, this is not suggesting these considerations can be neatly demarcated, however given the focus of this thesis it is necessary to consider ontology in isolation as it has importance for my reflective, analytical approach and my final contribution.

Ontology is concerned with the nature of being and reality, social or otherwise (Blaikie 2007, Kincheloe 2011a). That is, ontology is both concerned with what exists and what it is to exist. I navigate the field of ontology such that I can articulate my ontological position, without mechanically debating every ontological 'flavour' (Blaikie 2007) whilst, of course, avoiding a reductionist or instrumentalised approach that fails to engage with necessary considerations.[7] There is an apt quote by Bruno Latour that reflects my position here:

[7]Interestingly, the philosophical approach of ontology has been adopted within areas of computing. It refers to the reification and definitions of entities within a software system and the context it will be used in. As is typical with computing domains, this adoption of ontology is reductionist and

> "I'm like a dog following its prey, and then the prey arrive in the middle of a band of wolves which are called professional philosophers... My intention was not to fall in with the wolves and to have to answer all of these guys while trying to catch my prey." (Latour et al. 2011, p. 41)

This framing of a direct, purposed philosophical engagement reflects my intention of articulating an ontological position consistent with my epistemology. Or as articulated by Andreas Losch, I critically engage with ontological discussions to find an appropriate "label for [my] thoughts" (Losch 2009, p. 87). There are two areas of consideration when reflecting on my shifting ontological position. As put forward by Kincheloe et al. here I am "*dealing with dealing with a double ontology of complexity*" (Kincheloe et al. 2018, p. 439). First, to account for the complexity of objectives of inquiry - social, technological, or virtual - that may have a role in influencing perspectives of technology in learning. Second, to account for the social construction of human subjectivity, the production of human being (Kincheloe et al. 2018).

Typically, ontological theories fall into one of two dichotomic positions – relativism and realism (Burr 2015). It is worth noting that though relativism and realism are presented as dichotomous positions, there is indeed cross-over and a degree of flexibility within these positions (Crotty 1998, Blaikie 2007, Pring 2010, Burr 2015). It is this flexibility that I exploit in my discussion here. I am mindful to avoid an ontological position that undermines human agency in constructing understandings of technology and unduly elevating the capacity of technology's materiality to causally influence this understanding.

A realist ontology presupposes that there is indeed a material and social reality independent of human constructions. That is, there are objects in the world, social or otherwise, that exist regardless of a person's awareness (Blaikie 2007). For most relativists there is material reality beyond discourse however, as we can only

instrumentalized. However, at the same time it appears to have extensive crossover with actor-network theory's flat ontology and focus on relationships.

accurately engage with this discourse then the nature of reality itself is somewhat inconsequential. As described by Burr, "*[s]ince we can never have direct access to a reality beyond discourse, we cannot concern ourselves with its nature*" (Burr 2015, p. 103).

For the purposes of this research a relativistic position would be appropriate as it positions social groups, structures, and institutions as shared, but context dependent, internalisations (Blaikie 2007, Burr 2015). Given the focus of this research on expectations of technology, however, there is a need to also account for the materiality and interactivity of technology (Elder-vass 2012, Burr 2015). Collier's (2007) critical realist perspective espouses the role of practice and physical engagement with the world, suggesting that though social constructions may become abstracted from 'reality' to the point of inaccuracy, the physical interaction of reality will "*remind us of its nature*"(Burr 2015, p. 114).

A realism ontology presupposes that there is indeed a material and social reality independent of human constructions. Critical realism follows the same assumption but concedes that our understanding of this reality is context dependent, fallible, and therefore open to critique (Scott 2005, Elder-vass 2012, Burr 2015). As Burr describes:

> "Critical realism is 'critical' because it tries to uncover the implicit and potentially misleading or damaging assumptions of various policies and ways of thinking; it is interested in generating knowledge that is capable of working in the best interests of people" (Burr 2015, p.109)

It is this critical perspective that ensures its compatibility with the critical social constructionism previously outlined. However, for some critical realists, the social world is not entirely independent of human awareness as there are in fact material, and some social, objects that are 'real' and exist independently (Elder-vass 2012) such that they have a causal effect. From an ontological perspective, sociomateriality and actor network theory (ANT) both equate human and

technological agency in forming 'reality' (Latour 1996, 2007, Orlikowski 2010, Leonardi 2013, Elder-vass 2015). According to McDougall and Potter, ANT asserts:

> "that humans are quasi-subjects and non-humans are quasi-objects [and] neither has a pure distinction from the other" (Potter and McDougall 2017, p. 118)

Now, this 'flat ontological' (Elder-vass 2015) position described by McDougall and Potter has some utility here as it frames meaning construction as an emergent property of a network of agents - thereby accounting for the role of technology's materiality in influencing expectations, as well as human actors and social objects. Indeed, ANT would have utility given the intentions of this thesis. However, I do not make claim to be using ANT in my approach here - though I certainly have an affinity for it. Its deconstruction of quasi-social and quasi-material assemblages that interact to construct meaning is of relevance, however there is a need to explicitly account for myself in relation to these assemblages.

In the reflective analysis presented on this research I have adopted a shifting ontological position. This is partly in response the pragmatic requirements of the research settings, but primarily as a reflective response to increasingly prioritizing issues of subjectivity and complexity. Indeed, the ontology I now adopt is informed by the discussion presented in this section and reflections presented throughout the thesis. As such, it has been informed by the "*ability to use new social contexts and experiences to reformulate subjectivity*" (Kincheloe 2011a, p. 211). Indeed, the contribution of this thesis emerged from reflecting on this reformulation.

Here then, I am conscious in not prescriptively adopting an ontology without meaningful discussion. I do, however, present this thesis through a critical ontological position that is inherently interdisciplinary and fluid, to avoid the traps of prescriptively applying an instrumentalized and passive research methodology. This ontological fluidity, whilst still being critical, is predicated on the presumption

that research within an educational context is *"always complicated, mercurial, unpredictable, and, of course, complex."* (Kincheloe et al. 2018).

An Autoethnographic Bricolage

The research presented here explored the perceived role - and underlying expectations of - technology in different learning settings. Further, it reflected on my research and practice within this research and in doing so documenting a research trajectory that increasingly embraced an interdisciplinary, critical approach. Though different methodologies were adopted within each individual research project, the methodology I ultimately adopted is akin to an autoethnographic bricoleur. The specific research methodologies adopted will be discussed within their individual chapters - here I discuss the rationalization of an autoethnographic approach, informed by the conception of the bricoleur originally traced to Claude Levi-Strauss (1962).

Autoethnography is, according to Reed-Danahay, "*a form of self-narrative that places the self within a social context*" (1997, p. 9). It draws on extensive, reflective, accounts to draw insights that are, or should be, relevant and of interest to other researchers or practitioners (Adams et al. 2015). Of course, as with ethnographic research, there is not a unified approach to autoethnography, especially as typically these research projects are inherently personal. There is however a common focus on the ability to connect the personal with the social, cultural, and political through personal experience (Marx et al. 2017, Denzin 2018).

In adopting this autoethnographic approach I do so with a great deal of insecurity and potential vulnerability.[8] Luckily this is an insecurity shared by others

[8] I recognize that I have agonized over this previously, but in presenting this account of my research in practice, warts and all, I worry that the presentation of this thesis in this way is an act of self-sabotage.

and is in some ways representative of reflexive sociology[9] and autoethnographic research generally (Marx et al. 2017). A big source of this insecurity is the historical, and hard to shake, expectations I held over what constitutes research. To quote Douglas and Carless:

> "Like many others before us and since, we were (academically speaking) birthed into a tradition and a history that seeks objectivity and to remove all aspects of self, including the body, from the research process in order to diligently focus on (different) others. It would be naive to think that these academic traditions leave no scars." (Douglas and Carless 2013, p. 97)

To stay grounded, and reassured, I adopt an autoethnographic approach that focusses on the social context and the socio-cultural assumptions and values I critically engaged with, and was confronted by. That is, the self (myself) is a focus of this research, but not the sole focus, as I use my experience as a means of illustrating wider issues in the field of educational technology and the subsequent challenges facing researchers and practitioners. Each research project will be presented as a layered account (Ellis et al. 2011, Adams et al. 2015), featuring my experiences alongside the data captured and the analysis of this data under the original terms of the research (Ellis et al. 2011). In addition, these research projects will be prefaced with relevant literature and background context.

This thesis is presented autoethnographically as a "*layered [account] which juxtapose[s] fragments of experience, memories, introspection, research, theory, and other texts*"(Adams et al. 2015, p. 85). In the construction of these layered accounts, and during the process of undertaking this research, I found myself drawing on the metaphor of the bricoleur. According to Levi-Strauss, the metaphor of bricolage refers to the complexity of meaning making such that a bricoleur uses

[9] To quote, and therefore hide behind, Bourdieu: "*But I know, and will do nothing to conceal it, that in reality I discovered only little by little, even on the terrain of research, the principles that guided my practice.*" (Bourdieu 2008, p. 9)

multiple modes or tools in its construction. For Levi-Strauss this is opposed to that of the 'engineer' who adopts a linear construction of meaning (Rogers 2012).

The engineer-bricoleur dichotomy presented by Levi-Strauss and others has personal relevance as it captures my transition from an Engineering Doctorate to a Professional Doctorate – or from engineer to bricoleur (Latour 1993). Indeed, this bricolage approach speaks to my ontological position as, now, an opportunistic interdisciplinarian. With this, I draw inspiration from Latour's reflection on his position as "*half-engineer and half-philosopher*" with the intention to follow the "*imbroglios wherever they take us*" (Latour 1993, p. 3). That is, to be interdisciplinary by necessity, as a means of understanding and critically reflecting upon the various research situations, or 'imbroglios', explored in this thesis.

Indeed, as will be argued, this bricolage approach became a necessity for my work for three reasons. Firstly, as discussed previously the complexity of the research settings required a "*making do…*" (Denzin and Lincoln 2005, p. 4) or employing "*any means necessary*" (Kincheloe 2011b, p. 261). That is, there were pragmatic factors that influenced the specific method that can be deployed. Secondly, and mirroring the need to adapt methods to specific circumstances, the typical practices undertaken in these settings - along with the subsequent materials produced - provide opportune insights. Together these first two reasons paint a picture of a methodological bricoleur that:

> "respects the complexity of the meaning-making process by allowing contextual contingencies to dictate which data-gathering and analytical methods to use." (Rogers 2012, p. 5)

Finally, in presenting this thesis as a post-hoc assemblage there is a need to reconcile the development of an interpretive framework that was not reified until after much of the research presented here was completed. It would be disingenuous to write this section as if I had this axiological, epistemological, and ontological clarity from the outset. Instead, I present this research paradigm as a

post-hoc assemblage informed by my experiences as a research practitioner. As articulated by Kincheloe, this retroactive assemblage was perhaps inevitable as it was through:

> "the active bricolage, [that] we bring our understanding of the research context together with our previous experience with research methods." (Kincheloe et al. 2018, p. 255)

As will be discussed, the reflection and reification of this research paradigm was in response to the three research situations I present in this thesis. The development of this paradigm was incremental and ontologically 'uncomfortable'[10] and, again, this is part of the point of this research and the contribution I make. In navigating this tumultuous research trajectory, the clarification of the research paradigm I developed now gives it, I believe, a theoretical coherence (Kincheloe et al. 1995, Kincheloe 2011b) which gives credibility to the arguments made. To be explicit, the analysis of these research projects is framed through the following guiding principles:

> **Situated** – Meaning is constructed in relation to highly situated socio-cultural contexts, and to engage with this meaning warrants acknowledgement of these socio-cultural contexts. That is, realities are localised, and vary between groups of individuals (Berger and Luckmann 1966, Schwandt 1994, Holloway 1997, Crotty 1998).
>
> **Critical –** The social construction of technology in education is mediated by issues of power. As a result, this project seeks to unpack these powerful influencers – especially those that are not necessarily within participants'

[10] The initial submission of this thesis as a cobbled together assemblage of loosely fitting, but still important, arguments in my initial viva was a source of significant anxiety for two reasons. Firstly, it was a significant deviation from my initial starting point. Secondly, the retrospective and self-critical nature of this thesis felt antithetical to my perceptions of academic work as paradigmatically neat, systematic, and linear.

awareness (Horkheimer 2002, Scott 2005, Losch 2009, Kincheloe 2011a, Kincheloe and McLaren 2011).

Materialist – The myriad of physical digital devices and digital media present in learning can reinforce, and be demonstrable of, broader expectations of technology (Latour 1996, Orlikowski 2010, Elder-vass 2012, Leonardi 2013, Burr 2015).

Subjective – Constructions and interpretations of reality vary between the researcher and the different groups represented in this research (Schwandt 1994, Finlay 2002, Lather 2006, Le Gallais 2008).

Personal – Researchers' experiences with educational settings will be subjective, unique, and personal. Further, there are valuable insights within these personal accounts (Bourdieu and Wacquant 1992, Reed-Danahay 1997, Simpson 2006, Marx et al. 2017).

The Research Trajectory

This chapter has been presented as a reflective and retrospective clarification of my research axiology, epistemology, and ontology. This research paradigm informed the thematic analysis of the research presented here. Before discussing this research, I will provide an overview of the three research projects undertaken, including how they connect. While the specific links between the different projects will be addressed in more detail throughout the thesis, here I present a map for general connections between the projects.

Mediating Family Play

This research project was undertaken in partnership with Hide & Seek, a "*design studio working at the point where games meet culture*" [11]. They were pointedly resistant to definition but, in broad terms, were a digital marketing and

[11] https://web.archive.org/web/20170506000615/http://www.hideandseek.net/

events agency that specialised in experiential marketing campaigns, and pervasive game-based events. The studio had been approached by the Joan Ganz Cooney Centre to produce a mobile application designed to 'encourage' real-world play between parents and their pre-school aged children. My role within this organization was to evaluate the effectiveness of the application and this research involved organizing 'stay-and-play' sessions with the application at children-centric organisations.

Notably this project illustrated an initially over-simplistic, instrumentalist, and technologically deterministic perspective. This is captured by an initial framing of the research project as evaluating 'effectiveness' of the application, which presumed an unproblematic easily reified intention. However, upon reflection, there were several assumptions made by Hide & Seek regarding parent-child digital media engagement and co-engagement. Further, the purpose of the application was informed by assumptions of technology's role in childhood and the developmental importance of play. Moreover, there was an underlying presumption of parents' inability to play with their children.

Taken as a microcosm, this research project is illustrative of the role of commercial entities in developing technology to support children's learning and development. Though well-meaning, the development of the application was informed by wider discourses of parental deficiency, and an underlying assumption of technology acting as an unproblematic solution. As will be discussed in the *Mediating Family Play* chapter, my take away from this research was the necessity to consider wider socio-cultural context and the perceptions of research participants when designing and undertaking a research project.

Game Makers

After a rather unceremonious end to my work with Hide & Seek[12], my next project focussed on the development of digital games as meaning-making practice in a classroom context. As informed by my research with Hide & Seek, I shifted my research perspective to focusing on technology as socio-culturally situated and adopted a less prescriptive 'interventionist' approach to research. In this research situation I explored the classroom-based 'learner-led' production of digital games for social change with children aged 13 and 14 (Year 8) over ten 100-minute ICT lessons, with support of their usual ICT teacher. This was referred to as the *Game Makers* programme and was supported by the, relatively, newly established Isle of Portland Aldridge Community Academy (IPACA).

From the project I identified the practical and cultural contextual factors that mediated the aims of the *Game Makers* programme. Here, I began to develop a critical awareness of the various socio-cultural and institutional forces which legitimate certain constructions of learning. For instance, the use of the term 'progress' as an evaluative measure for the programme is indicative of the performativity of state education. The critical awareness developed through this project paralleled an increasing understanding of the complexity of educational settings.

The more I sought to capture and understand underlying socio-cultural influences of educational practices, the larger the scope of my research became. Eventually, this led to the adoption of an ethnographic research methodology that was undertaken in conjunction with the following research project. To be clear, there was some overlap between the *Game Makers* and *Digital Families* research projects, but they will be presented as separate research projects for clarity.

[12] I was informed of the company's closure through a blank email that had a link to the official announcement of their closure on their website. Although this is perhaps due to the difficulty of the situation, as most staff were personally invested in the company and telling people of the closure was understandably difficult, I cannot help but wonder if this 'minimalist' approach to telling me is reflective of how embedded I actually was in the company.

Further, the critical-turn in my research trajectory was born out of both these research projects but solidified in *Digital Families*.

Digital Families

Ostensibly this research project explored the provision of digital skills training via family-orientated workshops delivered by IPACA to the local community. In part driven by the IPACA's portrayal of its use of technology, it received a significant capital investment from Samsung UK to develop a Digital Classroom as part of Samsung's Digital Classroom programme. Typically, these Digital Classrooms were developed in primary schools and were intended to serve the wider school. In the case of IPACA however, their Digital Classroom was intended to act as a community space in partnership with various community groups and organisations.

With this final project there is perhaps a serendipitous neatness that leads into the final discussion. This final project illustrates the core themes of this thesis that were apparent in the previous research settings. That is, it identifies the necessity of a contextually situated perspective of technology adoption in teaching and learning. In addition, it highlights power-dynamics that are mediated by various assumptions of technology's role – and the implications of deficiency that these power-dynamics can create. Further to this, the uniqueness of the community setting aptly highlights the potential influence of socio-cultural values.

Upon reflection, my work at IPACA was at times a frustrating confrontation with the various power dynamics that legitimate certain educational practices. This includes the power the academy had in setting expectations for educational practices that parents must adhere to, less they be deemed deficient. It also includes the instrumentalized power of the education system itself, that creates a significant pressure on schools. Further, it highlighted an understandable response to the wider socio-cultural construction of technology as unproblematically and uncomplicatedly good for education. Of course, this wider socio-cultural

construction is also mediated by commercial entities and other technology proponents.

As an end point for this trajectory, I will discuss the development of my critical stance as a researcher and use the three research projects to illustrate why this critical stance is necessary. This includes a transparent admission of my epistemological blind spots throughout these research project, especially regarding processes of legitimation mediated by issues of power.

Research Analysis

Three research projects are being presented here. They are presented as a research trajectory through a coherent research paradigm that will also inform the interpretation and analysis. Typically, autoethnographic research findings are presented with reference to epiphanies – that is, moments of introspective clarification and realization as the researchers' understanding of the world shifts to expose new personal insight (Douglas and Carless 2013, Adams et al. 2015). According to Ellis et al these epiphanies are typically born from "*times of existential crises that forced a person to attend to and analyze lived experience*" (Ellis et al. 2011, p. 3). Of course, epiphanies are deeply personal, but they do provide insight into how others may negotiate similar situations, and the reconciliation process they may go through.

Though the term epiphany is useful here, I worry its use would miss a key part of the analysis and contribution here. The realizations presented in this thesis were born out of intense situations, yes, but these realizations were not immediately reconciled or even consciously understood. This is still true as I move through educational spaces and reflect on my position as a researcher, to quote Kelly Clark/Keefe *"I can see it before I can say it. I can sense it before I can make sense of linguistically*." (Clark/Keefe 2009, p. 17). Within this research, there was no immediate epiphany but instead there were growing discomforts and nagging

doubts. Indeed, to present my findings as such would be disingenuous and undermine the intended contribution.

My analysis here, then, will be framed around these epiphanies, drawing as clear a line as possible through the three research situations. It will therefore be presented as a:

> "cross-case analysis of the materials that have been collected, paying more attention to the process being studied than to the persons whose lives are embedded in those processes" (Denzin 2018, p. 128).

At the end of each research situation I will present points of realization as emergent themes (Bourdieu and Wacquant 1992, Reed-Danahay 1997, Adams et al. 2015), that will be further developed in the following research situation. The research trajectory discussed in this thesis makes the thematization process explicit as I critically reflected upon these themes. In my conclusion, these themes will be consolidated and framed as challenges in undertaking research in educational technology. To frame this analysis, I use the principles identified previously in this chapter and my overarching research questions.

Research Ethics

There is an important ethical consideration in the presentation of this thesis that goes beyond the 'typical' considerations of undertaking research. The research projects presented within this thesis were each ethically approved through Bournemouth University's ethical review process. Details of the ethical considerations for each research project will be discussed within their respective chapters. Here, however, there is necessity to consider the ethical implications of the retroactive assemblage of these research projects, including the addition of my reflections and observations made during those projects.

The presentation of this thesis as a portfolio of research means an inherent increase in scope over the ways in which I am using the data collected in the research projects. Although the use of these research projects in this way has been approved through consultation with Bournemouth University's ethics committee it bears reflecting on. A primary point of concern is that even though this thesis is focused on my experiences as a researcher, I "*ultimately cannot avoid implicating others*" (Tullis 2013, p. 248). Further, as the scope of my reflections and inquiry expanded the implicated 'others' were not always research participants or stakeholders.

At points in this thesis, I will reflect upon my experiences and observations as I navigated the field of educational technology. This includes interactions with educational technology commentators, scholars, and, for lack of a better term, salespeople. As an ethical consideration, discussions of these people will be focused on the positions they represented in as much as they are indicative of discursive positions within the field. Further, they will of course be kept anonymous. For those research stakeholders, participants, and collaborating organizations there is a concern of the critical-turn in my research.

The informed consent and gatekeeping procedures undertaken were, again, initially approved and subsequently reaffirmed by Bournemouth University's Ethics Research Committee, although this does not present me with any less to consider. A key through-line in this thesis is the inability to take anything for granted, including ethics. Ethical consideration, then, is an ongoing process of renegotiation and reconciliation (Tullis 2013, Adams et al. 2015). Ultimately, I choose to present this thesis with a considered balance of anonymity and situated, critical treatment for those involved. My reasoning for this is the desire to unpack issues of power in the construction of educational practices with technology.

Literature Review

> **"**there are institutions [technology] one must oppose and struggle to modify even though one also has considerable affection for them" (Winner 1977, p. x)

This chapter will critically unpack some of the assumptions and expectations underlying technology's perceived role in educational settings. The literature relating to the specific contexts and issues explored within the three research settings will be explored in subsequent chapters. This includes perceptions of play in children's development, differing constructions of literacy, and the role of parents in managing children's use of technology for education. This chapter explores the construction of technology as a 'totality' initially, and then in relation to educational settings.

I open with Winner's work here as it illustrates three goals of this literature review[13]. First, it captures a professional goal in undertaking this doctorate to meaningfully and critically contribute to the adoption and application of technology in educational and learning settings. Secondly, Winner's work was published in 1977 in response to a lack of meaningful discussion of 'technology' generally – including automated machinery, scientific advancement, and continued industrialisation. Here, though this thesis focuses on digital technology for learning, it is in part grounded in historical continuations of technological anxieties, optimistic expectations, and the discursive tensions in-between.

Finally, the scope of Winner's work demonstrates the necessity of contextualising the perceived role of technology in education in relation to prevalent societal assumptions. There are broader societal assumptions of technology's definition and perceived role that also manifest in learning settings, though the implications of these assumptions are of course different. There is a

[13] In addition to illustrating my unabashed geekiness and thus having an 'affection' for all things technological.

challenge in navigating through complex and contentious collections of literature. Moreover, the three research situations presented here require more focused explorations of different disciplines including play's developmental role in childhood, game creation in the classroom, and schools' role as a community space. Given the focus of this thesis however, there is a natural starting point in unpacking the term 'technology' itself.

To begin, I will first explore the notion of technology to identify its historical antecedent, to highlight an inherent perception of technology as intertwined with 'progress'. Further, I signpost the relevance of the historic roots of 'technology' with specific reference to the tendency to "*invest 'technology' with a host of metaphysical properties and potencies*" (Marx 1994, p. 249). For the purpose of clarity, the discussion of these assumptions is loosely categorized under different '-isms', starting with essentialism, the implied essentialising of technology as a totality, with a pervasive sense of its transformative role.

It is of course necessary to discuss technological determinism and teleologism. That is, technology's development trajectory is seen as a self-sustaining forward movement towards improvement or progress. Here then, I seek to establish that this teleological assumption of technology's development, informed by essentialised and deterministic framings, is reflected in its adoption and application. Naturally, this leads to the final '-ism': solutionism (Morozov 2014).

Here, solutionism does not refer to simply the act of seeing technology as a solution for all problems. Instead, it advocates that many of the problems asserted are not in fact problematic, and the virtues of the solutions proposed are not in fact virtuous[14]. Of course, I borrow extensively from the critical work of Evgeny Morozov and his definition of solutionism as critically capturing the:

[14] Ironically, instead the virtues proposed are potentially problematic, and the problems asserted can be virtuous.

> "[r]ecasting all complex social situations either as neatly defined problems with definite, computable solutions or as transparent and self-evident process that can be easily optimized." (Morozov 2014, p. 5)

Solutionism becomes relevant to represent the simplistic capturing of complex situated contexts and the ease at which 'problems' are uncritically identified and solved. Further, it speaks to a "*never-ending quest to ameliorate*" (Morozov 2014, p. 5) – as linked to teleological assumptions of technology's development. For the purpose of this thesis, and my intended contribution to professional educational practice, I frame this as a desire for progress that is problematic in educational and learning settings. Therefore, following the philosophical groundwork established, the following sections of the literature review will explore educational contexts specifically.

The exploration of the various educational and learning contexts will not be exhaustive[15], but the intention is to illustratively unpack the various manifestations of underlying 'solutionistic' assumptions of technology. In addition, I will identify various socio-cultural assumptions that, again, illustrate different factors that affect educational technology perceptions. This will act as a starting point for more general assumptions of technology, if only to highlight they exist, before then exploring the specific research situations presented in this thesis.

Defining Technology

> "[T]he artifacts, the knowledge, and the practices later to be embraced by "technology" would continue to be thought of as belonging to a special branch of the arts variously known as the "mechanic" (or "practical" or "industrial" or "useful")". (Marx 1994, p. 242)

[15] It would be naïve, if not hypocritical, to establish the necessity to embrace the complexity of educational settings and then present this work as an all-encompassing, comprehensive exploration of them.

To begin, it is worth considering the emergence of the term 'technology', as there is an underlying irony in the emergence of this term with reference to contemporary discussions. The word technology emerged as a neutral reference to capture emergent mechanical objects and practices. Preceding technology, as identified by Marx, the practices and social networks emerging around the increasing mechanisation and industrialisation were referred to as the mechanic arts (Winner 1977). As such, these mechanic arts were viewed as subset of the fine arts and was, according to Winner, subject to an invidious demarcation in comparison to the other arts. That is, it was a lesser set of activities that was a smaller part of the arts generally, and as such the term technology shifted this perception. According to Winner:

> "[t]his derogatory legacy was in some measure erased, or at least masked, by the more abstract, cerebral, neutral word "technology"." (Marx 1994, p. 242)

The irony that emerges here is that though the term may have had a neutralising effect on some of the, slightly classist, perceptions of the 'practical-arts', it has introduced new assumptions, meaning 'technology' is far from neutral. Indeed, the elevation of 'technology' as referring to the totality of tools, machines, practices, and knowledge afforded a perceived transformative role. This is furthered by a generalisation from the machine arts – referring to localised specific technical knowledge, practices, and tools – to a totality that positions technology as significant on a societal level. Or as David Nyes puts it, "*no sooner was 'technology' in general use than some began to argue for 'technological determinism*' (Nyes 2007, p. 15).

Now, I do not wish to discuss the etymological origins of the term technology in detail. By its nature, its inclusive use means much of the discussion would fall out of the scope of this thesis. However, it is worth considering it is not a neutral term – even if I only intend to use it to refer to digital technologies in an educational setting. As Bruno Latour argues, the framing of technology as a totality

is inherently disempowering as we presuppose fantastic properties, leaving us to ponder *"[w]hat is to be done, then, with such sleek, filled-in surfaces, with such absolute totalities?*" (Latour 1993, p. 126).

Technology has become more than just an inclusive label for technological artefacts and practices. Instead, according to Mackenzie and Wajcman, there are three levels of meaning to the term technology (Mackenzie and Wajcman 1985). It is used to refer to the physicality of objects, the practices for surrounding their use, and the knowledge that informs technology's development and use. What's more, technology is defined in relation to human activity rather than discrete objects or as Heidegger describes:

> "We ask the question concerning technology when we ask what it is. Everyone knows the two statements that answer our question. One says: Technology is a means to an end. The other says: Technology is a human activity." (Heidegger 1977)

I will come back to Heidegger and his particularly defeatist technological deterministic perspective. For now, he aptly captures a persistent framing of technology in relation to human activity that is in part reflected in contemporary discourse. Two things of interest are illustrated here - the framing of technology as a "*means to an end*", and the social situation of this end. So even when technology is used to refer to a technological artefact, that artefact itself is associated with a human-defined end – or a "*general human property, an extension of human capacity*" (Williams 1974, p. 129). Here, there is a common understanding of technology through socially contextualised teleologism.

The situating of technology has been extended in contemporary discussions to frame technology in terms of broader social contexts. For instance, in tracing the framing of technology as a driving force for society, Lewis Mumford argued that:

> "[t]he machine cannot be divorced from its larger social pattern; for it is this pattern that gives it meaning and purpose." (Mumford cited by Nyes 2007, p. 29)

So, in following Mumford, a definition of 'technology' should include an awareness of the social context it exists in. Indeed, this is reflected in contemporary discussions and usage of the term. According to Lievrouw and Livingstone, technology refers to artefacts and devices, activities and practices, and socio-cultural and institutional context (Lievrouw and Livingstone 2002). Given the inclusivity of this definition, and the focus of my research on technological devices, educational practices, and socially constructed perspectives (at times influenced by institutional entities), this will be my working definition moving forward. It is, however, not without contention – especially as we view the implications of defining technology through social context.

Defined by Technology

In tracing the origin of the term technology Marx argues that there was a shift from a localised perspective of technology as discrete artefacts and their related practices to a farther-reaching notion of technological systems. As illustration, the early locomotive was for a time an adequate reflection of technological progress, but this was subsumed by imagery of national rail transportation networks. That is, representations moved from material objects to that of the inherent complexity of intertwined technology, practices, knowledge and social contexts (Marx 1994). For a more contemporary illustration this representational shift from the discrete to the complex is perhaps best reflected in how we refer to the internet. As Neil Selwyn describes:

> "[w]hen people talk about the internet they are usually referring to the activities that they engage in online, the cultures that can be said to surround these social activities, and the knowledge that results from these activities." (Selwyn 2011, p. 8)

So, in referring to the internet we are not referring to the underlying technology, nor are we referring to individual computers or devices that constitute the internet. Instead, the internet is framed as a broader, less graspable, complex technological system. What is worth considering here and has some significance for this thesis, is in capturing the socio-culturally situated complexity of technology, there is a loss of a tangible grounding. The shift away from a localised, discrete, materialist understanding invites the reverential totality sign-posted by Latour (1993). In 1977, Winner ruefully illustrated this shift through mapping dictionary definitions[16] arguing that the shift from something precise, to something more expansive begets a "*disorientation that borders on the dissociation from reality*" (Winner 1977, p. 8).

Now, I am not suggesting that there is a definitive disconnect from reality when it comes to our perceptions of technology. However, both the timing and content of Winner's observation are interesting. The fact that this observation was made in 1977, before the mass adoption of the desktop computer and internet, again points to a heritage for our perceptions of contemporary digital technologies. Moreover, in contemporary discourse we can often see this "dissociation" manifest as a mythologizing of technology. For instance, in addressing our contemporary understanding or representation of the internet:

> "[t]he physical infrastructure we know as "the Internet" bears very little resemblance to the mythical "internet" – the one that reportedly brought down the governments of Tunisia and Egypt, and is supposedly destroying our brains – that lies at the center of our public debates." (Morozov 2014, p. 14)

[16] 1909 – technology as "industrial science, the science or systematic knowledge of the industrial arts"

1961 – technology as "the totality of means employed by a people to provide itself with objects of material culture"

This understanding of the internet is representative of contemporary discourse, spread across a spectrum of technological optimists and pessimists. Indeed, this elevation is reflected in technology's framing as a defining factor in contemporary society such that there is a retroactive re-categorization of society in relation to material artefacts available at that time. As Hannah Arendt writes, *"[t]ools and instruments are so intensely worldly objects that we can classify whole civilizations using them as criteria"*(1958, p. 144) such that contemporary national identities are strongly associated with technologies that are perceived to have had a significant shaping role in that nation's development (Nyes 2007, Wyatt 2008).

Sally Wyatt takes a slightly sympathetic perspective on the origin of this retroactive technological stratification of society. Initially, technological change was only seriously researched through an anthropological or archaeological lens - disciplines that prioritize material artefacts as they are often the only sources available, especially when researching non-literate societies (Wyatt 2008). This retroactive framing of not only societies, but societal development will be explored further in relation to deterministic conceptions of technology. As Latour suggests:

> "[b]y now, the history of technology should have forever subverted the ways in which social and cultural histories are narrated" (Latour 2007, p. 81)

Essentialised Technology

> "A common tendency of contemporary discourse, accordingly, is to invest "technology" with a host of metaphysical properties and potencies, thereby making it seem to be a determinate entity, a disembodied autonomous causal agent of social change— of history. Hence the illusion that technology drives history." (Marx 1994, p. 248)

Marx argues here that the elevation of technology to a 'determinate entity' of social change is a consequence of the attribution of ideological values. Though Marx wrote on the idea of technology in 1994, this assertion - that we invoke 'potencies' associated with technology when we use the term - is still relevant

today. Moreover, these 'potencies' necessitate critical consideration as they may inform expectations of what technology is or can do in an educational setting. Here, then, I will consider these 'metaphysical properties', or essentialised qualities, and address two connected assumptions of technology - the teleological framing of technology and the subsequent view of technology as transformative.

Before tracing the essence of technology, it is worth considering the futility of this effort - not to invalidate the discussion here of course as there are common assumptions underlying the idea of technology which undoubtedly shape its perception. In his conceptualisations of language-games, Ludwig Wittgenstein argued against the dogmatic searching for an essential core meaning of a word which is representative of all the ways in that word is used. Instead, in tracing the application of a word through its uses we reveal a "*complicated network of similarities overlapping and criss-crossing: sometimes overall similarities, sometimes similarities of detail*" (Wittgenstein 1958, p. 32).

There is still a persistent ontological essentialising of technology, however. This has already been discussed in terms of technology's reframing as an absolute, consistent, totality (Winner 1977, Latour 1993, Nyes 2007, Wyatt 2008). By extension, then, this technology becomes a 'determinate entity'. I would extend Marx's argument, and suggest that though the ontological essentialising of technology leads to its reification, this reification of technology also invites further essentialising. Likewise, as Latour asserts that socio-cultural histories have subverted the history of technology, perhaps too the history of technology is subverted by socio-cultural context. This stems from the first 'essentialised' framing of technology I will discuss here - the common teleological framing of technology.

In writing on the 'essence' of technology in *The Question Concerning Technology* Martin Heidegger captured technology as a means to a human end. That is, "*instrumentality is considered to be the fundamental characteristic of technology*" (Heidegger 1977, p. 5). Now, this instrumental framing of technology is a common characteristic of its definition – as Neil Selwyn writes "*at a basic level*

'technology' is understood as the process by which humans modify nature to meet their needs and wants." (Selwyn 2011, p. 6). Therefore, technology is frequently teleologically defined. It is defined in terms of its purpose, which is intertwined with notions of progress. It is an extension, or improvement, on human agency. It is not sufficient for technology to do what humans can already do; it must do it 'better'.

Naturally then, this frame of reference is shared within educational uses of technology. This isn't necessarily a significant finding – that we use technology because it is seen to have a use. However, what is wrapped up within this teleological framing of technology is significant as it speaks to some of the underlying assumptions that inform our perceptions of technology. Technology is not just the enactment of pre-existing human practice, though it may develop from this practice (Williams 1974). As Rudi Volit states:

> "technologies are developed and applied so that we can do things not otherwise possible, or so that we can do them cheaper, faster and easier." (Volit cited by Selwyn 2011, p. 5)

This instrumentalist presentation of technology is common and underlined by an assumption that technology affords better. For instance, Heidegger framed technology as an extension of human agency over the natural environment (Heidegger 1977), as a "*cultural form through which everything in the modern world becomes available for control*" (Feenberg 1999, p. 294). Further to this, this notion of 'better' – built on Enlightenment era ideals of progress driven in part through technological innovation (Marx 1994, Nyes 2007) – has become something that modern society views as an ideal (Wajcman 2014). As Winner captures when discussing an emerging anxiety of technology's perceived determinant nature:

> "[m]ore, farther, and faster is the formula for virtue in the modern age, our frenetic equivalent of the arete of the Greeks or the piety of the Puritans" (Winner 1977)

For Winner then, the betterment enabled through technology – and the 'potencies' technology is imbued with – came to represent some societal ideal. Naturally, intertwined with this improvement driven, instrumentalist perspective of technology's use is the framing of technology as a representative of progress, if not the direct cause of. Human development is stratified through levels of technological development and technology is also used as a key-dividing line between humans and "*atechnical*" (Nyes 2007, p. 2) animals. When using the term technology then, there is an invocation of both technology's perceived enablement and representation of change.

This framing of technology as affording better, or as progress in its own right, is traceable in educational settings (Buckingham 2007a, Selwyn 2013, 2016, Livingstone and Sefton-Green 2016). Technology is treated as a discrete, amorphous agent of change – something inherently transformative - such that its use in a classroom setting is treated as something akin to massive reform or out and out revolution. Given the perceived transformative currency technology holds, it is little surprise that those not embracing this usage are framed as obstinately resisting something inevitable (Cuban 1985, Kimmel and Deek 1995, Robins and Webster 1999, Buckingham 2007a, Selwyn 2013). Naturally, this intertwining of technology and notions of progress[17], change, and improvement alongside a treatment of technology as a 'totality' leads us to the question of determinism.

Technological Determinism

> "[I]t remains as part of a broader public discourse which seeks to render technology opaque and beyond political intervention and control." (Wyatt 2008, p. 172)

As Sally Wyatt captures, technological determinism is a persistent assumption in contemporary discourse despite consistent critique and

[17] For some this notion of technology's developmental progress is so self-evident and pre-determined that the frequently cited, and mis-understood, Moore's Law of consistently increasing programming power is treated as something akin to a Newtonian natural law.

admonishment. As such, it is necessary to unpack this determinism here, even though academic discussions have moved away from technological determinism to favour flat ontological positions of socio-materiality and actor network theory (Latour 2007, Edward et al. 2008, Orlikowski 2010, Leonardi 2013, Potter and McDougall 2017). Assumptions of technological determinism, despite falling out of academic favour, are still present in contemporary discourse surrounding technology – especially its adoption in schools.

Given my previous discussion of the perceived transformative 'essence' of technology, reflected in its cultural significance of illustrating change or progress, it is perhaps unsurprising that there is an underlying deterministic assumption that is difficult to unpack. Indeed, the reference to technology as an abstracted totality almost elevates it to a societal meta-process. Technology becomes something akin to globalization, individualization, and can be viewed as a precursor to the, socially contextualised, metaprocess of mediatization. (Heidegger 1977, Winner 1977, Latour 1993)

The perception of technology as an autonomous agent of social change creates a discomfort with technology's role in society that has historic precedent (Heidegger 1977, Winner 1977, Marx 1994). For instance, to revisit Heidegger, he argued that technology's transformative and subsequent deterministic role centred on the technology's capacity to enact control on society. In exploring the 'essence' of technology, Heidegger argued that the instrumentalist notion of technology can be further unpacked as a "*revealing*" (Heidegger 1977, p. 5), in that technology enables the 'revelation' of some human envisioned materiality. However, he adopts a, fatalistic, deterministic perspective in that he argues the revelatory capacity of technology becomes the sole means through which things are revealed.

Heidegger posits that technology comes to 'enframe' the world such that the world becomes framed as a 'standing-reserve' waiting for technological elucidation. Or as Neil Postman captures:

> "to a man with a pencil, everything looks like a list. To a man with a camera, everything looks like an image. To a man with a computer, everything looks like data." (Postman 1993, p. 14)

For pessimistic technological determinists Heidegger and Postman, then, technology eventually comes to frame our terms of engagement. Interestingly, this notion of enframing has direct relevance for our understanding of technology's role in schools, in that it goes some way to explain increasing data-centricity in educational settings[18]. In addition, what makes Heidegger's framing of technological determinism particularly relevant is the conception of technology as enacting a frame of reference that is both informed by underlying assumptions and self-reinforcing. To borrow from McLuhan "*the means employed discover their own goals*" (McLuhan and Watson 1970, p. 202).

For Heidegger, and this thesis, however, these goals are still informed by an underlying socio-cultural intention. In contemporary contexts, the increased data-centricity in education is not a sole outcome of increased data storage and computing capacity but is instead reflective of neoliberal notions of performance. However, the availability of computers enables an enactment of this performativity. As Selwyn describes for the advent of digital technology:

> "[w]hile not always apparent or wholly consistent, it could be argued that digital technology has long been intertwined with a closely related set of dominant contemporary ideologies." (Selwyn 2013, p. 25)

As discussed by Winner, technology's elevation to an agent of social change grew from Enlightenment era ideals of rationalist progress (Winner 1977). Indeed, it is this notion of progress that I wish to reiterate here as it is perhaps the most pernicious underlying assumption present in technology's role in education. For this

[18] To the admin with a spreadsheet, everything looks quantifiable.

thesis, it is also significant given my critical and informative intentions. As Wyatt describes:

> "[o]ne of the most misleading and dangerous aspects of technological determinism is its equation of technological change with progress." (Wyatt 2008, p. 176)

As this research will explore, notions of progress and transformation are rationalised in different ways, depending on social context. This research will identify some of these situated justifications, and anxieties, surrounding technology. Naturally, there are other iterations of this determinism debate, on a spectrum of hard to soft (Chandler 1995)[19] depending on human agency in enacting change through technology (Mackenzie and Wajcman 1985, Heilborner 1994, Marx 1994, Wyatt 2008). Indeed, there has been a marked shift over the near-century of technological determinism discussion that has moved away from the abstracted determinism of Heidegger, to the socially-situated and flat ontological structuring of socio-materiality and actor network theory (Latour 2007, Edward et al. 2008, Leonardi 2013).

Technology physically and metaphysically exists within a social context, and agents within this context are both shaped by and shape technology. This theoretical lens has value from a methodological standpoint – as addressed in my discussion of critical realism in the previous chapter. Here, however, this notion of determinism is necessary to explore in its own right – though I am conscious of 'legitimizing' it – as it has direct implications for the justification of technology in education. As identified by Selwyn, broader debates and ideological frames of reference for technology impact perceptions, adoption, and subsequent practices in educational settings (Selwyn 2011, 2016). As Selwyn suggests:

[19] Perhaps McLuhan's notion of Hot and Cold media is a better allegory here – hard and soft determinism refers to the degree of human agency in shaping society in much the same way that hot and cold refers to the degree of necessary human interaction with a medium.

> “these are also arguments that many people inside education are not fully engaged with, yet are already beginning to feel the effects of.” (Selwyn 2016, p. 2)

It is for this reason that this thesis eventually became focused on expectations of technology, and the discourses that shape them, rather than technology itself. As discussed throughout this literature review it is technology’s framing as a transformative meta-process toward a presumed ‘better’, that leads to a deterministic presumption. To draw on Latour:

> “[t]he words 'science', 'technology', 'organization', 'economy', 'abstraction', 'formalism', and 'universality' designate many real effects that we must indeed respect and for which we have to account. But in no case do they designate the causes of these same effects. These words are good nouns, but they make lousy adjectives and terrible adverbs.” (Latour 1993, p. 116)

Here, Latour argues that the use of terms such as ‘technology’ is a result of actual change – there is indeed some effect in some way relating to technology’s adoption. At risk of labouring the point, this is illustrative of the same underlying issue at stake here. Technology is not a neutral tool or term. Instead, it invokes historically situated notions of progress, or betterment. Further to this, and crucially for this thesis, the treatment of technology as something opaque limits discussion of the underlying socio-cultural processes that inform its adoption and use (Winner 1977, Wyatt 2008, Selwyn 2011).

Now, this thesis seeks to call to light some of these socio-cultural processes or assumptions and their manifestation in educational practices. Before moving on to educational technology more directly, however, there is one final ‘-ism’ I wish to discuss. Solutionism as presented by Evgeny Morozov (2014) refers to the uncritical adoption of technology such that it solves some ill-defined or non-existent problem. As will be discussed, this solutionistic approach is pervasive in education such that it provides an appropriate and necessary term of reference. In the context of the

academic literature discussed earlier, solutionism can be viewed as the logical extension of determinism.

Solutionism in Practice

> "The internet to us, is believed to possess an in inherent nature, a logic, a teleology, and that nature is rapidly unfolding in front of us." (Morozov 2014, p. 21)

As well as hard to soft, the ideology of technological determinism can be said to exist on a spectrum from pessimism to optimism. The negative assumptions underlying technology's role, especially in childhood, will be discussed throughout this thesis. Here however I wish to draw a link between positive framings of determinism and solutionism to represent the overly simplified discussions of educational technology. Further, there is a divergence in contemporary discourse surrounding technology, and academic framing of technology. That is, there is a reductionist framing of technology in educational spaces that is at odds with the critical discussions present in current academic inquiry[20]. In addition to solutionism as uncritical determinism, it also captures the invocation of the various "potencies" (Marx 1994, p. 249) that technology has been imbued with.

For instance, in educational contexts there is an increasing prioritization of data-capture, in part for the purposes of assessing school performance. Morozov discusses this as the outcome of a perceived benefit of transparency. That is, that transparency is a worthy end in itself leading to increasing data-capture. (Morozov 2014). Interestingly, this again speaks to Heidegger's conception of technology as enframing the world as standing reserves. This goes someway to explaining self-justifying nature of capturing performance metrics in education. The technological

[20] Perhaps best illustrated by the British Educational Technology Tradeshow (BETT). Anecdotally, a search of BETT website reveals ~1500 pages containing the term 'solution' including: 'Online only solutions', 'Reading and Comprehension Solutions', 'Smart Biometric Solutions'. Perversely, from a critical academic perspective, the evocation of simplicity, and reductionism, by the term 'solution' here is the selling point.

affordance of storing and processing data becomes something intrinsically worthwhile. Further reflecting Heidegger, there is a framing of learning that is abstracted away from everyday activities such that there is a performance of learning to fit an external framework.

Here, it was the intention to draw out three things in my discussion of 'technology essentialism, determinism, and solutionism' that have implications for technology in education. First, the elevation of technology to a demarcated entity, both affording and denoting progress. Second, the presentation of technology as an agent of social change, with varying degrees of human agency from hard determinism to the ontological flat actor-network theory. Third, the manifestation of a "*will to improve*" through technology and the subsequent reframing of educational contexts as "*neatly defined problems with definite, computable solutions*" (Morozov 2014, p. 5). Taken together, this creates a situation in which technology is, of course, problematic.

Now, for the purposes of this thesis, I am interested in exploration this intersection of perceptions of technology – its materiality, and abstracted meta-physicality – and the subsequent implications of these perceptions for educational and learning practices. For instance, speaking to the intertwining of technology and progress discussed earlier in this chapter, Cathy Burnett, Guy Merchant, and Becky Parry argue that the perceived 'newness' of technology in the classroom "*can neglect the situatedness of practice involving media, literacy, and technology*" (Burnett et al. 2016, p. 235). Outside of the classroom, Sonia Livingstone and Julian Sefton-Green observed that technology "*had come to stand for learning itself*" (Livingstone and Sefton-Green 2016, p. 189) perhaps reflecting the underlying teleological – purpose framed – perspective of technology.

It is worth exploring how this context is informed by the underlying assumptions addressed earlier, whilst critically unpacking other assumptions such as changing childhoods, changing parent-child, teacher-student relationships – underpinned by a notion of deficit. Therefore, here I will further unpack

perceptions of technology in education – broadly – before addressing literature relevant to the research situations though the thesis.

Educational Technology in Disputed Practice

> "Classroom use of films became a symbol for progressive teaching approaches, just as the microcomputer is today." (Cuban 1985, p. 12)

The adoption of technology in education is disruptive, but not necessarily in the way anticipated by technology advocates. As identified by Cuban in 1985, the micro-computer is a symbol for progressive, presumably better, teaching practices. However, this notion of progress is rarely pitched as an incremental improvement. Rather, the anticipated impact of technology is treated as something akin to a revolution. For instance, technology proponent, and founder of 'constructionist' pedagogy, Seymour Papert suggested in 1984 that the "*computer will blow up the school*" (Papert cited by Cuban 1985, p72).

Reflecting Papert's techno-optimism, the adoption of technology was meant to free teachers from the need to teach to the test and enable meaningful participation on the part of students. Of course, this is a very deterministic, if hopeful, perspective to take. What is relevant here is the positioning of technology as a solution to a pre-existing problem of instrumentalist teaching practices. The expectation for technology to solve this problem speaks to perceptions of its revolutionary nature, to the promise of technology. As such Papert's discussion of the impact of technology is one that is addressing current problems in education (Papert 1993).

Interestingly, Papert adopts a perhaps more sympathetic perspective for teachers and parents than other commentators in the area. That is, there is a consistent dismissal of learning practices as lacking in various capacities (Collins and Halverson 2009, Buckingham 2010a, Rowsell and Walsh 2011, Burnett 2013) - either as an ideological resistance to the pre-eminence of instrumentalist educational practices or, as discussed previously, a general expectation that current

practices can be improved because technology improves inherently. So, educational practices are problematized through critical disagreement, and are seen as problematic through an (il)logical inference from technological solutionism (Morozov 2014).

For instance, educational technology commentator Stephen Heppell suggests: "*Schools are full of things that our descendants will look back on and laugh out loud at.*" (Le 2010, para. 8). He is quoted as saying this in 2010, but even then, if we were to look back at what schools were doing, we would see a similarly contentious adoption of, and resistance to, technology. As Larry Cuban identified, from the 1920s onwards, following the adoption of technology in schools, there has been self-reinforcing problematizing of educational practices. Schools are problematized, technology is adopted as a solution, the failure for technology to enact meaningful, positive change is then justified due to the problematic nature of schools (Cuban 1985). Technology is the solution, just schools, their lack of resources and their anachronistic teachers are just *too* problematic.

Now, this isn't to suggest that all proponents of technology in education rely on uncritical assumptions of technological affordances. Nor is it fair to dismiss any technology proponent who is critical of current educational practices as adopting a simplistic, solutionistic perspective. There are many reasons to be critical of educational practices in the UK – especially instrumentalist teaching, teacher deprofessionalisation, and the use of performance indicators as political technologies (Shor 1993, Ball 2003, Parry et al. 2016). Conversely however, the advent of technology has created significant discussion about the role of educators – ranging from a shift from 'leading' to 'facilitating' learning, to suggestions that they are now entirely secondary to technological channels for education – if not entirely unnecessary (Kimmel and Deek 1995, Bebell et al. 2004, Vannatta and Fordham 2004, Prensky 2006, Collins and Halverson 2009, Vanderlinde and van Braak 2010, Kiili and Arnab 2013). This disempowering of teachers and parents will be a recurrent theme throughout this thesis.

Here I simply wish to illustrate that current educational practices are consistently problematized, but what is seen as problematic about these practices is not consistent.

> "Any confident claim of imminent digital change is usually linked to wider agendas, beliefs and interests about education reform and broader societal change." (Selwyn 2016, p. 21)

As identified by Selwyn and other educational technology commentators, technology's adoption in education is driven by broader societal agendas - including neoliberal notions of performance management, or the commercialization of educational technology (Buckingham 2007a, Burnett et al. 2016, Selwyn 2016). Likewise, any criticism of current educational practices is likely informed by wider agendas and systems of belief that influence what constitutes legitimate practice. In their discussion of literacies in the classroom, and the need to reconsider the term literacy in the context of digital-media driven meaning making, technology instead becomes a means of mediating, or 'technologizing' traditional notions of literacy (Burnett et al. 2016, p. 233). In addition, the 'progressive' adoption of technology in the classroom, perhaps perversely, often serves the purpose of enacting the institutional, instrumentalised notion apparent in schools (Burnett et al. 2016).

As identified so far in this literature review, I have unpacked some of the assumptions that inform perceptions of technology. I have also started to trace how these historically situated teleological, essentialised, and deterministic perceptions of technology manifest in education. At this stage however it is necessary to move toward a situated review of the literature in relation to the specific research projects discussed in this thesis. Naturally, there will be overlap between these projects and all, to different degrees, will illustrate the key issues identified in the literature review.

To begin, I will first explore children's development in the home – specifically exploring the perceived role of play in pre-schooler development,

parent's role in mediating 'appropriate' playful behaviours, and the tension that technology has introduced. Within this context there is an emergence of the 'tension' of technology's potential developmental and supportive role, in opposition to 'traditional' practices – especially with reference to the perceived developmental importance of play. Moreover, the role of digital technology in childhood play also demonstrates the continuation of traditional practices and values through technology, whilst also implying a degree of parental 'deficiency' in how they manage digital devices – especially when compared to their 'digital native' children.

Proceeding the review of literature discussing play and digital devices in the home, the application under scrutiny in the *Mediating Family Play* project is also illustrative of a solutionistic perspective that, perhaps ironically, offered a digital solution to a problem created by digital devices. The notion of digital nativism - with the implications of deficiency for parents - and the necessity of a socio-material perspective in considering technology's application, directly informed the next research project. It further explores the notion of digital nativism by directly exploring a group of Year 8 students' digital skills in a classroom setting. Further to this it uses the production of a serious game about a social issue as a means of exploring digital literacies as enabling new forms of meaning making.

Game Makers identifies, again, the extension of traditional practices through technology - here in the form of learning outcomes and signifiers of learning. Presumptions of digital nativism, implications for practice, and the expectations of the technology's educational potential feed the next research project. *Digital Families* is situated within the literature that explores the role of the 'digital immigrant' – or parents specifically – in managing digital devices in the home for the explicit purpose of education. Moreover, it responds to research exploring the role of schools in influencing, directly or otherwise, expectations of technology's usage in the home.

Research Situation 1: Mediating Family Play

Introduction

In this research situation I was embedded within the digital agency Hide & Seek. From June 2013 to March 2014, I would spend 2 days a week embedded within the organization to work on this project specifically. My role within the project was to provide evaluative feedback on a mobile application they had developed in partnership with the Joan Ganz Cooney Centre. It was the intention of the application to encourage real-world family play between parents and their preschool aged children. Further, these playful activities were intended to serve a developmental purpose.

This research chapter will reflect upon my time undertaking this research project, specifically focusing on the evaluation of the mobile application. The purpose of this is two-fold. First, to present the development of this mobile application is illustrative of interventionist approaches to the development of educational technology that is predicated on socio-culturally informed values and assumptions. In this instance, there were apparent cultural assumptions about the developmental purpose of play, the perceived inability of parents to curate the correct forms of play, and the capacity for technology to present a solution.

The second purpose of this chapter is to present an entry point to my research trajectory that saw me develop an increasingly socio-critical and reflective stance. As such, I will discuss the research as it was undertaken and my current reflections upon this research. This will include what I now see as gaps in my approach. Most importantly for my final contribution, however, I will conclude this chapter with the initial reflections I had following this research project. That is, the initial half-formed epiphanies that informed the following research project and are the basis for my final contribution.

In presenting this research project, I will begin with necessary background information on the company, my role there, and the initial goals of the research project. This will also include additional information about the mobile application itself. Following this, I will include a focused literature review that highlights relevant socio-cultural values that informed the development of the application. I will then discuss the research methodology as it was conceived at the time. This will include a discussion of critical reflections as I revisit the research methodology from my current researcher stance. Finally, I will conclude with the findings from this research project, drawing specific attention to findings that directly relate to the overall goal of this thesis.

Background Context

The decisions made by Hide & Seek in developing the application are illustrative of various assumptions surrounding play and digital technology. Hide & Seek's shared open plan office provided an apt metaphor for their organization. Hide & Seek were sandwiched between a digital games development studio and an architectural firm – an appropriate setting for a studio whose director saw the "*old division of between real-world and digital [becoming] ever more spurious*" (Lee 2013). Ostensibly, they were a digital marketing and events agency that specialised in running experiential campaigns, and pervasive games[21]. Within this space between digital and real-world, Hide & Seek's core values were centred around the importance of play.

> "Our values are built around the belief that play – as a theme, a way of being, and design tool – is integral to understanding how culture will develop in the 21st century." (Fleetwood 2014)

The cultural importance of play advocated for by Hide & Seek is reflective of Johan Huizinga's theory of the homo-luden – in that play, in its various forms, acts

[21] https://vimeo.com/hideandseek

as a crucible for human culture (Huizinga 1971). With this value of play, Hide & Seek initially developed the mobile application *Tiny Games*:

> "… a smartphone app that enables you to play fun, social games in the real world. You tell the app where you are, who you're with and what's to hand, and it supplies a game to fit." (Fleetwood 2013)

Having heard about this game, members of the Joan Ganz Cooney Centre contacted Hide & Seek to develop a Sesame Street themed version of the application designed for parents and children. It was at this stage that I began working with Hide & Seek, in the latter stages of the application's development. To be clear, I joined the company when the application had already been developed to a stable, and playable, state. I joined the company with a view to "*evaluate the effectiveness of Sesame Street Family Play in relation to its aims*", with the application's aims as follows:

- "Increase the amount of time parents spend playing with their children through contextually sensitive activities.
- Improve 'quality' of play between parents and children in terms of parental / peer involvement, enjoyment and relation to educational outcomes.
- Stimulate parents' creation of new games or tweaking of previously played games.
- Reframe parents' perceptions of play so they understand play's developmental importance.
- Promote the development of executive functions: self-control, cognitive flexibility and working memory."[22]

The application's aims were, upon reflection, lofty and it must be noted that at the time I did not question them. Of course, now the scope of these aims is significant as is the specific language used that implies something measurable. Indeed, the central focus of this research project was evaluative, but there was limited clarity regarding the specific measurable outcomes. In part this was a flaw in my researcher stance at the time, but it is also indicative of a solutionist framing of

[22] Taken from Hide & Seek and Sesame Street agreed project proposal – See Appendix A

technology development. It problematizes parents' ability to curate certain forms of play and presumes the application can provide an adequate solution.

The Application: Sesame Street Family Play

Interestingly, there was something a paradox in the underlying rationale behind the development of the application. Hide & Seek conceived the app as counter to contemporary perceived trends of producing developmentally playful, but insular and screen-centric, digital media. Ostensibly then, it was a technical solution to a problem created by technology. According to people working on the application at Hide & seek, the justification for the application as predicated on the assumption that parents are not playing with their children 'enough'. The significance of this lack of play was of course reinforced by general conceptions of the importance of play. In addition, parents lack of time and presumed inability to generate ideas for playful activities was presumed to be a cause for this lack of play.

Figure 1: Screenshot of Mobile Application Home Screen

Figure 2: Screenshot of Mobile Application Location Options

The application was designed specifically for parents to use independently of their children, rather than for co-engagement. It provided parents with short (3

to 5 minute) real-world games that are contextually appropriate. When opening the application parents are first asked to select their current location from different options (Figure 1 and Figure 2: Screenshot of Mobile Application Location OptionsFigure 2). The application then presents a game that is designed for a specific location, then presents this game as an option for the parent to play (Figure 4). If they chose not to play, they will be presented with another game appropriate

Figure 4: Screenshot of Mobile Application Game Choices

Figure 4: Screenshots of Mobile Application Game Rules Explanation

for that context. Once they have selected a game they wish to play, they will then be given a series of screens explaining the rules of the game (Figure 4).

I revisit the research situation after having approached the project from an uncritical, positivistic perspective – framed primarily around 'evaluating the effectiveness' of the application. Notably, findings and reflections from this study provided a catalyst for the more critical approach I adopted in later projects. Here, however, the following research situation is framed around the following questions:

(i) How do conventional notions of the purpose of play, the purposing of play, and the stratification of play types inform our understanding of children's learning and developmental relationship with 'digital play'?

(ii) How do assumptions surrounding the role of digital technology affect parental attitudes towards learning and development through digital play?

(iii) How do playful practices, and perceptions of such, manifest and represent the broader debates surrounding 'digital play'?

Question (i) is concerned primarily with mapping the broader socio-cultural context and will be explored through a review of relevant literature. Here we explore the socio-cultural purposing of play, and the subsequent rise in use of digital media in childhood – linking to the broader themes of this thesis. For instance, discussions of digital play – practical or ontological - cannot be decoupled from the broader romanticising of, and anxieties surrounding, children's relationship with technology. Questions (ii) and (iii) are explored through the empirical research project, in which the mobile application was 'evaluated'. Again, these findings are presented here with a critical lens that includes a reflection on the initial intentions of the organization and my evolving approach. Collectively, these questions will inform my overarching research question:

To what extent do underlying socio-cultural assumptions and values manifest in expected uses of technology in educational settings?

Literature Review

In Western cultures, play is 'culturally cultivated' (Gaskins et al. 2007a) in childhood and is viewed as key for children's development. Additionally, learning activities are often viewed as more effective when they are playfully framed (Cohen 2007). Within this construction of play as developmentally important and an effective pedagogic approach (Sutton-Smith 1997, Kernan 2007, Lillard et al. 2013a, 2013b) there is a developmental stratification of play types that digital technology is referenced against. Children's digital play, for instance, is often viewed as intrinsically purposeful such that they develop digital literacies (Prensky 2001, Selwyn 2009, Bayne and Jen 2011), or this digital play is a means of engaging in educational content (Stewart et al. 2011, DiCebro 2015, Livingstone et al. 2015).

The distinction between digital and non-digital play presumes that there is a distinction to be made, rather than something more fluid (Burnett and Merchant 2016b), and that play is something that is definable or reifiable. This literature review will first explore the challenges of defining play – and my reluctance to do so. It will then unpack both the presumed developmental purpose of play, and the use of play to serve another purpose as a starting point for introducing the role of digital technology. The intention of this section is to reframe this research project within the wider socio-cultural context that informed Hide & Seek's development of the mobile application.

Defining Play

> "We all play occasionally, and we all know what playing feels like. But when it comes to making theoretical statements about what play is, we fall into silliness." (Sutton-Smith 1997, p. 1)

Play is an notoriously difficult concept to define (Sutton-Smith 1997, Cohen 2007, Smith 2010) and typically, according to play researcher Brian Sutton-Smith (1997), play is defined in response to the lens through which it is studied. However, there have been efforts to define play through an essentialized identification of the

various qualities that 'play' demonstrates, a la Wittgenstein's (1958) familial similarities (Huizinga 1971, Cohen 2007). Moreover, given the various 'forms' that play can take there has been some effort to taxonomize play (Bishop and Curtis 2001, Hughes 2002, Broadhead 2003, Richards 2013, Marsh et al. 2016). For the purposes of this thesis I am not concerned with the "silliness" of defining play[23]. Instead, the focus of this chapter is a pervasive assumption of play's developmental purpose, and how perceptions of technology have become embedded within this.

Of course, this is a blinkered perspective to be taking when discussing the ambiguity of play. I avoid definitions but ascribe to a position of play serving a development role. Notably, play has not always been framed as a developmental activity for children. It has been argued to be the expelling excess energy, or cathartic expression of primitive behaviours (Huizinga 1971, Sutton-Smith 1997, Cohen 2007). Further, and consistent with the position of Hide & Seek, Johan Huizinga (1971) argued that 'play' in its various forms provided a pre-civilization crucible for humanity's cultural development.

As Brian Sutton-Smith describes – reflecting the use of the term 'technology' – play was frequently used to denote progress (Sutton-Smith 1997). That is, play is seen as developmentally critical for children in Western cultures, and the capacity to provide playful opportunities for children is a marker of societal development. Of course, this research is concerned with learning and development through play, but it is worth situating that within this playful context to avoid being too blinkered. Of relevance here is that, in tracing the purposing of play and presumed purpose of play over time, there are antecedents for current parental 'mediation' issues around technology in the home (Livingstone et al. 2015, Mascheroni et al. 2016, Rideout and Katz 2016) and pedagogic uses of technology.

[23] I recognize that this is perhaps a cowardly approach to take. Rather than provide a working definition of 'play' for this thesis, I am instead throwing my hands up in the air and referring to the whole endeavor as, citably, silly.

The Presumed Purpose of Play

> "[I]f a boy is to be a good farmer, or again, a good builder, he should play, in one case at building toy houses, in the other at farming We should seek to use games as a means of directing children's tastes and inclinations toward the station they are themselves to fill when adult." (Plato 1971, p. 1243)

As with pervasive assumptions that inform technology's usage, there are also playful antecedents that inform our technological practices. To start with Plato – he proposed that play can be used to guide a child's development and, by extension, suggested that play can be educationally purposed (D'Angour 2013). However, according to play researcher David Cohen (2007), the early 19th century saw the development of the idea of play serving some innate purpose.

> "[E]nlightened laws gave children a kind of freedom which they had never had before. If they used some of that freedom to play, then play had to have some purpose." (Cohen 2007, pp. 27–28).

In Western cultures this manifests as a presumed developmental purpose, or as play research Peter Smith captures a "*play ethos*" – the "*strong and unified, unqualified assertion of the functional importance of play*" (Smith 2010, p. 28). Smith argues that play is viewed through three models: inherently purposeful, something with potential to be purposed but not at the exclusion of other approaches, and finally something that serves no function (Smith 2010). For developmental psychologist Lev Vygotsky, play was something akin to wish fulfilment, in which children use their imagination to free themselves from immediate situational constraints (Vygotsky 1978). The framing of play as a liberating activity for children is somewhat echoed by contemporary discussions of digital play and digital nativism - children's presumed affinity with technology (Selwyn 2009).

The notion of digital nativism will be discussed again later as, though it has received much criticism, it is still a pervasive[24] assumption. Here, there is a parallel between children's playful, unconstrained, or 'fearless' engagement with technology that forms a key rhetorical justification for some intrinsic understanding of digital technologies (Prensky 2001, Selwyn 2009), that is perhaps just a reflection of the same explorative behaviours exhibited during play. Further to this, the capacity for digital games to create 'safe spaces' – or magic circles (Huizinga 1971, Salen and Zimmerman 2003) – in which children can explore at their own pace, and fail without fear, forms a key argument for the justification of games-based learning (Prensky 2006, Van Eck 2006, Hudlicka 2008).

Returning to play's developmental purpose, following his conception of play as something freeing, Vygotsky suggested that:

> "[i]n play a child always behaves beyond his average age, above his daily behaviour; in play it is as though he were a head taller than himself." (Vygotsky 1978, p. 102)

This association of play with learning or development presented by Vygotsky here is also represented through the conception of children's development as linked to age. For instance, Jean Piaget posited that play affords an opportunity to consolidate existing skills and develop a sense of mastery (Piaget and Cook 1952). Moreover, he also suggested that the children's play activities can be mapped to a developmental sequence. That is, children's capacity for certain types of play is indicative of their developmental level[25] (Broadhead 2006, Cohen 2007).

Mirroring Vygotsky's elevated framing of play, and Piaget's linking of play to children's development, psychoanalyst Erik Erikson presented a romanticised notion of play such that when playing together:

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[24] Considering the implied disempowering of teachers and parents in comparison to children's digital capability, perhaps describing it as 'insidious' would be more appropriate.

[25] Much in the same way that a society's technological access is indicative of its developmental 'level'.

> "[t]he playing adult steps sideward into another reality; the playing child advances into new stages of mastery. I propose the theory that the child's play is the infantile form of the human ability to deal with experience by creating model situations and to master reality by experiment and planning." (Erikson 1963, p. 199)

Though historically rooted, the notion of play serving a developmental purpose is apparent in contemporary Western cultures (Cohen 2007, Gaskins et al. 2007b, Wood 2012). In fact, play is seen as such a fundamental part of childhood the United Nations elevated play as a fundamental right of childhood (Nations 1989). However, as will be discussed here and explored in the following research, much like technology, play cannot be essentialised to a single activity. In addition to play's perceived purpose, there is another element captured by Plato in the opening epigraph, the purposing of play. Typically play is purposed, again, toward educational and developmental roles that is reflected in contemporary uses of digital devices in childhood.

The Purposing of Play

> "All of the vices of childhood are nourished in idleness, and almost anything prevents the idleness will also prevent the vice. It is the fact that our city children, at the present time, have nothing to do in the time when they are not in school, that makes the playground problem the great problem that it is." (Curtis 1915, p. 61)

In 1915, Henry Curtis lamented the lack of suitable playground spaces for the day's youth and framed it as a societal problem. Without structured play environments the "*idleness of the streets*" (Curtis 1921 cited by Cohen 2007, p. 28) may provide opportunities for negative social constructions that may "*mar a whole life".* For both play researchers Brian Sutton-Smith and David Cohen, Curtis' work signposted a deployment of playgrounds in the US, and subsequent playful activities, as a means of curating societally appropriate behaviours and values through play. Taking a step further back, to perhaps a more romanticised notion of

play, Jean-Jacque Rousseau stated that "*to a child of 10 or 12, work or play are all one*" (Jean-Jacque Rousseau cited by Cohen 2007, p. 23).

This notion of play as the 'work' of the child was influential for the educational approaches pioneered by Friedrich Frobel and Maria Montessori – approaches that are still apparent today. Both educationalists advocated for the purposing, or controlling, of play (Sutton-Smith 1997, Cohen 2007, Lillard 2007). Together the perceived moral imperative to curtate playful behaviour, combined with Frobel's and Montessori's approach to playful learning, illustrates a purposing of play that has two points of significance for contemporary discussions of digital play. First, harnessing play's captivating nature toward some goal. Secondly, as touched upon previously, the comparative stratification of play types.

The developing of games-based learning, as well as providing a safe space for exploration, is also frequently justified in relation to games' "*holding-power*" (Turkle 1984, p. 499), the ability to create a motivational 'flow' states (Nakamura and Csikszentmihalyi 2009), or otherwise be engaging (Connolly et al. 2012, Wilkinson 2013, 2016a, Slussareff et al. 2016). In addition to this use of digital games as a means of engagement with educational, developmental content, there is also an allegory in the development of physical play spaces in 1920s USA. To revisit Curtis:

> "[p]lay whether directed or not, will be good for children physically. It will tend to make them healthier and stronger. Undirected play, however, is often a bad thing for children morally. The undirected playground is likely to fall into the hands of the young loafers of the community." (Curtis 1915, p. 63)

The presumed 'moral' imperative to curate children's play spaces due to an anxiety over children's unprescribed behaviours are, to an extent, mirrored in contemporary parental practices surrounding the mediation digital spaces – for play or otherwise (Livingstone and Helsper 2008, Hollingworth et al. 2011, Clark 2013, Mascheroni et al. 2016, Livingstone et al. 2017). Indeed, the perceived impact of

technology for children that necessitates curation of children's digital habits is reflective of a historical purposing of play as a necessity. In curating playful activities specifically, there is also a point to explore here in the perceived need to curate playful experiences.

Within this there is an implicit value judgement surrounding the types of play that are acceptable. For instance, Curtis suggested the rule-orientated play afforded by managed play-spaces would develop 'good character' – as opposed to becoming a 'loafer' (Curtis 1915). Intertwined with notions of development, then, the justifications for purposing play are imbued with societal values and anxieties. In addition, though both Montessori and Frobel advocated for playful educational approaches, the former focused on teacher facilitated real-world objected-based play, consciously eschewing the discursive pretend-play prioritised by Frobel (Cohen 2007, Lillard 2007). Frobel's kindergartens predominantly used teacher-directed imaginative play and Montessori prioritised object-based, real-world, interactive play.

Contrary to popular interpretation, Montessori's assertion of *'play is the work of the child'* refers specifically to a structured, prescriptive form of play, not necessarily other forms of play. In contemporary discourse, certain forms of play lead to children's cognitive, emotional, social, or multiple literacies development (Bergen 2002, Kernan 2007, Pellegrini 2009, Chung and Silva 2013, Wohlwend 2013). Certain play types are constructed as more developmentally beneficial than others for certain aspects of development. Further, different forms of play are necessitated and valued over others. As such there is a stratification of play types. Therefore, when introducing digital devices into playful practices, there is a question of where this now mediated form of play exists within a pre-existing play hierarchy.

Digital Opposition and Continued Purposing

To present digital play as distinct from real-world play would be simplistic. Especially when considering the ambiguity of play (Sutton-Smith 1997), localised

cultures of familial digital media co-engagement (Montola 2005, Lauricella et al. 2014, Livingstone et al. 2015, Burnett and Merchant 2016b, Livingstone and Sefton-Green 2016), or indeed the emergence of the blurred mediums of augmented reality and pervasive games (Montola 2005, Wilkinson 2016b). In addition, within these situated contexts, the digital devices themselves are physical objects that afford access to virtual spaces (Prinsloo and Rowsell 2012). Indeed, as Cathy Burnett writes - though in a classroom context - the virtual sociomaterial entanglement of digital devices becomes more or less of the focus of an activity, such that this digital mediation of play "assembles and re-assembles" (Burnett and Merchant 2016b, p. 221).

Perhaps slightly counter to this "*sociomaterial turn*" (Potter and McDougall 2017, p. 43) there is academic discussion that attempts to situate digital play within pre-existing play taxonomies (Fleer 2016, Marsh et al. 2016). Though this does not capture the transient dynamic of real and digital play in practice (Burnett and Merchant 2016b), it does speak to an inherent tension of reconciling digital play with traditional forms of play. The mobile application explored within *Mediating Family Play* is situated within this reconciliation. It was developed in response to the oppositional framing of digital technology and traditional play – citing technology as a disruption and presuming a parental deficiency in managing digital technology. Perhaps paradoxically however, this application was also viewed as offering something of a solution. The efficacy, necessity, or imposition of this solution is of course worth considering, however.

It is worth reclarifying that the development of the mobile application was not directly based on research. Instead, the purpose of the application was informed by the subjective experience and biases of the digital media agency - rather than a more granular understanding of the various mediation strategies and subsequent role of technology in family dynamics (Verenikina and Kervin 2011, Livingstone et al. 2015, Mascheroni et al. 2016). Additionally, the application was designed to address a perceived issue of digital devices being used as a means of controlling children's behaviour as an incentive, or as a "*babysitter*"(Livingstone et

al. 2015, p. 14). Much of the literature discussed so far has been in service of unpacking expectations of play.

The application evaluated in this study was motivated by a presumption that parents were not playing with their children 'enough'- with a prevalence of digital technology in the home and a lack of ideas for play being exacerbating factors. This is also reflective of broader socio-cultural perceptions of the importance of play, the implied 'deficiency' of parents, and the impact technology has had (Fisher et al. 2008, Hill 2010). Parental attitudes toward play and technology are naturally informed by this and, as discussed, represent a degree of anxiety in terms of managing digital devices in the home – at times in relation to traditional forms of play (Livingstone 2014, Livingstone et al. 2015). The fact that this was seen as a problem speaks to the values with which Hide & Seek and Sesame Street viewed play.

To clarify, before moving on to the research undertaken here, this research was initially undertaken as a means of exploring the efficacy of the mobile application. Upon reflection, there is of course an additional layer of consideration in the somewhat interventionist, and uncritical, development of the application. The assumptions and broader themes of this thesis of solutionism, determinism, and situatedness are illustrated in this project. The efficacy of the mobile application will be discussed first, before then integrating the discussions of this research in with the meta-discussion of the application's development.

Research Design

This section outlines the original research design. It adopted a mixed methods approach (Tashakkori and Teddlie 2003) using self-reported questionnaires and quasi-naturalistic observation. The specific focus and design considerations for these research methods will be discussed separately in the following section. Together, the data collected parental perceptions of the mobile application, play's role in childhood, and of technology generally. The intention behind this focus on the application and wider constructions of play was to 'evaluate' the mobile application in relation to parents' play habits and practices, and their attitudes towards play.

Procedure

A series of 'stay-and-play' spaces were created in the three child-centric organisations: a children's nursery, a children's museum, and a soft play café. Parents visiting these organisations were invited to use the play space which include typical household items, craft resources, soft pillows for seating, and tablet computers preloaded with the application. The stay and play spaces were close approximations of the kind of spaces visitors would expect to see.

Following this quasi-naturalistic physical set-up of the environment, parents were invited to use it as they would any other space within the respective organisation. That is, parents visiting these organisations were invited to use the play space - including props and tablets preloaded with the application – in whatever capacity they wished to. This was of course prefaced with telling parents we are undertaking research to evaluate an application; however, it was not necessary for them to participate in the research if they just wished to use the space. Upon opting into the research, they were asked to complete a consent form, informing them that there is a participant observation element and a questionnaire

to complete when they were finished playing with the app. In addition, they could choose how long to play for, and this time was noted in participant observations[26].

Participant Observation

Play spaces were created and presented in such a way to mirror typical spaces in the child-centric host organisation. The environment was set up with a consciousness of Dave Cohen's criticism on non-naturalistic research that compartmentalises aspects of play (Cohen 2007) – especially with regard to the 'physicality' of the play space itself. Further, the production of these spaces and provision of the tablet with the loaded mobile application is akin to a 'field stimulation' (Salancik 1979) or contrived observation (Webb et al. 1966) - especially as tablets themselves were unlikely to be present, by default, in these play spaces. As such the play spaces were presented as a 'warm home-like laboratory' (Cohen 2007) informed by those who worked at the respective organisations. That is, they were holistically embedded into the organization to appear as a 'natural' part of those organizations.

To stratify my role within this research setting I acted as a "*participating observer' within the context of Hide & Seek, and as a 'partially participating observer*" (Bryman 2015, pp. 442–443) when undertaking the Stay-and-Play sessions. Of course, this stratification was not always clear as there was a need to be responsive to the requirements of undertaking research in a public setting[27]. Given the context of the research, and a desire to not affect play practices through overt note-taking, field notes were taken inconspicuously and as "*scratch notes*" (Bryman 2015, p. 443).

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[26] As is perhaps typical with this type of research, having parents fill in a consent form, no matter how it was formatted or presented, adds a degree of formality to the experience that undermines the 'naturalism' of the environment.

[27] There were several incidents were upon observing my 'stay-and-play' space, complete with iPads, parents assumed I was more of a child-minder working on behalf of the organization and would leave their children under my supervision, at times without alerting me. To a point, this perhaps illustrates the efficacy of the research in adopting a 'naturalistic' approach.

The need to be as unobtrusive as possible meant an unstructured observation style was adopted, as rigorous or systematic coding would have undermined the ability to take notes inconspicuously. However, as the original focus of the observational data collection was concerned with the application's 'efficacy' in relation to its intended impact. As such, observational notes were taken specifically documenting the following:

- Examples of enjoyment, frustration, or boredom in using the application
- Examples of 'atypical' use of the application compared to expected use
- Physical handling of the tablet and child-parent engagement with the application
- Levels of engagement for parent and child (characterised by affectations of disinterest)
- Amount of time played

When parents had finished playing with the mobile application, they were asked to complete a questionnaire. This required parents to either self-identify that they had finished using the application, or my asking parents to complete the questionnaire as they preparing to leave the play-space.

Questionnaire Design

The questionnaire was split into two sections and used open and closed questions. The first section focused on evaluative questions related to the mobile application itself – including questions regarding its potential effectiveness. These questions were framed on a Likert scale, and were treated as a simplistic measure for parents perceived utility of the application. The following section asked questions regarding parents' general attitudes towards play and typical play practices. This section used a mixture of open and closed questions on pre-coded scales (Oppenheim 2000, Bryman 2015).

Closed questions concerning parents' attitudes toward play presented a play typology that was informed by wider reading. The specific 'types' of play used in the survey was then reframed in a way that was, as close as possible, concordant with

different types of play discussed in the literature, but also framed in a way that was more accessible to the general public. Digital play was also included as an option to present a discrete[28], technology-specific type of play such that I could draw comparisons between this and non-digital forms of play. In addition, parents' attitudes towards the developmental purpose of play were also explored through asking them to rate the perceived importance of play for different aspects of their children's development.

The questionnaire also asked parents to rate how often they play with their children, whether they or their children think this is sufficient, and to rate the impact of barriers to play. These barriers were informed by the perceptions of Hide & Seek that informed the development of the application, specifically including limited ideas for play, or a lack of time. In addition to this, parents' playful practices and habits were captured through Likert scales asking them to rate their likelihood of engaging with different types of play, using the same play typology. Open questions were used to allow parents to expand on their answers and elucidate their underlying assumptions that informed their closed-question answers. As Robert Peterson suggests in Constructing Effective Questionnaires:

> "Although the two question types tend to produce different answers even when they are semantically equivalent, neither type is universally superior to the other for all research situations" (Peterson 2000, p. 30)

The suggestion that semantically similar questions will invite different responses is relevant. The original construction of the questionnaire was designed for parents to explain their choices in response to the pre-coded, closed questions. In addition to providing explanatory context, these open questions created potential for parental responses that are in some way contradictory and therefore

[28] This is now something of a contradiction of what I discussed in my literature review, as the distinction between non-digital and digital play is increasingly blurred. Further, there will also be different forms of play that can occur using digital technology e.g. creative, language-based, puzzle-based etc.

having potential to highlight underlying attitudes towards play, and the perceived need of performing certain attitudes or playful practices (Oppenheim 2000, Peterson 2000).

Participants

Participants were recruited from visitors to three locations, chosen to include parents from a variety of socioeconomic backgrounds. This includes Talbot Woods Nursery, The Children's Discover Story Centre, and The Good Play Café – a child catered 'soft-play' café. Posters were placed around these organisations explaining that a new play-space / exhibition was available for their use. The space was used by numerous visitors to these organizations, of whom 28 agreed for their observational data to be used and to complete the questionnaire. Of the 28 participants who took part in the study, 26 identified themselves as primary caregivers. Of these 26, 17 were individual caregivers visiting with their children; 6 took part as a family unit and the remaining 3 visited as a group of parents.

Thematic Analysis

The qualitative data collected here (questionnaire responses and observational notes) were thematically coded with reference to the themes identified in the literature review around play – focusing on presumptions of purpose, and the framing of 'technology' in relation to play. Quantitative data is discussed with respect to these overarching themes. The thematic coding process followed the phased approach outlined by Braun and Clarke (Braun and Clarke 2006). Initial codes were generated through a semantic analysis of participant data in combination with topics identified in the literature review. In the initial stage, codes were stripped of presumptive values identified in the literature review (e.g. play's presumed purpose, protectionist views of technology) such that they did not "narrow [my] analytical field of vision" (Braun and Clarke 2006).

In addition to the codes generated from the literature review, a code for 'utility', or perceived usefulness, was notionally used in support of evaluating the

application. From this deductive, top-down approach starting point to identify codes, initial themes were generated through semantic analysis (Patton 1990) of participants' framing of these topics. Initial themes were then analysed to draw out underlying presumptions and values that informed participant framing (Gee 2011a, 2011b) such that these themes could be related back to the socio-cultural presumptions identified in the literature review. This thematic coding was repeated to further 'refine and define' the final findings (Braun and Clarke 2006).

Research Ethics

This research project was approved by Bournemouth University's Ethics Research Committee. In considering the ethics for this research project, I considered the following issues. I considered the following ethical issues in relation to this project (Bryman 2015):

Informed Consent: Attendees at the organization were informed about the aims of the research project, what is involved in their participation, and how their data will subsequently be used. In addition, only attendees at the organization who had consented had observational data noted about them. Further, attendees were explicitly asked to consent on behalf of their children with regards to observational data.

Protection from Harm: The potential for the research itself to cause harm was trivial. However, the use of the play-spaces themselves as seen as a potential source of risk. As such appropriate risk-assessments were completed for these spaces.

Confidentiality and Data Protection: Participants' data was anonymized prior to its presentation in this thesis, or publication elsewhere. Identifiable participant data was collected only on the participant consent forms. Further, all data has been stored securely in the researcher's locked office, and on a password protected computer.

Description and Discussion of Results

The discussion of the field work undertaken here will be presented in relation to five overarching themes. Initially with the functionality of the application, before moving to discuss broader perceptions of play, and finally revealing the assumptions that informed the development of the application.

Perceived Utility: Play Ideation and Timeliness

Parents generally responded positively to the perceived usefulness of the application adding that the ideas for play could provide support for their own ideas, rather than as a source of ideas in their own right - as was the application's original intention. Based on the responses to Q14, 'Where do you most often get your ideas for play activities?', there is a disconnect between the presumed lack of ideas for playful activities that informed the development of the application, and parents' reported source of ideas. In addition, Q12 asked 'Who initiates play most often?' according to parents, playful activities are initiated relatively equally by parents and pre-schoolers (n=15) - although eight parents said it was the pre-schooler and two parents indicated that they initiated play more often.

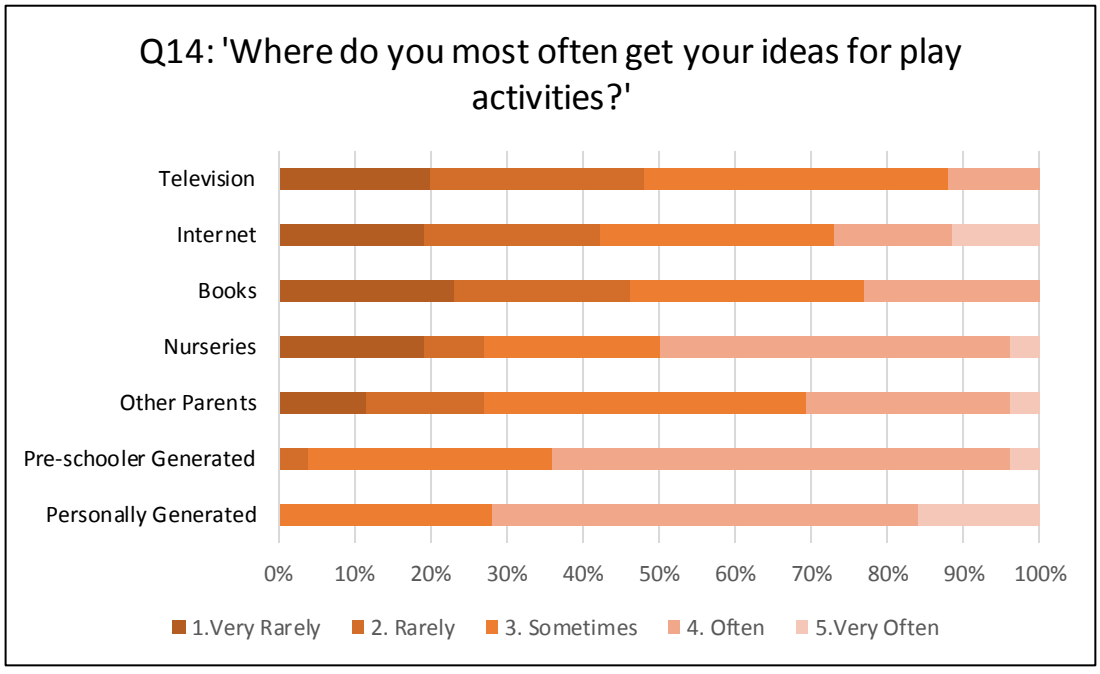


Figure 5: Responses to Q14 'Where do you most often get your ideas for play activities?'

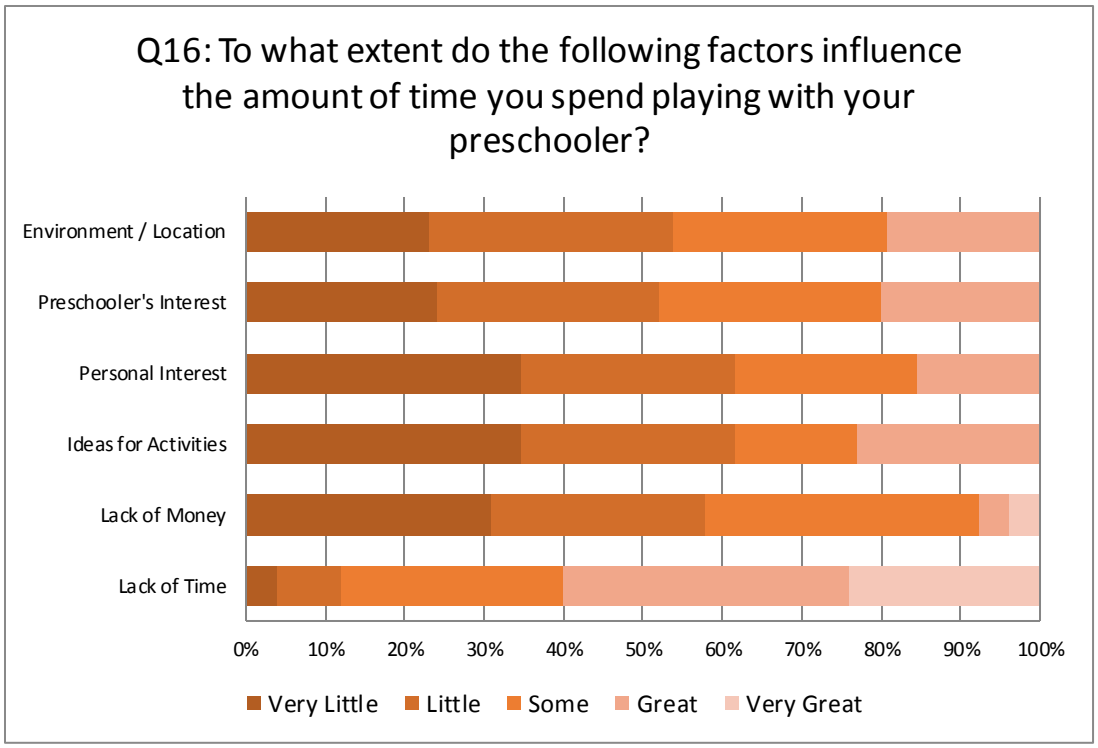


Figure 6: Responses to Q16, 'To what extent do the following factors influence the amount of time you spend playing your preschooler?'

In response to asking what affected the amount of time spent in play activities, parents reported a lack of time as the most significant hindrance to play. This fits with an assumption that informed the development of the application; the app was designed to facilitate play though generating short, contextually aware activities on request. As one parent suggested:

‘the short nature of the games means it is easy to fit into a busy day’.

Perhaps reflecting this notion of fitting play into a 'busy day' parents also indicated that play most often takes place at home (n=19) as opposed to whilst

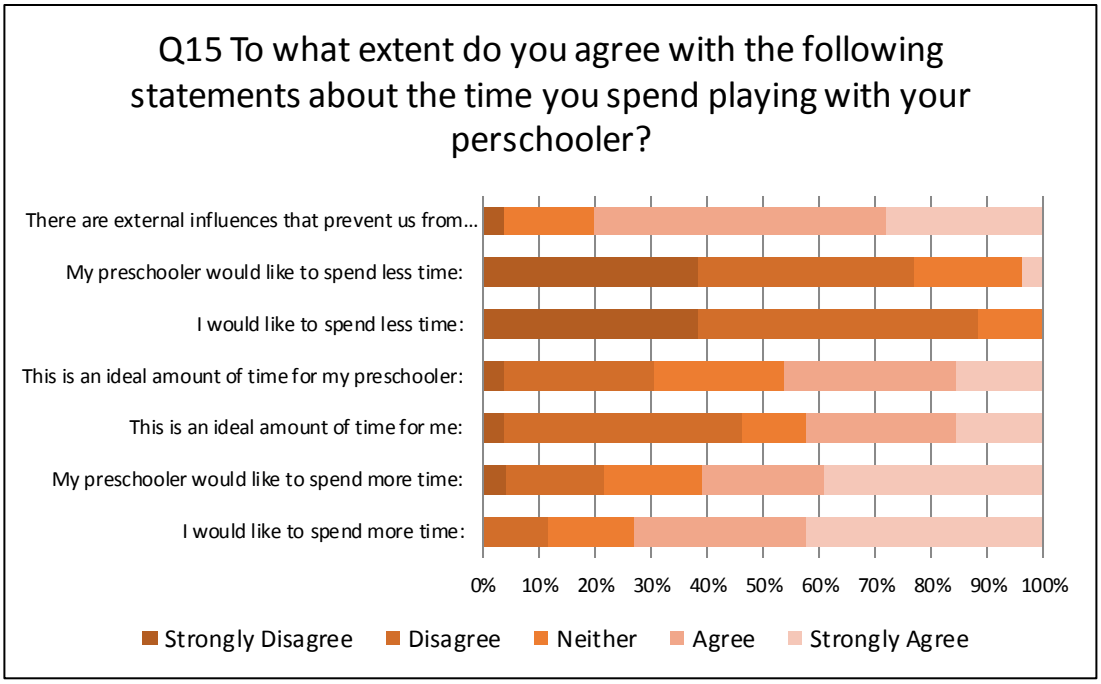


Figure 7: Responses to Q15, 'To what extent do the following factors influence the amount of time you spend playing your preschooler?'

travelling (n=3) or outside of the home (n=10). What is also significant here, is a presumption that parents are not playing 'enough' with their children. In response to Q15 'To what extent do you agree with the following statements about the time you spend playing with your preschooler?' (Figure 7) parents suggested that both they (n=19) and their child (n=14) would like to spend more time playing together. Moreover, they identified external influences as preventing this (n=20).

From a superficial perspective there was a reported perceived utility for the application, however this is somewhat contradicted by other results. For instance, the design of the application to provide short games fits with parents' identification of time as a significant barrier. However, an underlying justification for its development was the presumption than parents had insufficient ideas for play. In addition, a disutility did emerge when viewing this application in the context of preconceptions of play and digital media. That is, the physicality of the device

became a point of reference that created a tension when asking parents about real-world play.

Real-World vs Digital Play

For parents, there was a suggested reluctance surrounding digital media and play – especially when it comes to family orientated play. Therefore, when parents discussed digitally mediated real-world play in relation to family play, they made a clear distinction between the two. For instance:

> "Its purpose is not really clear – it is the opposite to the use of apps / iPads for children, they are used for when adults are unable to offer one to one"

Here the parent is highlighted an expectation of the application to be used individually in child-centred play - as an alternative to real-world family-orientated play. Therefore, parents not only made a distinction between notions of family and digital play, in doing so they elevate real-world family play above digitally mediated family play:

> "I try to play with books and toys with my daughter"

Additionally, there was frequent use of the phrase 'quality time', implying that other play activities lack some notion of 'quality'. Again, reflecting other research suggesting digital play is used as a control strategy, parents viewed digital play as something as a compromise:

> "Playing with my child does not involve an iPad or computers."

This was typical of parents' responses to the types of play in which they and their pre-schooler participate. From the questionnaire, parents reported that they are less likely to participate in technology-based play with their children than other types of play (Figure 9). Moreover, the types of play pre-schoolers participate in by themselves are more likely to feature technology than play with their caregivers

(Figure 8). Again, this highlights a tendency to frame digital play as an individual activity – rather than for co-engagement by default.

Some parents however, recognised an opportunity in the application to encourage real-world interaction around digital media – as a means of rejecting individual approaches. When asked why they would be likely to use the application in the future they spoke in terms of co-engagement, as opposed to individualistic play.

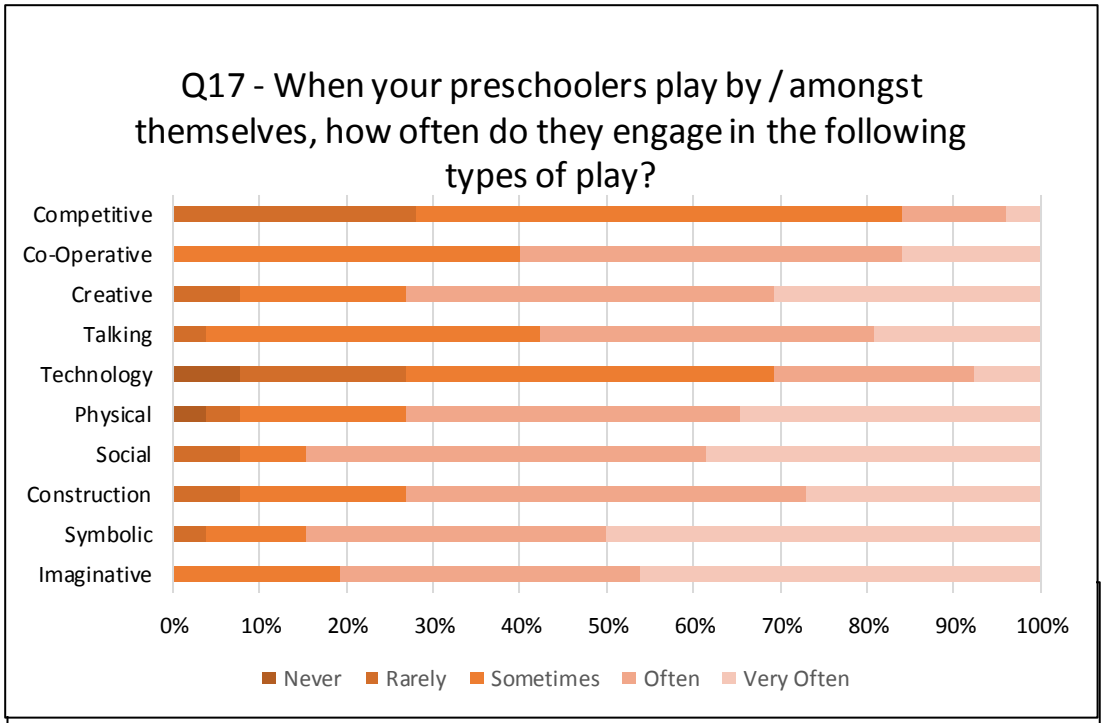


Figure 9: Responses to Q17, 'When your preschoolers play by / amongst themselves, how often do they engage in the following types of play?'

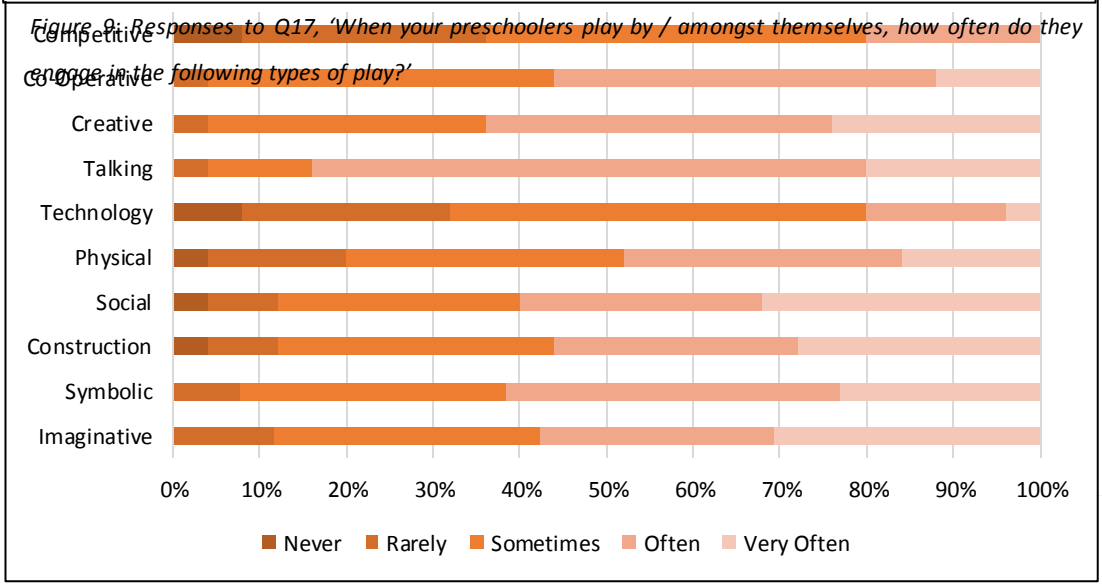


Figure 8: Responses to Q18, 'When you play with your preschoolers how often do you engage in the following types of play?'.

"The app is parent responsive. Parents are required to interact with the children instead of giving the child to play on their own."

In discussing the utility of this application in relation to types of real-world play an implicit separation began to emerge. That is, real-world play is viewed as something relatively distinct from 'digital play' – or at least interaction with digital technologies. Now, for this application specifically this created an inherent barrier to its efficacy as it is difficult to decouple this notion of real-world play, and digitally facilitated real-world play. This was most apparent during observations during the study as for many parents the device itself became something of a distraction.

Decoupling Digital-Facilitated and Digital-Orientated Play

The application was designed for parental interaction, such that parents would read the rules of the game then lead the play activity. Designing for an individual, rather than co-engagement, proved problematic for family play as a shared expectation among parents and their children began to emerge that is counter to the application's intention. That is, there was an expectation that the child would also interact with the application. For some parents this was not an initial expectation but emerged as a strategy to minimise children's 'reaching up' for the device. As the application was designed for adults and predominantly text-based, it was not appropriate for their pre-schoolers.

Of course, this is an obvious finding – that an application not designed for children is not suitable for children. However, what is interesting here is a demonstrable expectation when it comes to digital technology in parent-child interactions[29]. For both parents and children, there was an expectation that the application would either be designed for co-engagement, or for a child-led activity – rather than parent led.

[29] Indeed, when introducing the application, I struggled to explain the intention of the application simply. Interestingly, over the course of the play sessions however, I was able to more clearly explain the purpose of the application by directly framing it as counter to typical uses of applications with children.

From observation, this was captured by some parents 'handing-off' the tablets to the children, before using the application or inquiring about its use. That is, at times there was an immediate handing over of the tablet to the child as a default reaction before then realising this was not its intended usage. Further, when parents were using the application as intended, children would still expect to 'play' with it as well as was demonstrated by them reaching up for the tablet in an attempt to interact with it themselves. As one parent succinctly captures[30]:

"Expectations of the iPad are to play on it"

As discussed, for most parents who used the application, they began to co-engage with the application to hold their children's interest. As mentioned, this practice created its own problems:

"My child would rather touch the iPads and was not interested in listening to me"

"Kids disturbing me so that I could not read properly."

At the time of undertaking this research, there was a presumption that this co-engaged strategy was adopted as a response to the application itself, in that parents would not be able to use it effectively. However, with recent research pointing to parent-child co-engagement with digital media (Lauricella et al. 2014, Livingstone et al. 2015, Rideout and Katz 2016) this may be indicative of a default approach to managing technology.. Additionally, this practice also revealed another, rather obvious, finding in that the application was developed for parents with pre-schoolers there were issues regarding its age appropriateness. Though pre-school refers to a relatively narrow age range (3 to 5 years) the developmental

[30] During the study itself, when the 'distraction' of the tablets began to emerge as a finding, I noted that "why not phones?" primarily as a methodological concern of ecological validity. However, it also speaks to the themes of this thesis especially a critical unpacking of essentialism - not all devices carry the same set of expectations due to social expectations and their physicality.

significance of this age range creates an issue when this application was used for co-engagement.:

> "I like it, but my toddler is three years, she wasn't very interested, she wasn't listening, visual stimulation is what she likes at this stage"

Ironically, in attempting to promote real-world play the digital format of the application presented a barrier to play due to preconceived notions of digital devices as, somewhat, oppositional to real-world play. In this discussion of the difficulty of decoupling real-world play from digitally facilitated real-world play, there is an apparent framing of digital technology as serving a specific purpose and as such, the application was counter to typical uses of digital technology.

Purpose of Play vs Purposing of Digital Play

Most parents suggested education and development as a significant motivation for their engagement in playful activities (Figure 10). Following this, they view play's ability to occupy their children as an additional, though less significant, motivation. This split of play's purposing creates a distinction that is analogous to the perceived distinction between non-digital, and digital play.

As discussed in other studies, digital media has been framed as something to occupy children (Mendoza 2013, Livingstone et al. 2015) - a continuation, perhaps, of the notion of television as an 'electronic babysitter' (Austin et al. 1997). This is a sentiment expressed by parents in this study. Moreover, parents suggest that digital play becomes a stop-gap in favour of real-world play:

> "The iPad is used in short bursts as a break or whilst cooking dinner."

> 'Its purpose is not really clear – it is the opposite to the use of apps / iPads for children, they are used for when adults are unable to offer one to one play'

There is therefore a distinction worth exploring here when comparing parents' perceived purpose of play, and their purposing of digital play. Parents viewed play, generally, as developmentally important whilst distinguishing digital play as something that is primarily suited for occupying children. Even then, only in "short bursts". Parent perceptions presented here may be a direct response to the application, with questions about how it will fit in with their current mediation strategies influencing a lack of clarity over its purpose. However, the fact that in evaluating the application they draw upon 'typical' uses of digital devices is significant as it highlights expectations they bring forward when using technology.

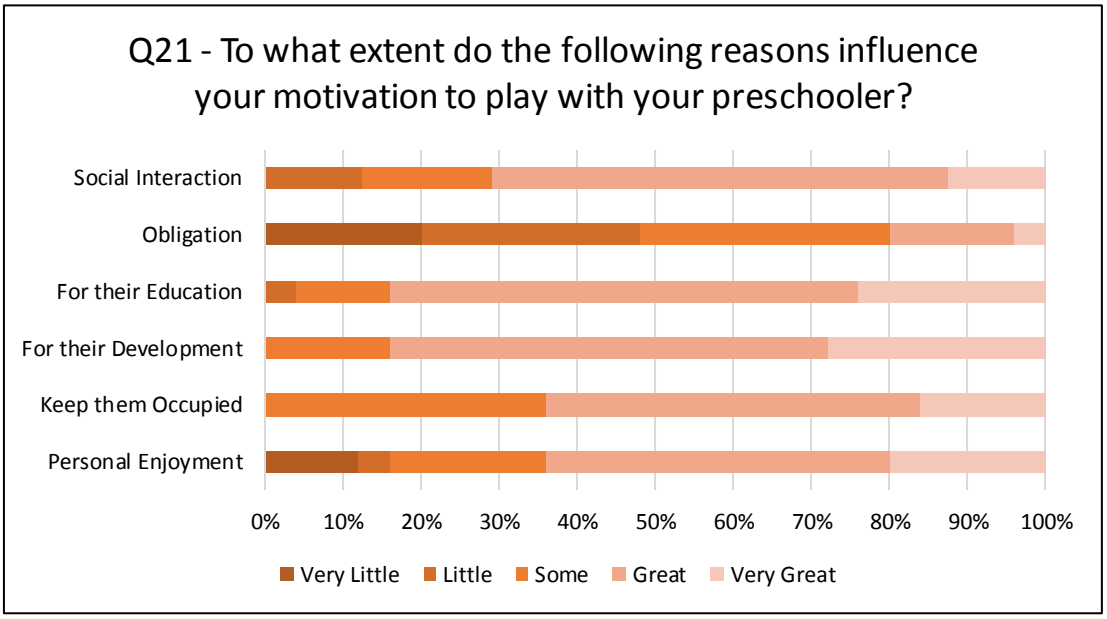


Figure 10: Responses to Q21 'To what extent do the following reasons influence your motivation to play with your preschooler:'

For instance, this preconception of digital technology, and its observed distracting nature in this study, led multiple parents to support the purpose of the application but request that the games be published on physical cards instead. This can also be tied to a general parental sense of 'screen-anxiety' (Blum-Ross and Livingstone 2016) as, when asked about using the application, one parent responded they:

'Concentrated time taking them away from TV'

Of course, I cannot make a generalised statement from the response of an individual parent – however it is interesting that for this parent all media can be viewed as something to be cautious of. So, for all of this study's discussion of perceptions of technology – perhaps a more appropriate frame of reference would have been perceptions of 'screens' (Blum-Ross and Livingstone 2016). For parents, as captured in their survey responses, and children, as observed in their interaction with tablet, the digital device itself had some effect. That is, the physicality of the tablets used, and their expected typical use, influenced how parents and children initially interacted with the mobile application and their presumption of its purpose. In addition to this, there are also the expectations placed on parents in terms of curating developmentally beneficial playful activities.

Facilitating vs 'Encouraging' Family Play

At this stage, I move toward a more retrospective discussion of the interventionist framing of the development of the application. What was interesting from parents' reception of the mobile application's intended purpose was a sense of defensiveness. Now it is necessary to be cautious of overstating this defensiveness, or incorrectly ascribing it to just broader expectations of parents. Further, I do not use the term defensiveness to be dismissive of their perspective – viewed through the hindsight writing this thesis offers, it was warranted. However, the intention of the application was to 'encourage' parents to play together with their children more - thereby assuming they currently aren't playing together enough and, crucially, that an external 'encouragement' is needed.

In presenting this question to parents there was a markedly defensive response in relation to this notion of 'encourage'. Question 6 asked, 'Would having the application available to you encourage you to play with your children more?':

"No encouragement needed"

"I spend lots of quality time with my children".

"I play with my kids anyway"

"We play a lot together already"

Of course, the use of this term encourage in retrospect was a methodological consideration. However, the response from parents to this question is illustrative of a tension in the expectations placed on parents, their response this these expectations, and the intentions of the application's developer. That is, as discussed earlier, the mobile application was designed in response to notions of parents not playing with their children enough, nor engaging in developmentally appropriate forms of play - socially interactive, real-world family play.

For parents then, there is a presumption of deficit that this mobile application was designed to ameliorate. This ties into broader pressures placed upon - and subsequent anxieties faced by – parents, such as the challenge of curating developmentally appropriate playful activities whilst effectively managing their children's relationship with technology (Fisher et al. 2008, Hill 2010, Bayne and Jen 2011, Livingstone et al. 2015). The notion of deficit in relation to strategies for managing technology, and raising their children more broadly, is an issue that will be further explored in my final research situation – *Digital Families.* Here, however, there are obvious connections with this thesis' discussion of technological essentialism and solutionism.

Conclusions and Connections

As discussed, the ability of the application to facilitate family play was limited. There were some missed considerations in the development and justification of the application that, in retrospect, can be argued to be obvious. For instance, there was a contextual mindfulness in the development of the application that did not account for the potential impact of device itself on parent-child dynamics. Indeed, the development of an application to solve a problem, presuming that there is indeed a problem, illustrated both a perception of technology as being negatively impactful, but also having capacity to ameliorate this negative impact. That is, this endeavour was both built on the idea that technology is both the cause and a solution.

Interestingly, some of the presumed problems invoked to justify the development of the application were 'real' to a point, and detrimental to the application's 'effectiveness'. The application, ironically, became a source of distraction rather than a facilitator of real-world play. This research situation illustrates the necessity of a situated perspective for two reasons. First, not considering the 'familiarities' of parents and their pre-schoolers and how this influenced their engagement with the application undermined its effectiveness. Second, the broader pressures and anxieties faced by parents, such as notions of parental deficiency in curating developmentally appropriate playful activities whilst effectively managing their children's relationship with technology (Fisher et al. 2008, Hill 2010, Bayne and Jen 2011, Livingstone et al. 2015), were not a considered factor here.

This research situation is illustrative of wider issues in the field of educational technology, and the potential challenges of undertaking research in this field. There are of course a variety of ways in which my work with Hide & Seek had informed my thinking in undertaking this Professional Doctorate. For now, I will focus on the salient ways in which this project informed my research design and

approach in my following project. In doing so, I wish to present a clear research trajectory that maps both my development as a practitioner, but also the development of the key themes in this thesis.

Interventionist Approaches to Technology Development

The most significant personal takeaway I have from this research project is my lack of critical engagement over the role of the organization in developing this application. That is, earlier in this chapter I discussed the justifications that Hide & Seek had for developing an application for 'encouraging' family play. However, what was not discussed or reflected upon until much later in my research trajectory, was the justification of Hide & Seek as developers for the application. That is, what justifiable role did the company have in identifying a problem and then developing the solution to that problem. Initially, this issue was framed as a lack of adopting a participatory approach in their development.

The development approach of Hide & Seek involved multiple play tests at various stages of the applications design and development. However, there was a lack of inclusion of the application's intended audience. That is, my involvement in evaluating the app was the first time that application was play-tested with parents and pre-schoolers – despite participatory design and user-testing being relatively common approaches in mobile development. This was my initial take-away from this project. However, though the participatory approach would have helped in this setting, there is a more significant takeaway that informs this thesis's contribution.

Within this research project there were unexamined, taken for granted, valuations of play and presumptions of parental deficiency. Again, this is reflected within the field of educational technology general as different agents or organizations are able to 'identify' and define problems, and then offer solutions. In addition, the other issue within this approach is the lack of critical consideration for the legitimating power of various stakeholders involved – myself included. So, it is not just that the approach of Hide & Seek lacked a critical, self-evaluative

perspective - it is that without this perspective they were reinforcing wider notions of parental deficiency.

As a researcher in this space, the difficulty in adopting this critical stance with the stakeholders I worked with was complicated. In part, there was a naivety on my part and a feeling of it not being my place to question as the specific scope of my involvement was the 'evaluation' of the application, and not critically unpacking the rationale informing its development. Of significance to this thesis however, and the field of educational technology generally, is the combination of a well-meaning stance, informed by 'common-sense' constructions of children's development that can mask underlying power dynamics.

'Thinking beyond the screen'

One of the key takeaways from this project was an increased focus on complexity, but primarily concerned with the physical and cultural situatedness of technology's usage. However, the focus on the situatedness was primarily concerned with the immediate physical environment, and explicitly related conceptual issues. In part this was informed by Hide & Seek's development of pervasive games and use of 'augmented reality' technologies that created a clear illustration of a blurring between physical and virtual 'realities'. Within the research project itself, the physicality of the device itself obviously impacted parent-child interactions to the extent I remember musing whether mobile phones would have been more appropriate.

In addition to this, the philosophy of Hide & Seek and the findings from this research added an additional element - the socio-cultural factors that influence engagement with technology. Hide & Seek positioned themselves as exploring the intersection of games and culture and positioned themselves as a technology agency with a cultural focus. In addition to this, one of the key findings of this research was the purposeful assumptions underlying play and the developmental stratification of play types. Thus, there was a cultural predisposition that influenced

the intended purpose of the application itself, as well as how it was perceived by parents.

At this stage then, I had begun to think around technology to physical and socio-cultural factors, but not necessarily holistically. This is not to say that I had placed clear conceptual limits over what would or would not be relevant in in influencing expected uses of technology. Instead, this was just a first step in moving toward ontological and epistemological complexity. Further, from an axiological perspective there was a reconciliation with my adopting a position that presumed parents did indeed need encouragement. Moving forward, my focus to be more explorative and conceptually open was informed by a desire to understand the experiences of using technology from the perspectives of participants.

Research Situation 2: Game Makers

Introduction

This research situation explored children's design of digital games as a pedagogic practice within a classroom setting. This project took place between November 2014 and March 2015 in partnership with the Isle of Portland Aldridge Academy (IPACA). This overlaps with the following research project *Digital Families.* Overall, I was embedded within the school between September 2014 and August 2016 being present at IPACA for, on average, 2 days a week during this time.

There is of course a shift in focus from the previous research situation. The trajectory between the two projects can be mapped from two perspectives. First, the practical and methodological considerations shifted to focus on a situated, participatory approach – as will be discussed in this section's methodology. Secondly, of most significance for the overall conclusion of this thesis, *Mediating Family Play* and *Game Makers* illustrate different perspectives on the role of technology in children's learning and development, and the challenges of researching these perspectives.

Before introducing the project proper, I will start this chapter with relevant background context and the role I adopted as a researcher, and within IPACA more widely. This will include the original intentions behind the project, as informed by members of IPACA. Further, it will, to a point, demarcate my role as a researcher in this research project, and my general involvement with the school itself. Further, this research project coincided with the research project discussed in the following chapter. Here, however, I will discuss the specific research methods adopted for *Game Makers* and demarcate this project from *Digital Families.* Naturally, there are connections between the findings of the two projects, however for the sake of clarity this chapter will focus on *Game Makers* until the conclusion where I will then map these connections.

As with the previous chapter I will discuss the literature that was relevant to this specific situation. This will discuss differing, overlapping, constructions of digital and other literacies and how these constructions intersect with the UK educational system. It will also locate this research project within the contemporary research and practice of serious games development –digital games that have a purpose other than entertainment. The development of serious games is relevant here as it was used as part of the justification for this research and educational programme. Indeed, this will be discussed in relation to the creative research methods adopted.

The research methods adopted in this research project are a combination of creative research methods, interviews, and observations. These will be discussed and justified in relation to the initial intentions of the project to undertake research practice that is reflective of, and responsive to, classroom practices and dynamics. My discussion of the data collected from this project will be discussed in relation to apparent tensions within the classroom - specifically focussing on different constructions of what constitutes legitimate practices, the various perspectives that inform these constructions, and my role as a researcher-educator navigating these constructions.

Background Context

In this research setting I explored the classroom-based 'learner-led' production of digital games for social change with children aged 13 and 14 (Year 8) over ten 100-minute ICT lessons, with support of their usual ICT teacher. This was referred to as the Game Makers programme (See Appendix D). This project was originally proposed by me to a member of the Senior Leadership Team (SLT) at IPACA, which was accepted with minimal requested changes. The original aims of this project, as presented in the proposal, are as follows:

> "Explore the potential of learner-created educational game design
> Promote and support the new computing curriculum
> Equip students with skills to work as a team and develop games

Provide students with a hands-on understanding of the games development process"

Empower students to go on and develop other games or mobile applications"

It is worth noting that the aims as presented here were purposely broad, as a means of starting a conversation and formalising a specific project. I was not under the impression it would be accepted immediately with minimal discussion[31]. The intention was to develop a research project that, as much as possible, adhered to the requirements of IPACA. That is, to develop a research project with aims that reflected the aims of IPACA. The project was accepted regardless, and I then began visiting the school regularly. Initially, this was only to run the *Game Makers* sessions, but the role eventually grew significantly.

My *named* role at the Academy was a 'Researcher in Residence' and this also includes my presentation as thus in publicly facing communications from IPACA. This will be discussed in the following chapter, as this external presentation relates to the 'performative' culture present at IPACA. Here, however, it speaks to a lack of agency, to a degree, in controlling my 'identity' within this environment. I did adopt an explicit identity as a researcher and framed my work as exploring how technology is being used to support learning at IPACA – thereby adopting the role of an 'overt full member' (Bryman 2015, p. 441). Moreover, although my research was focussed specifically on this project, and the *Digital Families* project that followed, I was conscious of supporting and participating in the school in other ways to build trust. [32]

[31] Upon reflection, this is somewhat illustrative of IPACA's use of digital technology in that there was, at times, limited critical consideration about its' adoption and usage.

[32] There are two moments in which I feel like I was properly accepted as part of IPACA. First, the invitation to openly vent about the work-ethic inadequacies of certain members of SLT, including a member of staff vouching that I could be trusted when other staff members wanted to vent with similar enthusiasm. Secondly, an encouraged but ill-fated portrayal of Santa Claus for primary year students.

When introduced to the students I was working with, I was introduced as a researcher. I was conscious of this in terms of both creating a distance between myself and students and inviting a self-consciousness on behalf of the students. To manage this, I would introduce myself to student as Phil and encouraged students to refer to me as such – counter to the expected practice of 'Sir' and 'Mr'. However, my role as a researcher from a local university was often used as a means of facilitating behaviour management. If I was actively participating in or supporting a lesson, and students became unruly, some teachers would refer to me as a '*games expert*' and frame my presence there as a *'privilege'* that the students should be grateful for.

There was of course, a balance to strike between establishing rapport with students and undermining the day-to-day priorities of teachers. Therefore, I would defer to the expectations set by teachers (excluding the use of my first name, which was okayed by the supporting ICT Teacher) and in doing so I, again, adopted the identity of a 'games expert' and introduced myself to the student as such. Therefore, my identity in the classroom was that of an expert who was teaching students about designing digital games for social change, ostensibly because *"I thought students can do it better than the professionals."*[33]

The specific aims of the project in terms of learning outcomes were discussed with the ICT teacher who was supportive of the project. Initially, it was intended that I would teach learners enough programming knowledge to develop the games they designed. During early conversations with the ICT Teacher to review the programme, it became apparent that I was overly ambitious. In reflecting on this I presented it as an arrogance[34] on my part, the ICT Teacher countered with*:*

[33] This was presented in such a way to consciously capture the students' perceptions of myself as a researcher, and what typical research looks like. Therefore, attempting to rein in potential student self-consciousness about my presence and purpose there.

[34] In retrospect, this was informed by my 'distance' from the challenges of learning coding during a computer science degree, and my, then current, experience of providing private tuition to 6-to-8-year olds covering coding through game development. With some distance and reflection, I now think it was both.

'that is not an arrogance, that's a naivety' (ICT teacher). Instead, the programme focussed on the design of digital games and use of software to develop assets for the game. Further, this research was also interested in exploring the potential for serious games production to act as a creative research method. As such, the initial questions were as follows:

a) What contextual factors affect the development of digital literacies?

b) How is digital literacy framed in the UK educational system, and what pedagogic approaches are used in the development of this literacy in learners?

c) What pedagogic practices currently used can be incorporated into this research that facilitate either games development or creative research?"

There is some overlap with the research questions as they were originally conceived and the final focus of this thesis. That is, there is increased inclusion of wider socio-cultural contextual factors and greater consideration of the forces that legitimate certain educational practice. Further, there was a sensitivity to the existing practices and requirements of the educational context. However, it was not specifically related to issues of power. Indeed, the necessity for educational practices to be concordant with the UK Standard Curriculum was initially taken for granted. Therefore, though I was interested in capturing and being responsive to the requirements of IPACA, I had not yet begone to critically unpack the values and ideology that these requirements represented.

Literature Review

This literature review will contextualise the development and justification for this project in relation to the use of digital games in educational settings and the construction of different forms of literacy. There has been extensive discussion of the role of digital games in classroom settings (Prensky 2001, Gee 2003, Van Eck 2006, Prensky 2006, Kafai 2012, Burn 2016a, Kafai and Burke 2016, McDougall 2016). Indeed, paralleling the previous chapter's discussion of purposeful play and its historical overture in contemporary settings, games as a purposeful medium also has a rich history (Wilkinson 2016c). In addition, there is extensive discussion of the potential for games development as a pedagogic practice in educational settings, largely built on the constructionist theory put forward by Seymour Papert (Papert 1993, Kafai 2012, Kafai and Burke 2016).

As this constructionist theory focusses on the development of learning in accordance with instrumentalist "*accounts of literacy that assume a simple cognitive pathway between mind and text*" (Burnett and Merchant 2016a, p. 3), here I start with a broader discussion of literacy as deictic, and focus on the potential conflicts between instrumentalist notions of educational practices, especially around digital literacy, and the more 'fluid' socio-culturally situated conception of literacy that is apparent in academic discourse. The purpose of this discussion of literacy is to demonstrate that there are overlapping constructions of literacy that are, in some ways, competing for priority in educational settings.

Situating Digital Literacy

> "[T]he teaching of literacy always aimed to ensure common destinies – whether religious, political or social – through access to the written culture of the times." (Chartier 2009, p. 464).

Here, I wish to briefly (or as briefly as I can) draw out the historical approaches to literacy. The purpose of this is to draw antecedents to current conceptions of digital literacy in as much as they illustrate the focus of this research

on developments of digital literacy, and reconstructions of literacy in response to the pervasiveness of digital media. For instance, in Chartier's historical account of mass literacy education, the motivation behind state-backed prioritisation of literacy is reflected in the UK government's discursive framing of the necessity of digital literacy (ECORYS 2016), especially as:

> "[d]igital services are becoming the default option for accessing public services, information, entertainment and each other.[35]" (Gov 2014)

In addition to this socio-civic justification of literacy and digital literacy's necessity a significant proportion of the UK Government's research into this area is centred on employability. In the recent report Make or Break: The UK's Digital Future, published by the House of Lords, digital literacy in education was elevated to be on par with the "3 Rs" such that it is necessary to integrate it with all aspects of the curriculum. The justification for this prioritization of digital literacy does discuss accessibility and civic participation though, primarily focused on the potential impact on the UK's economy through:

> "[i]ncreasing the number of digital 'workers' and 'makers' at the medium- to high-level could therefore drive the UK to a leading position in the global economy." (Select Commitee on Digital Skills 2015, p. 43)

To revisit Chartier, there is a historical parallel to draw here in the framing of literacy as enabling individuals and subsequently generating economic benefits more broadly:

> "[i]t was thought that the economic development and democracy would necessarily result from an increase in literacy levels achieved through mass schooling." (Chartier 2009, p. 464)

[35] This will be addressed more in the Digital Families chapter, but it is worth noting that does not include the influence the UK Government has had in going Digital by Default and removing traditional access points to public services. That is, digital services are becoming the default option because in part due to the deprovisioning of non-digital services.

Now, there is a current movement within the UK Government to embed digital literacy "*as a core subject alongside numeracy and literacy, embedded across all subjects and throughout the curriculum*"(Select Commitee on Digital Skills 2015, p. 15). In part this is justified as digital literacy is seen as a necessity for engaging in other aspects of learning, again reflecting the shifting focus of reading and writing from "*no longer an aim of schooling but rather a means of all further learning*" (Chartier 2009, p. 467). Partly due to this elevated importance of digital literacy it too has seen the same instrumentalization around the 'basics' (Merchant 2007), much as literacy came to stand for the functional skills of reading and writing.

To illustrate, the UK Government adopted The Essential Digital Skills Framework (updated in 2018) as their baseline for defining basic digital skills (Partnership 2018). Again, it is worth noting that this prescriptive approach is justified primarily in relation to economic return and the national curriculum reflects this instructionist nature (Hague and Payton 2010, ECORYS 2016). Indeed, prioritizing digital skills for economic impact has influenced the construction of digital literacy in educational settings – particularly the development of the computing curriculum and a focus on coding (Sefton-Green et al. 2009, Buckingham 2011, Gov 2013, McDougall et al. 2016).[36] However, for the government's focus on the development of digital literacy as a core subject, there is no direct mention of this within national curriculum for computing itself.

Though it was proposed to split 'computing' into three areas: computer science, ICT, and digital literacy – with digital literacy again focusing basic functional skills, this demarcation is not reflected in the national curriculum (Gov 2013) – but it is reflected in contemporary reports elevating its importance in education (Gov 2014, Select Commitee on Digital Skills 2015). I restate this because it does appear to be a slight contradiction that, perhaps, speaks to a slight ill-ease with the term. Further to this, there is a lack of clear definition as to what digital literacy is, in the

[36] There is a less direct allegory in the codification of digital literacy as digital skills, the rules and syntax of computer programming as one of them, and the reduction of traditional literacy to a codified practice of understanding the rules and syntax of language.

context of the education system. The Essential Digital Skills Framework may, however, become the basis, if not the direct measure, of this digital literacy.

Digital literacy outside of the curriculum, but still within government documentation, is seen as something functional, a term that is invoked to refer to the basic skills in digital access, reflecting the same institutionalized conception of literacy as reading and writing. The development of digital literacy, as a set of skills, through digital games production, will be reflexively explored in this research project.

Unsituating Digital Literacy

> "Rich and complex meaning making experiences, such as those associated with virtual play, sit uneasily with the view of literacy reflected in and sustained by current systems of accountability in education." (Burnett and Merchant 2016a, p. 1)

As discussed previously, an increased focus on performance measures, furthered in part by technology, affects educational practices. That is, though the national curriculum in the UK does not directly dictate how teachers should teach, the granularity, frequency, and importance of assessment measurement does influence practices and constructions of learning (Burnett et al. 2016, Livingstone and Sefton-Green 2016). As identified by Burnett and Merchant, more codified conceptions of literacy limit capacity for holistic perspectives of literacy. Further, this codification of literacy, and educational practices generally, can limit the use of educational practices concordant with young people's textual lives (Buckingham 2010a, McDougall 2016, Parry et al. 2016).

Despite the consensus shift, or state of constant shift (Leu et al. 2017), in our academic understanding of literacy, mass education in the UK has inherited an immutable perspective of literacy that still focuses on the 'basics' (Merchant 2007, Parry et al. 2016). Conversely, academic literature has moved from this 'basic' view to literacy as socio-culturally situated (Street 2003) or holistically 'sited'

perspectives (Burnett 2014, Burnett et al. 2014, Apperley et al. 2016). This ongoing shifting discourse around literacy has led to Donald J. Leu et al asserting, "*the nature of literacy has become deictic*" (Leu et al. 2017, p. 1), such that it has a dynamic meaning relative to the context it is used in.

In response to these literacy contentions, there has been effort to taxonomize the various models that are used (Street 1984, Auerbach 1992, Mills 2010, Green and Beavis 2012, Leu et al. 2017). The relativistic perspective of literacy put forward by Leu is of relevance for this research, as games production as a pedagogic practice is situated between multiple conceptions of literacy. As discussed in the literature review, 'technology' is not neutral, so when exploring its integration within discourses of literacy it is worth acknowledging pre-existing contentions. As asserted by Leander and Boldt, it is necessary to acknowledge that the:

> "questions arising in the context of new literacies are not simply a function of changing technological times" (Leander and Boldt 2013, p. 23)

Moreover, I further suggest that the adoption of technology and subsequent practices are of course influenced by these pre-existing 'questions'. For instance, the western mass adoption of literacy education in the mid-19th century is justified in comparable terms of workforce preparedness and capitalist economics as prioritizing digital literacy today (Chartier 2009, ECORYS 2016). Furthermore, according to Gee, *"[r]eligious, social, and political ideologies were transmitted through the literacy learning*" (Gee 1996, p. 57). Currently, when discussing children's digital or media literacy the functionalist position evidenced in the UK Government's approach is largely informed by neo-liberal capitalist discourses (Hobbs 1998, 2011, Buckingham 2007, Mendoza 2013, McDougall 2016). As such there has been a continued discomfort over the ideological underpinning of literacy that such that:

> "educators need to question whether in fact they themselves have accepted the ideology of computer literacy uncritically". (Goodson and Mangan 1996, p. 78)

Here, Goodson and Mangan identified a discourse within schools, surrounding the adoption of computers. However, in the conception of literacy itself, and the discourses that surround it, there are implicit epistemological definitions that dictate educational practices (Auerbach 1992, Shor 1993, Gee 1996). As repeatedly touched upon, this is illustrated by the manifestation of increased accountability of reified learning outcomes, or the focus on 'basic' skills. Further, for Brian Street and others, all literacy is ideological – in that literacy is connected to a socio-cultural context of normative beliefs and values (Street 1984, Gee 1996, Buckingham 2007b). So, the focus on 'basic' skills is framed through broader systems of meaning to enforce standards in mass education.

Civic Participation through (and as) Literacy

> "[I]n many policy circles concerned with education and civic participation, more internet use is framed as precisely the "solution," as part of a normative agenda that asserts it to be desirable for all youth to use the internet for expression, learning, and participation." (Livingstone 2012a, p. 5)

Given the different manifestations of 'literacy' there is a site of contention that has impacted the adoption, expectations, and subsequent practices surrounding digital technology for education and civic engagement. For instance, the notion of media literacy itself is increasingly used solutionistically to "*foster criticality, participation, engagement, vibrancy, inclusion, tolerance, and even mindfulness*." (McDougall et al. 2015, p. 4). Or as Paul Mihailidis argues:

> "[m]edia literacy has often assumed, with little evidence, that enhanced critical thinking will lead to civic awareness and engaged participation in civil society." (Mihailidis 2014, p. 139)

Interestingly, the use of 'media literacy' here reflects the solutionistic naivety that is present in presumptions of technology's potential impact. Further, in discussions of children's civic participation through access to digital technology there is a familiar solutionistic thread (Jenkins et al. 2008, Tapscott 2009, Buckingham 2010a). Indeed, digital media has been argued to be an effective means of encouraging civic engagement in young people (Rheingold 2008, Buckingham 2010b, Jenkins et al. 2015). The discussion of the uncritical assumptions of technology's impact is potentially reinforcing of, or reinforced by, an uncritical use of the term literacy. Further, there is a familiar investment of 'literacy' "*with a host of metaphysical properties and potencies*" (Marx 1994, p. 248).

For instance, in 'critical computational literacy' (CCL) there is a clear representation of the use of literacy as a, somewhat evangelized, solution to broader social issues:

> "Through CCL, young people conceptualize, create, and disseminate digital projects that break silences, expose important truths, and challenge unjust systems, all the while building skills such as coding and design." (Lee and Soep 2016, p. 480)

CCL speaks to multiple facets of this research situation, and the thesis more broadly. It represents a convergence of the potentialities of both technology and literacy. It does, slightly, abstract from technological solutionism and determinism, instead applying these notions to engagement with the technology. So, in the intertwining of notions of technology and literacy, there is perhaps an offloading from the former to the latter of various uncritical assumptions and determinate potentialities. In this instance, there is framing of the development of technical skills for the purposes of undertaking civic action that is familiar in uses of media literacy. With regard to civic participation, through media literacy or otherwise, the actuality of children's civic engagement through digital media under their own

volition is, however, contextual and ad-hoc (Selwyn 2009, 2013, Buckingham 2010b, Livingstone 2012b, Waldie et al. 2017).

Young people's civic engagement online, as self-identified, is primarily through showing support on social media platforms, sharing online petitions, or engaging with the news (Ofcom 2016, Waldie et al. 2017). It would of course be undermining to dismiss this civic engagement as limited - especially the young people themselves reported feelings of empowerment through this (Waldie et al. 2017). Given the changing digital media landscape and nature of civic engagement, Paul Mihailidis and Eric Gordan argue for a more inclusive, less evangelical, perspective of what constitutes civic engagement through digital media (Mihailidis 2018) – hence the inclusive definition of civic media as:

> "the technologies, designs, and practices that produce and reproduce the sense of being in the world with others toward common good." (Gordon and Mihailidis 2016, p. 2)

The framing of this project in relation to social issues in the community intersects with this conception of digital media as leading to and facilitating civic engagement. Indeed, this project focussed on the design and production of digital games as a critical-creative exercise in representing social issues. That is, to develop a "*critical vocabulary [and] creative narrative aptitude*" (McDougall et al. 2015, p. 15). Digital skills and media literacy do not translate to civic engagement directly – just as technology does not directly translate to societal progress. Further, civic engagement itself is a broad term that can refer to various positions and activities – especially within the context of increasingly mediated civic media and political discourse.

Digital Games and Literacy

> "[G]aming is a future's language, a new form of communication emerging suddenly and with great impact across many lands and in many problem situations." (Duke 1974, p. 33)

In discussing the emerging field of 'serious games', Richard Duke argued that gaming was a future's language well situated to tackle emergent issues in education and instruction. That is, he argued that the multi-modality, multi-materiality, representational and agential affordances of games made them well suited for tackling problems associated with increasing societal complexity and subsequent pressure. Or as Duke described, games present a means of overcoming the fact that "*[h]umankind has been harried of late*" (Duke 1974, p. 3). Interestingly, Duke's assertion here was quite prescient when viewed in a contemporary context[37] and is directly echoed by James Paul Gee's assertion that "*[w]hen people learn to play games, they learn a new literacy*" (Gee 2003, p. 13).

As discussed previously, literacy is deictic and contested. In this instance, given the textual distinction of *gaming* literacy, discussion in this area is typically text-centric and comparative (Buckingham 2009, Burn 2016b, Kafai and Burke 2016) - with some instrumentalising this 'new' literacy (Zimmerman 2008, Apperley and Beavis 2013). For my purposes, I do not wish to define gaming literacy as distinct from other forms. Here, I use games production in a classroom setting as a means of illustrating broader tensions between, to be reductive, *critical* and *functional* framings of literacy (Leander and Boldt 2013).

Within this 'critical' view of literacy, the value of this exploration of games production is two-fold. First, the framing of games as affording multi-modal, multi-material, socially situated and virtual representations. As such, the production of games requires engagement with multiple overlapping domains involving, according to games designers Katie Salen and Eric Zimmerman, "*systems-based thinking, iterative critical problem solving, art, and aesthetics, writing and storytelling…*" (Salen and Zimmerman 2003, p. 303). Therefore, representation through games becomes a curational exercise across multiple modalities and

[37] Interesting to note, Duke also presciently argued against the current solutionistic approach of serious games - *"Gaming is not a predictive device, not a panacea to be plugged into the problem of the moment"* (Duke 1974 p. 44).

frames of reference. Second, is the loose distinction made between games and other media forms such that games require active participation of a 'player'.

In discussions of games literacy and design there is of course frequent reference to elements of 'action' (Apperley and Beavis 2013), 'ludic' (Buckingham and Burn 2007), or 'play' (Zimmerman 2008). Games are designed for interactivity and degrees of player agency. This adds an additional immaterial element to the multimodal composition of games in that meaning is created, or changes, in response to the player. For instance, game designer Eric Zimmerman writes:

> "[f]or a game designer, the creation of meaning is a second-order problem. The game designer creates structures of rules directly, but only indirectly creates the experience of play when the rules are enacted by players." (Zimmerman 2008, pp. 24–25)

Here, Zimmerman refers to the player 'experience' as an indirect but significant consideration in the design of the game. As the player interacts with the game, they bring their own subjective interpretation of the various modalities of the game and construct their experience[38]. This gameplay experience is of course intangible, amorphous and dynamic. As such, when discussing games, it is necessary to consider material modes of signification that are reciprocal and dynamic. As David Buckingham and Andrew Burn suggest, drawing on linguistics:

> "games function in linguistic terms both through the indicative mood (that is, showing us the world) but also in the imperative mood (that is, urging us to take action upon that world)." (Buckingham and Burn 2007, p. 327)

In this research exploring games design in the classroom there are representational affordances through a feedback loop between audio-visual elements and player agency. That is, there is the initial 'state' of the game, and the

[38] It is interesting that this framing of game-design as a second-order problem is reflective of a contemporary criticism of the New London Groups' conception of literacy that is text-centric and agnostic to an (im)material dynamism (Leander and Boldt 2013)

change of this game's state in response to the player's actions, and so-forth. The meaning created by the player as they interact with the game is then assembled and reassembled (Burnett and Merchant 2016b) in response to the game's dynamism as well as, of course, other subjective and social factors. In this study, learners' design decisions in the construction of second-order meaning is therefore the focal point for consideration of their ability to articulate, and prioritize aspects of, a social issue.

Digital Games and Constructionism

> "If one does belong to a culture in which video games are important, transforming oneself from a consumer to a producer of games may well be an even more powerful way for some children to find importance in what they are doing." (Papert 1988, p. 3)

Papert's constructionism is interesting here as it speaks to a broader advocation of acknowledging and validating children's media worlds and incorporating this into the classroom. With reference to games specifically, there is a suggestion of a "*proto-game literacy*" by Andrew Burn (Burn 2013, p. 28) – such that children have a pre-existing meta-language and critical, self-reflective awareness of aspects of games design. It is of course worth noting that in discussing technology and its role in learning Papert echoes an optimistic, but slightly reductionist, tone in contemporary educational technology rhetoric.

As described by David Buckingham (2008), Papert essentialises children into an homogenous group that have some essential quality that creates in them an affinity for learning through digital content creation. Papert's (1991) constructionism is influenced by the Piagetian staged-based model of children's construction of internal knowledge schemas (Piaget, 1957). Constructionism argues that construction of knowledge structures:

> "happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity." (Papert and Harel 1991, p. 1)

In addition to constructionism reflecting a potentially oversimplified perspective of children's learning, it also reflects an instrumentalist approach to education. As suggested by Becky Parry, "*[i]t is widely acknowledged that the inclusion of popular culture in the curriculum not only increases children's engagement and motivation*" (Parry et al. 2016, p. 148). However, with the inclusion of popular culture there is a risk of a tokenistic instrumentalization of children's media worlds[39]. That is, a co-opting of children's media worlds in service of a standardised curriculum, rather than a legitimising of these worlds on their own terms. Historically, constructionist approaches focussed on the production of games about specific curriculum subjects, such that the production of the games is in service of these curriculum subjects (Papert 1980, Papert and Harel 1991, Kafai 2006).

In Yasmin Kafai's book Mind Storms (1995), the early game-constructionist pioneer discusses her experience of using LOGO – created by Papert (1980) - as a games development environment. The use of game authoring software for developing games for traditional curriculum subjects – especially mathematics – is prevalent today (Kafai 2006, Li 2010, Burn et al. 2016, Kafai and Burke 2016). Additionally, there are multiple external institutions that are developing game authoring software and games development initiatives focussed on developing digital literacies (BAFTA 2018, Microsoft 2018). Digital literacy here is primarily framed around technical skills - particularly programming and software engineering.

There is overlap between the use of games development as a means of developing digital literacy or curriculum-mapped, subject specific knowledge and notions of civic participation. That is, the act of producing digital content as a 'public entity' is, for Papert, a key justification for the engaging potential of constructionism as a pedagogic approach. Further, there is a comparable framing between the production of games as participatory and treating media literacy as

[39] And potentially tokenistically - games are often used for their 'holding power' to engage children in more desired activities. Here, the production of games can be used in a comparable manner, reflecting the 'chocolate covered broccoli' approach to educational games design (Bruckman, 1999).

directly leading to civic participation. For instance, CCL (Lee and Soep 2016) elevates itself as empowering students to have a civic transformative agency through developing 'critical' computational skills. However, within CCL the focus is on content creation itself and the actual civic engagement, or change, is a presumed natural consequence.

This research adopted a similar stance to CCL in that it focussed on the content creation process; however, it focussed on this as a demonstration of civic awareness – rather than being or leading to civic engagement directly. Given the difficulty of defining - or instrumentalising given the classroom context - civic awareness, this project primarily focussed on the representational considerations participants made in designing their games.

Digital Games and Ideology

> "[M]eaning in videogames is constructed not through a re-creation of the world, but through selectively modeling appropriate elements of that world." (Bogost 2007, p. 43).

As video games can portray complex social dynamics and systems of rule or governance reflective of real-world social systems it has been suggested that digital games afford opportunities to develop civic literacies (Kahne et al. 2008). Educational game theorist and developer Kurt Squire echoes the findings presented in Joseph Kahne's report *The Civic Potential of Video Games*. Interestingly, he reflects a Deweyan philosophy of education through designing educational games, based on real-world social issues, such that they encourage civic participation.

> "What we want to do with educational games is to […] build them around critical kind of current issues and then get kids to be motivated and have the skills to go out and start to solve these problems as a direct result of having played the game." (Kurt Squire featured in Saomya 2013)

This research abstracts from this approach, to focus on the development of games about social issues, rather than children playing them. Initially, my thinking for this was informed by a subset in the field of serious games concerned with creating games with a social message as their purpose (Bogost 2011, Misuraca 2012, Wilkinson 2016c). Development of these games for social change follow a similar rationale to the development of educational games in that it is presumed to be more engaging. Interestingly, this notion of engagement is developed beyond the 'holding power' of games and instead focusses on additional critical-creative expressive affordances of games.

As discussed previously, the interactivity of games creates a potential additional expressive affordance within games design. Meaning is actively constructed both as the game presents itself, and as the game changes in response to player activity. According to game designer and researcher Ian Bogost, this is captured as a 'procedural rhetoric' – the construction of meaning through the procedurality of the game as a piece of software. That is, the execution of internal logical or, like traditional non-digital games, the enactment of rules and the consequences of these rules is part of the expressive capability of games (Bogost 2007). This theory of procedural rhetoric fits within the broader socio-civic industry / practice of developing digital games for social change.

Games for Social Change are digital games developed with a societal issue as a central theme - often with a political or ideological message (Squire and Jenkins 2003, Klimmt 2009, Bogost 2011, Reng and Schoenau-Fog 2011, Flanagan and Nissenbaum 2014). Again, there is a crossover here with the use of play as discussed in the previous chapter. Sutton-Smith's discussion of the rhetoric of play did not describe play, according to game designers Salen and Zimmerman, but instead identified how games and play embody ideological values and "*how specific forms and uses of play perpetuate and justify these values*" (Salen and Zimmerman 2003, p. 4). This is where this research was positioned as it explores how children,

in a classroom setting, consciously engage with broader socio-civic issues and articulate this through the creative affordances of games.

Games, Literacies, and Ideologies

This literature review is of course not exhaustive. In part out of a sense of pragmatism reflective of the original intentions of this project, but also from a slightly fatalistic assumption that I would not be able to provide a neat, linear accounting of the various conceptions of literacy and the forces that have shaped this. Instead, I focused on those that are of relevance to this research project and my thesis more broadly. Further, the discussion of digital games here was intended to mark the intersectional point they occupy between media literacies, notions of critical civic engagement, and educational values in a classroom setting.

Research Design

There is overlap in the observations and findings between *Game Makers* and *Digital Families.* It was during my initial time at the Academy working on *Game Makers* that the *Digital Families* project was developed and undertaken. Both projects adopted an ethnographic methodology but with a differing focus and level of scope for what was considered. When starting *Game Makers* my focus was the activities taking place in the classroom and directly involved participants in the research project. It was ethnographic then, but within a classroom context. This focus expanded to include the Academy itself, and the wider local community.

There is a tension in the presentation of this research project as something neatly demarcated from the following project. Moreover, the framing of this thesis as a development of my research trajectory, to a point, implies a linear, incremental development and clarification of my thinking. However, for the purpose of clarity there is a need to impose a linear narrative to these events. As such this section will focus on the methodological considerations for *Game Makers* specifically. It will discuss the methodology for *Game Makers* as it was originally conceived before the scope of my work with the Academy increased significantly to include *Digital Families*.

This section will outline the ethnographic methodology adopted here as it was enacted within a classroom setting. This includes the use of observational research methods, interviews, and the framing of games design as both a constructionist pedagogy and creative research method. In doing so, my intention is to present this research project as a vignette – a self-contained illustration of some of the tensions in using educational technology. I take this approach understanding that this approach can be subject to the same criticisms applied to situated, overly simplified and text-centric perspectives concerning literacy.

> "[I] view a scene, with an infinite number of movements, interactions, possible rhizomatic lines, and we subtract from the scene all that makes the

> telling of a coherent post hoc narrative difficult." (Leander and Boldt 2013, p. 41)

This will be reconciled at the end of this chapter as I broaden my scope to include additional observations, and of course this will be expanded further still in the following research chapter and subsequent conclusion.

Ethnographic Methodology

> "Ethnography is actually situated between powerful systems of meaning. It poses its questions at the boundaries of civilizations, cultures, classes, races and genders. Ethnography decodes and recodes, tilling the grounds of collective order and diversity, inclusion and exclusion." (Clifford 1986, p. 2)

Clifford's assertion regarding the holistic nature of ethnography – the need to take multiple socio-cultural systems of meaning into account – captured an academic self-consciousness when conceptualizing this research project. For this project I was conscious of different systems of meaning, and of over-imposing or over-elevating an academic perspective. As noted by Guba and Lincoln, the processes, theories, and frameworks used by external investigators "*may have little or no meaning within the emic view of studied individuals, groups, societies, or cultures*" (Guba and Lincoln 1994b, p. 118). I adopted an ethnographic approach as it was "*based on the premise that social reality cannot be understood except through the rules which structure the relations between members of the group*" (Pring 2010, p. 106).

Within the Academy I was acting as both an insider and outsider. This research project took place between November 2014 and March 2015 and was centred on ten 100-minute ICT lessons in which I taught games design to 12- to 13-year-old pupils at the Academy. Before, and during, teaching at IPACA, I was physically present for 1 day a week to discuss the project with teachers and members of the Senior Leadership Team (SLT). This also included my becoming involved in various other activities at the Academy - including supporting

community outreach events, facilitating an after-school coding club, and sitting on some lessons when invited by teachers. As such, a central issue in this research project was the multiple roles I found myself in.

As this research project initially had an intention to evaluate games development as a research and pedagogic approach, it is necessary to adopt an etic and emic worldview. Here, in this etic perspective "*the ethnographer emphasizes what he or she considers important*" (Kottak 2006, p. 47). Again, what was considered important was the efficacy or utility of games design as a research method. Paralleling this, an emic perspective was consciously adopted such that outputs of the research project were *"expressed through terms of the conceptual schemes and categorizes regarded as meaningful"* (Lett 1990, p. 130). Here, the efficacy of games design as a pedagogic practice.

An ethnographic approach was adopted to be responsive to the research context, and to identify *"the wider picture within which [my] work is situated*" (Conteh 2005, p. xxii). There is considerable overlap with the use of ethnographic and other qualitative approaches and it can refer to both a set of research methods or an overarching research philosophy (Pole and Morrison 2003, Hammersley and Atkinson 2007, O'reilly 2012) - here, I use the term ethnography with reference to the latter. That is, I adopted ethnography here as a guiding *"theory about how research should be conducted"* (O'reilly 2012, p. 10).

In capturing the wider picture my ethnographic practice here follows three consistent principles identified in the work of others (Hammersley and Atkinson 2007, O'reilly 2012). Firstly, research involved embedded, extended participant observation and interaction within the research context. Secondly, though this research focused on technology in learning, it was exploratory and sought to present a rich representation of this phenomena *"rather setting out to test hypotheses about [it]"* (Atkinson, 2000 pp 248). Thirdly, a wide variety of contextually relevant artefacts or *"whatever data are available"* (Hammersley and Atkinson 2007, p. 3) were collected alongside 'traditional' research materials.

As Denzin and Lincoln (Denzin and Lincoln 2018b, p. 17) have suggested, the effective ethnographer should be a bricoleur, one who uses whatever tools and techniques are at hand in order to gain an in-depth understanding of the phenomena in question (Kincheloe et al. 1995, Rogers 2012). This bricoleur approach was enacted through the combination of research methods used, particularly creative research methods.

Creative Research Methods

Initially, it was intended that this creative research method approach would be used in reference to the final game designed by the students, however it was expanded to include the various design artefacts produced throughout the game design process. I was first drawn to creative research methods as an approach due to its ability to approximate, if not directly reflect, typical pedagogic practices (Gauntlett 2007, Buckingham 2009). Similar to the criticisms levied at other participatory approaches (Hunleth 2011), creative research methods can be adopted by researchers as a means of immunization against assertions of unconsidered power-dynamics and prescriptive practices. That is, offering participants a choice in how they express themselves, or space to express themselves freely within a specific medium, is innately participatory or empowering (Buckingham 2009, Lomax 2012).

Interestingly, the same justification of empowerment of participants through creative research methods (Buckingham 2009, Lomax 2012) is reflected in the rhetoric of digital nativism and citizenship explored in this project. Taking the use of 'empowerment' as a benefit of creative research methods, this empowerment stems from 'new' representational affordances and a capacity for this representation to transcend institutional hierarchies (Buckingham 2009, Hunleth 2011, Lomax 2012). This was of course not my intention here - though I did give learners participating in this study creative 'space', this space is course demarcated and controlled – something that will be reflected upon this chapter's findings.

It would be disingenuous to describe this research as participatory – especially if we take 'participatory' as a binary descriptor. If we take the view of 'participatory' as a spectrum – or stratified ladder (Hart 2013) – through the contextually reflective approach adopted here, there is a self-imposed limit on how participatory it could be. This research then can only be described as participatory in as much as the imitated educational practices within this setting are also participatory[40]. This reflection of educational practices however is a common justification for creative research methods in education and is of particular relevance here, as captured by Buckingham when reflecting on his creative research:

> "[i]n my own research, I have often consciously used methods in which groups of children are invited to 'sort' or 'rank' television programmes – and these are the kinds of activities that primary school children in particular are routinely required to do in the classroom. Such activities clearly run the risk of implicitly positioning young people as 'pupils' in a 'teacher–pupil' relationship." (Buckingham 2009, p. 642)

Interestingly, Buckingham invites caution against unduly influencing the perceived relationship between the researcher and participants. For this research however, this close alignment with a typical educator's role within this context was intended and welcomed. An additional consideration with this imitative approach is the adoption of educational practices, or an educator's role, within an educational context can invite a type of institutionalised compliance with the research and "*schooled docility*" (Lomax 2012, p. 106).

This institutionalised compliance in the form of students producing what they feel is expected of them, or what they think I - or their present ICT teacher – want, can of course affect the materials produced. Again, if they are producing

[40] The degree to which this 'learner-led' approach manifested in practice was debatable – somewhat reflecting the superficial use of unreflexive participatory research (Gallacher & Gallagher 2008).

materials that are reflective of what they would be producing in the classroom then this is salient to this research project and will discussed in the analysis. Within this setting, the creative research method adopted – produce a digital game about a social issue – was undertaken alongside other, traditional, research methods.

Observation

In this research setting, observation was deployed as a method from three perspectives – my observations in the classroom; the ICT teacher's observations in the classroom; and my observations within the broader school. Within the classroom setting, taking rigorous notes was of course difficult, as most of my attention was given to educating and supporting the games development process. Therefore, field notes here were either made as 'scratch notes' or written up after the lesson, or end of the school day[41]. Within the classroom context, my observations were loosely centred on the student's engagement with the various digital media production 'tools', and their representational decision-making process.

As for the ICT teacher, she was asked to undertake lesson observations (O'Leary 2013). Therefore, her observations centred on the typical expectations of an ICT lesson. It was intended that I would have little say in this process, such that the teacher could identify what would, presumably, be valued. This afforded a contextual "*[expression] through terms of the conceptual schemes and categories regarded as meaningful*" (Lett, 1990 p. 130) and affording the teacher the capacity to emphasize what she deemed important. Therefore, this approach avoids prescriptive notions of 'good' pedagogic practices, or my own conceptualisation of what constitutes 'learning' in a formal educational setting.

[41] I did also experiment with a voice recorder. It was an hour and a half commute to the 'research setting', so I would tie the voice recorder to the rear-view mirror and divulge all my reflections and observations from the day. Given some of the challenges I faced in this research setting, this process, though cathartic, produced a somewhat unwieldy dataset.

More general observations were made throughout my time at the school, as I adopted various roles and developed relationships. Again, these observations were captured in the form of field notes. However, given open-ended exploration within this setting, and the meta-exploration of this thesis, various 'asides' have also been captured including reports, emails, social media postings, and newspaper stories.

Interviews

Interviews were undertaken with the ICT teacher and the learners who participated in this research. The interview with the ICT teacher was conceived as a semi-structured interview (Cohen et al. 2007). However, in undertaking the interview it fell into a more shared reflective conversation exploring the materials students had produced over the programme. The focus of this conversation was on discussing evidence of learning, progress, and student engagement. Though this very conversational approach was not intended, it was fitting in retrospect. To undertake a semi-structured interview approach would create a relatively stark juxtaposition with the collegial relationship that had been established through my time there. In doing this, it minimized the potential intimidation from adopting a more formal style. Additionally, in avoiding adopting a clearer role as a 'researcher' in the interview, it avoided issues around response bias and the ICT teacher wishing to provide 'correct' answers.

There are of course similar issues when interviewing learners. I was conscious of striking a balance between providing positive feedback to student response, without guiding or demonstrating approval. This goes against some interview technique wisdom, which appears to elevate a researcher's stoicism in the name of validity. Here, however, it was important to maintain a sense of rapport with students. Questions here were designed to prompt reflections on their decision making – specifically relating to why they chose the social issue they did, and their representational decisions in producing the game.

Participants

In total, there were 17 Year 9 students (13 to 14 years old) split into 6 teams. There was a split between 5 girls and 12 boys, and a typical lesson would have attendance of 14 students. The ICT teacher had been working at IPACA for 2 years, and the previous school that was amalgamated into this Academy for a further 5 years. She had a dual subject teaching load, focusing on ICT and psychology. This specific combination of subjects may go some way to explaining her enthusiasm in supporting the programme [42].

Procedure

As previously discussed, this project was embedded into the ICT lessons of a Year 9 class. It was supported by the ICT teacher but led by me. As such, the practicalities of undertaking this research were dictated by the academy's timetabling and resourcing. The prescriptive limitations of undertaking the project as part of an ICT lesson will be discussed in the findings section. However, there are two things to consider here. First, the structuring of each lesson. Second, the conceptual framing of game production within the classroom. Particularly how game production, and what a 'game' is, was presented to students initially.

Lessons were structured using a format that was 'typical' of the academy environment – and of lessons plans generally. It opened with a plenary activity, before moving on to the main activity – themed around an aspect of game production – before then ending with a reflective exercise (See Appendix F). The programme of lessons followed an, in retrospect, ambitious timetable – starting with idea generation and research, moving on to constructing the different aspects of their game. The different aspects of game design were presented as three 'elements' – narrative, aesthetic, and ludic (See Appendix H). In presenting game design to the students and running this as a series of lessons in which a degree of didacticism is expected, there was a necessity of 'deconstructing' games and

[42] Upon reflection, given the context of the Academy, a part of the enthusiasm might have been the 'workload relief' my research provided.

presenting this to them in a way that can be followed through a time-table regimented series of lessons.

Breaking games down into three elements was designed to engage students with the different representational affordances of games. Moreover, these elements were taken from a synthesis of game design practice and philosophy (Crawford 1982, Salen and Zimmerman 2003, Calleja 2007).

Thematic Analysis

My analysis here will be presented thematically, starting by focussing on the textual productions created by learners before then moving on to broader themes relating to issues of educational expectations. It is worth noting that the research undertaken here produced a rich set of 'data' to work with, and my focus is limited by necessity. Indeed, there are several interesting themes that will not be discussed in significant detail including how learners engaged with, and chose to represent, the social issues at the core of their games. Instead, the focus of this discussion will relate to the expectations of educational practices that manifest in the classroom, and how this intersects with the different perspectives of those present.

Research Ethics

This research project was approved by Bournemouth University's Ethics Research Committee. In considering the ethics for this research project, I considered the following issues (Bryman 2015):

> **Gatekeeper Consent:** A member of the Senior Leadership Team at the Academy acted as a gatekeeper for my ethnographic 'presence' within the Academy. This included my ability to take observational notes and to undertake educational practices within the classroom. Additional gatekeeper consent was sought from the ICT teacher who supported this research.

Informed Consent and Assent: Consent was acquired from learners' parents and gaining consent was supported by the ICT teacher. In this project, consent was sought to cover the data collection methods adopted within the classroom context, and not the educational practices. That is, parents were able to remove their children's data from the project at any time, but their children would still participate in the classroom activities.

Protection from Harm: The potential for the research itself to cause harm was trivial. There was a standard risk assessment put into place for my activities in the classroom. Further, I had acquired the necessary enhanced Disclosure and Barring Service (DBS) checks. A point of concern from my perspective was the potential for this research to take away from learners' educational attainment in other ways. However, the ICT teacher did provide reassurances that the educational outcomes of the research project were adequate.

Confidentiality and Data Protection: Participants' data was anonymized prior to its presentation in this thesis, or publication elsewhere. Data collected included a range of physical and digital materials in different forms. This includes Google Slides, physical notes, mind maps and designs. All physical materials were scanned into a computer and stored securely. Further, all data has been stored securely in the researcher's locked office, and on a password protected computer. Identifiable participant data was collected only on parent participant consent forms.

Description and Discussion of 'Data'

In total the class of 17 learners formed 6 teams and created 6 games (See Appendix I) Analysis here draws on various design artefacts produced as part of specific lesson activities in addition to ancillary materials produced by learners, observational assessment provided by the teacher, and my own observational notes. These observational notes include what I observed taking place within the classroom and reflections on my experiences in acting as an educator in this project.

As discussed, there were several interesting findings that could be discussed here. Indeed, the initial intention behind this project was exploring how game design can be used as a creative research method to elicit young people's perspectives on social issues. There was indeed rich data collected that does capture the various ways in which the learners in this study understood various social issues through the negotiated representational decisions they made. However, for the purposes of this overall thesis, the discussion of findings here will focus on how this project illustrated the intersection of different expectations of educational practices and uses of technology.

To begin, this analysis will discuss the games the learners designed, drawing particular attention to the representational decisions made by the learners. This will illustrate the ways in which the learners drew on their pre-existing understanding of these social issues and of games design. In doing so, I will discuss the ways in which students demonstrated, and developed, a pre-existing critical literacy regarding games design. From this, I will then discuss the levels of engagement students exhibited with the games design activities. This engagement will be suitably qualified and be used to illustrate the contextual factors that framed this engagement.

The ways in which learners engaged with the games design activities, and the observations of this engagement by me and the ICT teacher, will be discussed

with reference to situated expectations of educational practices. Further, these expectations will be discussed with reference to a sense of strategic engagement with expected educational practices by me, and by learners.

Identifying a Proto-Critical Literacy

> **'**We could have a side scrolling beat 'em up game in which you have to fight your emotions, we could have special power-ups such as medication which either makes your enemies less powerful or increases your strength each of a certain amount of time.' James, AnX: Freedom from Fear

As discussed in the procedure section of this chapter, the first workshops in this programme focussed on developing students' awareness of 'serious games' through playing a selection of serious games (Re-mission 2, Depression Quest, A Closed World, and Free Rice) and analysing them through answering set questions. In this initial consideration of games, it was interesting that they were able to, pick out visual, narrative, and ludic elements of relevance to the issue. Another point to consider in learners' analysis here was an emergent use of a language of games design. Following the analysis of games, the next session introduced the three elements of game design.

The initial workshops would go through each element in turn, and have activities based around generating ideas and resources for that element. This appeared to be a useful frame of reference for breaking game design into sequential self-contained 'workshops'. What is of interest here however, and was quite surprising, was the degree to which learners demonstrated a granular understanding of elements of games. As demonstrated by the opening quote in this section, which was taken during initial brainstorming, learners already had a deconstructed, granular perspective of games. For instance, learners made reference to existing game 'genres':

> 'Our game will be a platform RPG. The school is a town or village in an rpg, to trade and get quests…

The boy you play as imagine the fight against the bullies as medieval combat, e.g. swords armour, shields, potions and magic' Eric, Jack's Adventure

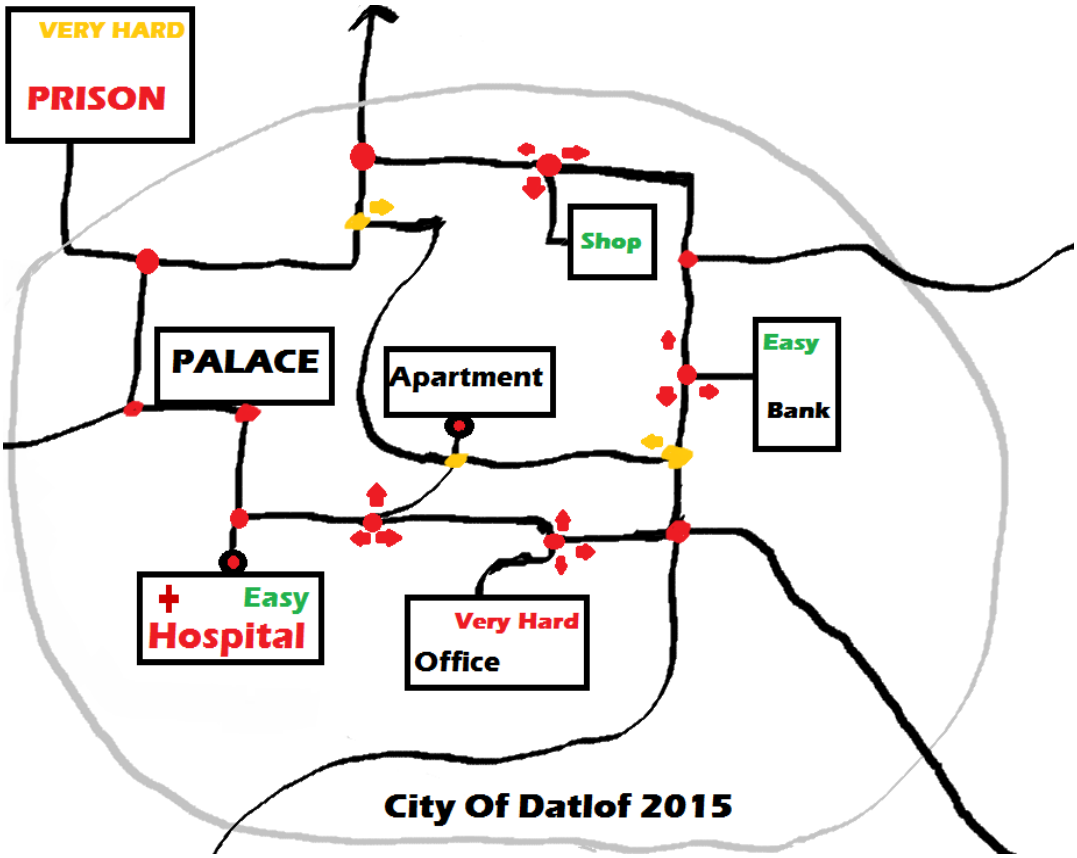


Figure 11: AnX: Fight For Freedom, overworld map of the City of Datlof – representing the different levels the player can 'liberate from fear

Interestingly, within this conception of a game about bullying the learners are specifically referring to the 'platform RPG' game genre. Further to this, the game world itself draws on several game design tropes – including typical items used, and the ability to trade and find quests in a central 'hub' – here the town or village (Figure 11). In addition to this, Beggar Clicker was directly influenced by the online web-game Cookie Clicker in terms of the core gameplay loop of resource collection and management as a representation of homelessness.

Beggar Clicker represented homelessness by creating a game based on Cookie Clicker, a game where you click and collect cookies. In Cookie Clicker there is an on-screen cookie which, whenever pressed, gives you a cookie. You then invest

these cookies to get more cookies and so on. Interestingly, in Beggar Clicker you click on the screen to get donations or items, however receiving anything from clicking is intentionally very rare. Alongside these game mechanics, Beggar Clicker was designed with a visual style (Figure 12) to invoke a sense of despondently trying to survive. This is further reflected with the game's resource management mechanics - making the player invest limited money on managing their health, temperature, and hunger.

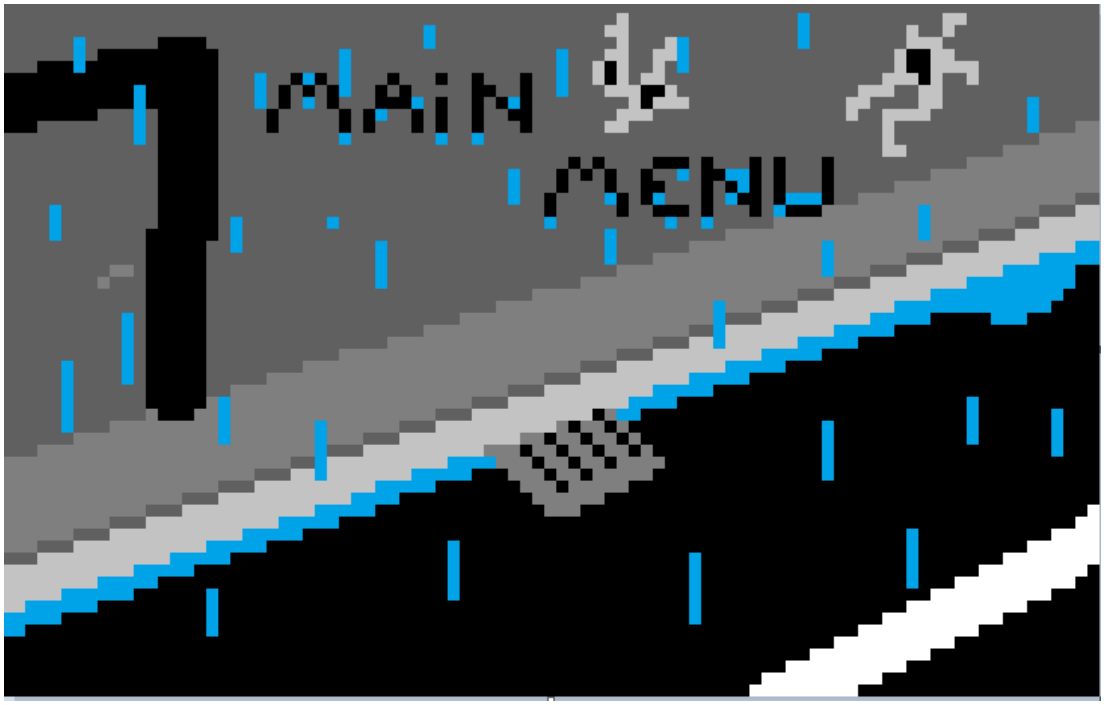


Figure 12: Beggar Clicker, main-menu for the game designed to have animated rain.

Whilst teaching game design to the learners, I increasingly saw my role as legitimating their current understanding. Learners had a pre-existing conception of digital games through their own lived experiences. This included a meta-understanding of different types or genres of game, including a standard terminology. Further to these examples, Jack's Adventure, set in a medieval fantasy setting, features items such as 'Health Potions' that are typical for this setting and game type. Additionally, AnX: Fight for Freedom consciously uses certain typical gameplay elements for the purpose of, quite wryly, situating their game:

> ‘In the Work Level you will quite literally fight a “mini-boss”[sic]’ James, Jake, and Larry, AnX: Fight For Freedom

The playful, self-aware redeployment of the ‘mini-boss’ gameplay element demonstrates not just a meta-language, but a degree of comfort in subverting game expectations. They demonstrated a granular understanding of various modal elements within digital games – health bars, enemies, pick-ups etc. As such I saw my role as drawing out their current observations and conceptions, legitimating them and, if necessary, providing the standard terminology. What is significant here however was that they had intuited the design rationale, or experiential intention, behind these game elements.

Learners used health bars, for example, not because they knew this was a thing that games featured, but because they the understood the intention of a health bar - to influence player behaviour through a metaphorical resource. It was this understanding that they then mapped their perceptions of their social issue to. In Beggar Clicker, physical heath was presented as a significant consideration when homeless, in Smokeration the health bar represented patient health. However, with notion of a ‘health bar’ as a metaphorical resource to be managed was critically reframed and reapplied outside of ‘health’ context. In Beggar Clicker there were separate resource bars for temperature and hunger; in AnX: Fight for Freedom the resource bar came to stand for morale – an abstracted representation of mental health; and in MotherCare presented a ‘baby meter’ that would deplete over time.

There was therefore a proto-critical (Burn, 2014) meta-language of varying degrees that was present for students. This extended to a deconstruction and

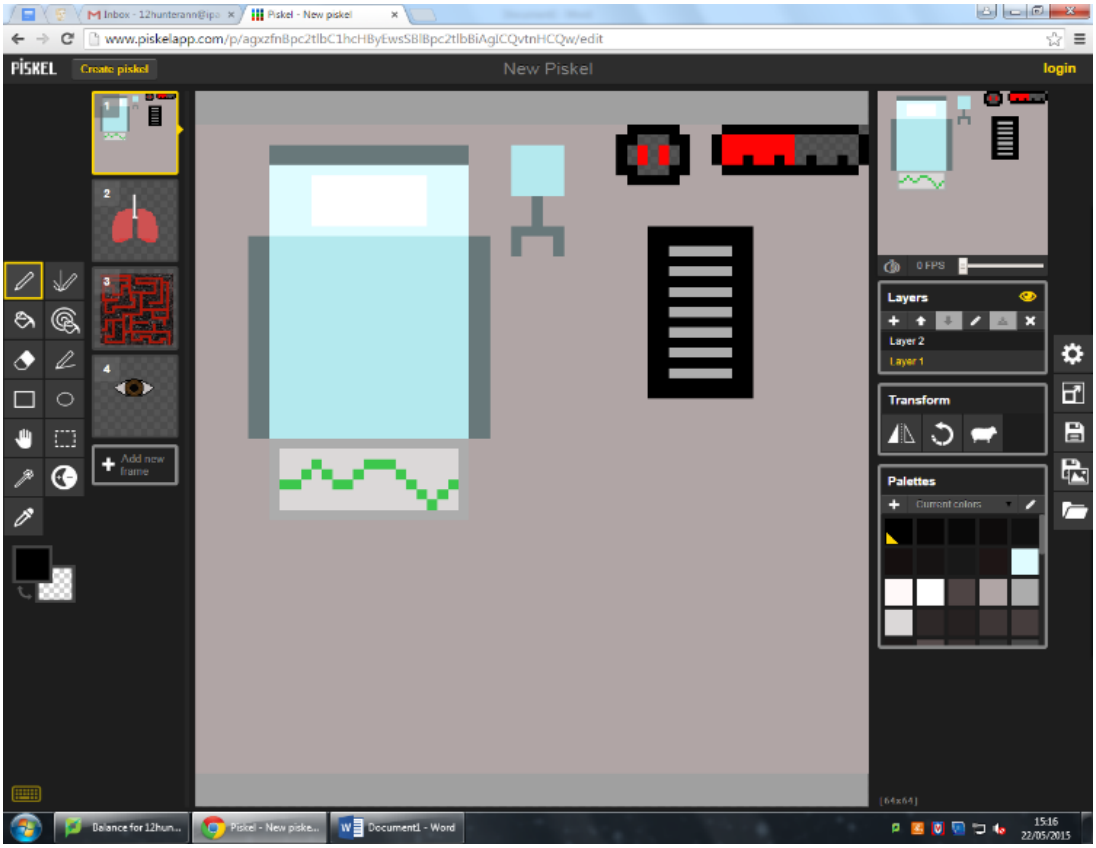


Figure 13: Smokeration, hospital room setting for the game showing a health bar.

critical engagement with the appropriateness of various game design elements with a high degree of autonomy. In this research project, there was an invited porousness between the classroom and the home (Benson 2010, Potter and McDougall 2019). Though the representational decision making and sophisticated approach taken by some students is interesting, what is of relevance for this thesis is the interrogation and integration of learners' experiences of these issues and pre-existing critical literacies into the expectations of the classroom.

A Critical Convergence

The introduction of this pedagogic practice into the classroom can be framed as introducing a site of critical convergence between multiple systems of

meaning. This includes learners' expectations and understanding of games design as discussed previously. However, it also included their perspectives on the social issues they chose as their focus. 'A morale meter will be featured at the bottom of the screen, it gets bigger with some of the pills that you take but goes down as the enemies send mean texts to your phone / hit you.' James, AnX: Fight for Freedom

The purpose of this research project was to explore how games development can develop literacies (as a problematized deictic notion). In this instance, critical framing refers to the capacity to which learners are able to use their ability to represent their social issue through "*interpreting the social and cultural context*" of their designs (The New London Group 1996, p. 88). Now, this discussion is not a direct evaluation of the accuracy of their representations, but instead presents the representational decisions made in service of presenting their social issue[43].

From the games produced, learners made use of the different modal affordances of games to represent their social issue. For instance, in Smokeration the team consciously designed the body parts to be as visually realistic as possible (Figure 14), which would also include '*information about what smoking does to the*

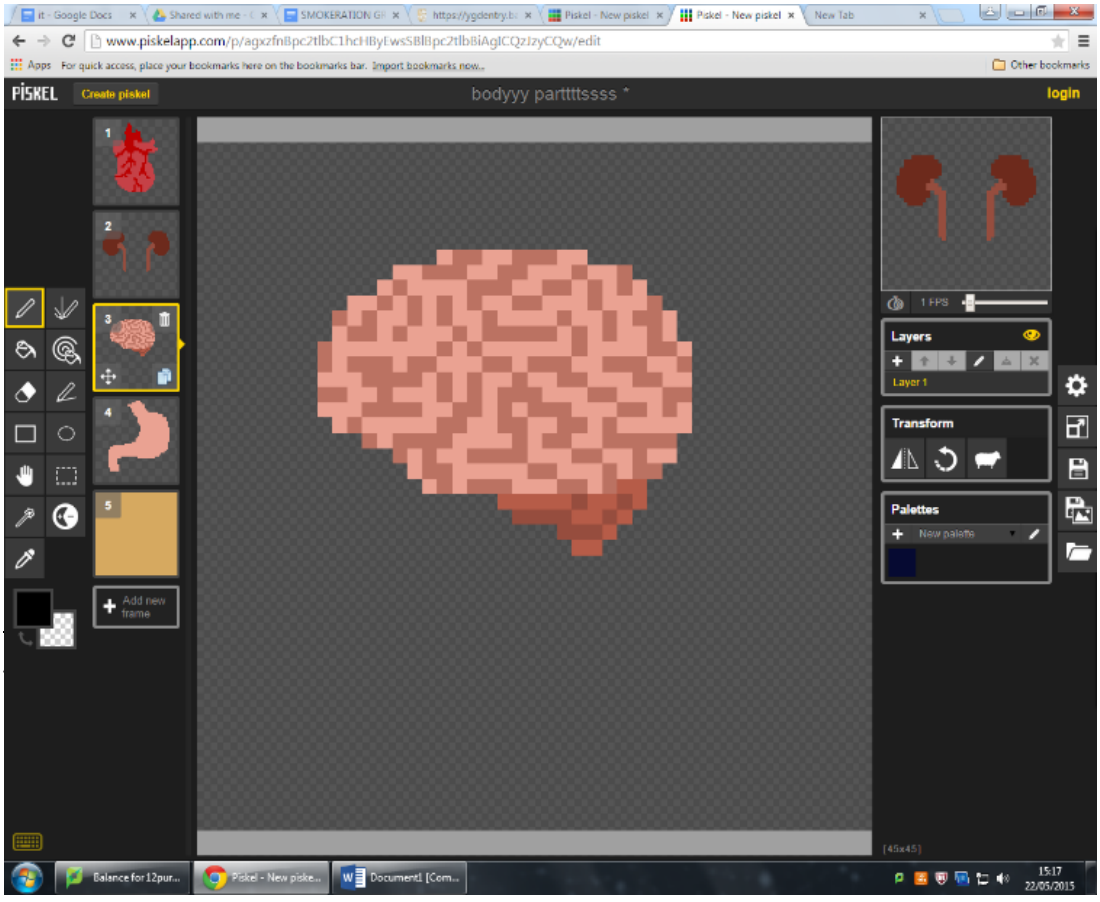


Figure 14: Smokeration, design of 'brain' that would be demonstrate the impact of smoking on the brain.

body part' [44] Further to this, they situated the game in a hospital room *'[t]o tell the player of the game the dangers of smoking'* (Sara, Smokeration).

For instance, the intention behind of MotherCare was '*to educate people on teenage pregnancy and to show the stress and big responsibility that comes with it*' (Abby, MotherCare). To get the sense of *'stress and big responsibility',* in MotherCare the player had to manage various household responsibilities along with managing a 'baby meter' – here acting as a timer. If the time runs out the baby cries and 'its game over back to level one'. Now, these household responsibilities are represented by jobs such that:

> 'the jobs show when furniture appears red and to do the job you click on the furniture, lots of the items come up in red and in each level you have more jobs to do… and the time runs out quicker as the levels go up'. Abby, MotherCare.

As a central premise, the entire game is designed around overwhelming the player, acting as a single mother[45], through continuously increasing 'responsibilities', in the form of items to interact with, coupled with less time as represented by the 'baby meter'. Further, the representation of teenage pregnancy in MotherCare itself was chosen as it directly affected their local community:

[44] Given the, potentially overly graphic, game designs, I half-joking made note of the fact that *'they may be designing a game they are too young to technically play*'.

[45] Of course, there were several assumptions inherent within this game. When asked about why the game focussed on being a 'single' mother specifically, she said that she had designed the game for girls specifically, when asked why she responded: 'because it's a thing boys don't have to worry about'

> 'I learnt that in 2009, Weymouth and Portland had the highest teenage pregnancy rates for 10 years at almost double the national rate.'[46] Abby, MotherCare

Likewise, AnX: Freedom from Fear is a game that started off looking at mental health generally, before focussing specifically on Generalised Anxiety Disorder – as the learners discovered this was a diagnosable medical condition during their research. According to the ICT teacher, they chose this specific issue as a member of their team was directly affected by it. However, not all choices were 'meaningful' in this sense, for some it was a decision made from indecision:

> 'boys were picking because that's what they were suffering with, some boys picked it because they didn't know what else to pick'. ICT Teacher

As will be discussed in the next section there was also a sense of strategic decision-making for some learners as they felt the need to comply with the expectations of the classroom. To be clear then, only some learners choose their social issue because it had direct meaning to them in that they had previously observed it or felt directly affected by it. However, all learners drew on their previous experiences when engaging with the issue. This consideration of their choice illustrates the convergence of different systems of meaning, and that these systems of meaning are ultimately reframed with reference to the dominant system of meaning within the classroom.

To illustrate, there are two examples that offer very different reasons why learners chose the issues they did, but the outcome was much the same. The first is an example that did not constitute part of the *Game Makers* project proper, so here it will be discussed in broad terms. At the request of the ICT Teacher, citing the utility of the games production content I had produced, she asked me to repeat a

[46] This was a continuing issue on the Island that will be discussed again in the next chapter as, according to some residents, this issue had historical roots that, anecdotally, links back to the Island's insularity.

workshop to another group of learners. During a single 100-minute lesson, a team of learners wished to design a game with suicide as their social issue. Their reason for selecting this issue, retroactively disclosed to me by the teacher, was there were several incidents of suicide amongst parents of their friendship group over the previous 6 months.

The teacher and I discussed the implications of their continued engagement with this social issue. It was decided that within a duty of care, citing a lack of expertise in counselling, we decided to ask them to pick a different social issue. In choosing their original issue, the learners picked something of personal significance for them. Our reasons aside, well-intentioned as they were, this still revealed a significant issue in terms of the illusion of participatory practice and learner agency. As such, within these educational settings practices reflective of civic engagement are enabled, and tightly controlled, by educational practitioners. This same negotiation of learners' decision making is seen in the next example, but with a very different underlying set of considerations of course.

In designing the game Obese's Pieces, I found it hard to trust the sincerity of their engagement, as during the character creation process I observed 'a lot of laughing' that seemed inappropriate. I did approach the learners however, as I was concerned that they were just 'making fun'[47] of the character they had created. In addition, the name Obese's Pieces can be seen as indicative of a degree of irreverence in learners' engagement. This engagement was observed by the ICT Teacher:

> **'**Originally they were just looking at the physical effects of obesity and were unaware the images used could be seen as offensive, as a member of the class is overweight they began to realise there are other factors affecting obesity and started to look at this problem in a different light.' ICT Teacher

[47] There is also a tension here with my dual role – as a researcher, perhaps I should not have intervened and simply made a note.

Further to this, the backstory of their main character was heavily inspired, if not directly lifted, from a news story (Higgens 2010). Learners therefore were allowed to engage with games production practices meaningfully and subjectively but within an inexplicit, loosely defined boundary informed by a duty of care, normative frames of reference for intended learning outcomes, and my own personal values. The classroom then is a site of negotiated systems of meaning that is unavoidably mediated by power dynamics. What is of interest are the ways in which learners recognized this and saw the need to comply with certain expectations placed upon them.

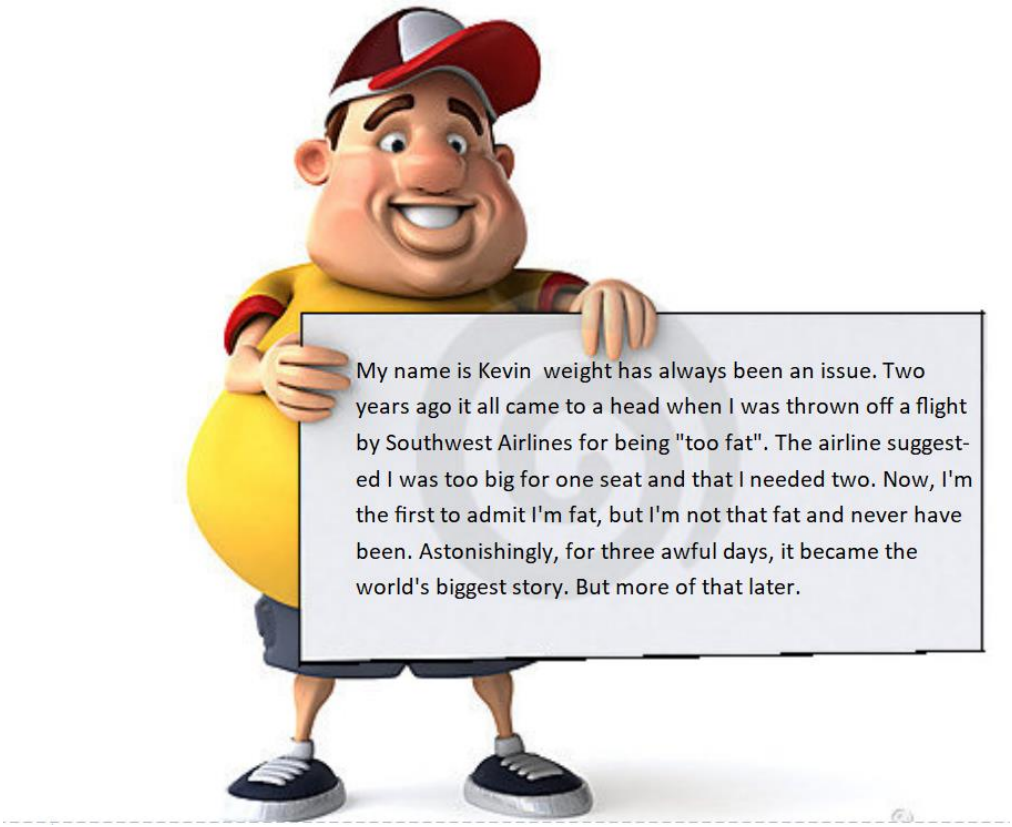


Figure 15: Obese's Pieces, A representation of 'Kevin' the main protagonist, along with his back story, taken from a real-world news story.

Qualified and Strategic Engagements

> 'I enjoyed how much freedom we had, designing, the game although it had to be about a social issue there was not set game'. Joe, Beggar Clicker

Here, I tentatively discuss the levels of engagement and enjoyment as reported by the learners and observed by the teacher and myself. Learners did generally suggest the game maker's workshops was 'FUN!!!! :D [sic]' (Steve, Jack's Adventure). In addition, the ICT teacher made two observation she thought were indicative of engagement:

> 'In a different lesson when they have finished a task for GCSE they will automatically revert back to the gaming task'. ICT teacher

> 'arriving in lessons they would independently start working on the project and continue without any prompts from the teacher'. ICT teacher

The first observation does illustrate that the learners, to a degree, engaged with the game production itself. The second could be more illustrative of respecting the authority of myself as an educator. This was of course a concern in undertaking this research - that in entering a school environment, and positioning myself[48] with some educational authority, I would inherently draw upon the "schooled docility" of the learners – an issue that is often used as a justification and criticism for creative research methods (Buckingham 2011). As important context, it is worth considering the general 'disposition' of the class. As stated by the teacher:

> 'increased or decreased engagement is difficult to gauge as the pupils are quite hard working out of 'respect' to the teacher'. ICT teacher

[48] There was a great deal of rapport between myself and learners as evidenced by their affectionate, and much appreciated, nickname for me: 'Phil Nye The Computer Science Guy'.

In a journal entry at the start of the workshops I make note of my response to this 'docility', as a personal issue for me to address:

> 'There is a personal problem to get over in regards to the 'blank expressions' of the learners. It encourages me to stop in my tracks and seek reassurance that they are actually understanding and taking in what I am saying. There must be a way of doing this indirectly,…'[49]

It is therefore necessary to qualify any discussion of engagement, as it appears that the class itself were already quite engaged 'out of respect' to myself as an educator or indeed as a researcher. Additionally, the frame of reference often used by learners is a comparison to typical educational practices:

> 'More engaging, making a game that educates you is more interesting thIng doing basic research or reading of a power or board' Abby, MotherCare

> 'The whole thing… is quite good instead of a normal boring thing. Better than normal stuff'. Jake, AnX: Fight for Freedom

The comparison made by learners is significant here as it illustrates their reflections on typical educational practices. This is of course not a unique, or particularly interesting, finding – that learners think about their education. Here, however, it presents a useful entry point to discuss how learners engage with typical educational practices and the degree of awareness they have over what is expected of them. That is, to follow the framing of the classroom as a space of negotiated expected practices, they are aware of this negotiation and subsequently what is expected of them.

When discussing the inclusion of a social issue as the central focus of their game, some learners appear to frame this inclusion as something of a necessity. For instance, as reported by a member working on AnX: Fight for Freedom, 'you can

[49] Following up from my discomfort with this, in a separate entry I note after discussing this later with another teacher *'I was told these blank expressions were to be expected'.*

justify it if it's about a social issue' (Jack, AnX: Fight for Freedom). Additionally, the team behind Beggar Clicker, when asked why they chose homelessness as their social issue, simply stated '[a]ll the other ideas had been taken, and I've been doing homeless in English.' (Joe, Beggar Clicker). Now, this may point to the cross-curriculum value of this activity. However, of significance for this research and this thesis more broadly, is a sense of strategic engagement with pedagogic practice.

As suggested in an earlier quote, Joe was not particularly interested in the social issue representation component of these lessons but was engaged with the game production aspects. When asked about this, he suggested that the social issue element was something he saw as 'something that had to be done' (Joe, Beggar Clicker). Further, I am very cautious of asserting the degree to which learners developed new understandings of their social issue, as there is an element of learners performing or speaking to the type of learning that they think is expected of them. For instance:

> 'Yes we have learned about our social issue and it's been very interesting whether we have just refreshed our memories or have learned completely new facts.' Chloe, Smokeration

> 'Yes. It has made me and my group think about things with people with obesity.' Gregg, Obese's Pieces

Of course, this may be an overly critical analysis, and the learners may be sincere in their responses. Given the dual issues of learner compliance with educational authority, and the issues of participant-bias in research, I believe it is worth acknowledging that this, and the response of other learners may be a superficial account. Further to this, in the lesson observations, the ICT teacher noted learners developing new skills in relation to independent learning, problem decomposition and solving, and that they 'learnt organically to work as a team' (ICT teacher). This speaks to one of the key justifications of constructionism, and other forms of project-based learning, in that if a learner is sufficiently motived by the

activity, they will autonomously develop the skills necessary to complete this activity. Overall, the learners' and ICT Teacher's reflections suggest a level of engagement with the production of games. The actuality of the learning that took place, however, is much more diffuse and open for contention.

In a debriefing discussion with the ICT Teacher, it became apparent that from the teacher's perspective learning is framed through a sense of 'progress' that was evidenced, with regard to digital skills, by learners using new pieces of software, abstracting a 'real-world problem', and the production of various documents about their game. I will address this again in the conclusion section of this chapter, as this notional use of progress supported with evidence capture speaks to a normative way of framing the pedagogic appropriateness of this project.

Conclusions and Connections

In this discussion I have presented games selectively, with reference to particularly illustrative examples of the themes discussed. As such, I have potentially given the impression that the learners and the game design artefacts produced in this project are interchangeable which, of course, is not the case. Learners engaged with the practice in different ways, drawing on and prioritising different life-world experiences and motivations. For instance, in producing their games learners chose their social issue and represented it in ways that were *presumably* meaningful to them. I qualify this as 'presumably' not to be dismissive, but to speak to the sense of negotiation by students as they bring their lived experiences into the classroom.

Legitimated Practices

Learners themselves hinted at an awareness that their experiences and perspectives needed to be translated into something that was deemed legitimate by, what they saw as, the requirements of the classroom and school more broadly. In entering this research project, I was aware that there would be a sense of

legitimising educational practices. So, when discussing the critical negotiation in representing their social issues through games, there was perhaps an additional negotiation with what they saw as being expected of them in that setting.

This process of legitimating their experiences in accordance with different systems of meaning was something I found myself undertaking from two perspectives. First, the developing and articulating of learners' gaming proto-literacy through my understanding of game design practice and vocabularies. Second, the sincere - but perhaps naïve - reliance on the ICT teacher to determine whether 'learning' had taken place. Indeed, the construction of this project as a creative research method that is reflective of pedagogic practices was explicitly justified with deference to typical educational practices.

In constructing this project there was a conscious decision to align it with the learning objectives, measures, and goals of the ICT teacher. At the time this methodological decision was rationalized by a discomfort of 'research practices' that have little immediate value within an educational context. With this said, there was frequent, positive, feedback from the ICT Teacher about the work learners were producing. It became apparent that from the teacher's perspective learning is framed through a sense of 'progress'. Interestingly, this then became the situated-normative way of framing the pedagogic appropriateness of the project. Primarily, for the teacher the biggest indicator of progress was their developing ability to use new production tools in the production of game 'assets' and the game itself.

There was a reconciliation by teacher of the "relationships between personal beliefs, experiences and curriculum requirements" (Burnett et al. 2015, p. 4) that this research did not necessarily capture; nor was this research necessarily seeking this out. This reconciliation is something I also experienced and is part of the central antagonism of this thesis. As an educational interloper, I had adopted a rather simplistic, if sincere, perspective of being deferent to my understanding of the curriculum and subsequent educational practices. In practice, undertaking this research and subsequently writing it up became a confrontation with complexity as

multiple systems of meaning overlapped within the classroom. In addition, this became consistent internal interrogation and reflection as the tensions between these systems of meanings emerged in multiple, unpredictable ways.

Seeking Critical Complexity

In writing on the subject of resisting simple, blinkered, or institutionally enumerated perspectives of educational practice, Cathy Burnett advocates for a sensitizing "to those affective, material and embodied dimensions of meaning making" (Burnett and Merchant 2016a, p. 4). In this instance, I became sensitized through confrontation with intersecting layers of meaning and the decisions I had to make.

Perhaps speaking to my naivety of education-in-situ, throughout the project several relevant unanticipated considerations emerged. These ranged from the locally mundane (under-performing projectors, computers laden with malware, and broken peripherals), to the more diffuse, but pervasive, politicizing of education and more diffuse still expectations and normative beliefs about education. There was therefore a necessity to be less digitally centric, but also aware of issues of spatiality, physicality, and community-school dynamics as well as the culture of the school itself.

In critically reflecting upon the use of technology at IPACA there was a disconnect between the external presentation of their digital learning innovations and the internal day-to-day reality. There was a culture of performativity among some members of staff, with various levels of seniority, that was not matched by pedagogic practices, or support thereof, in utilizing technology effectively. This of course loops back to a central theme of solutionism, but perhaps speaks to its manifestation in practice. That is there was a presentation of technology as having significant positive impact, regardless of consideration pedagogic rationales, de-professionalization of teaching and the practical considerations of technology governance.

With distance and reflection, there is an additional personal consideration over the potentially performative use of technology. To a point, I bought into the same performative use of technology in education, as exhibited in this and the previous research project. I do, however, have sense of regret and embarrassment for three reasons. First, it speaks to a lack of criticality on my part. Second, this superficial 'celebration' of the use of technology is something that I have benefitted from to a degree. Third, this superficial use of technology, and the resources devoted to it, has a genuine impact on the educational outcomes and professional practice of staff and students at the school.

Research Situation 3: Digital Families

This chapter has been redacted for reasons of confidentiality.

Conclusion

Introduction

This final chapter draws together the three research situations presented throughout the thesis. In doing so it will highlight various assumptions that impacted the adoption and application of technology in educational settings. Though there may be several contributions made within this thesis, with respect to the specific research projects undertaken, the contribution that I make claim to relates to the necessity of adopting interdisciplinary, reflective, and critical research perspectives. Indeed, as demonstrated in this thesis the attitudes and expectations of technology are complex, at times contradictory, and mediated by imbalanced power dynamics. To apply or research educational technology without this interdisciplinary, reflective and, critical perspective is to miss important insights, to impose the inherent biases of the practitioner on the research, and to be ignorant to the power dynamics at play that tangibly impact users of technology.

My contribution is framed with reference to the research questions posited at the beginning of this thesis:

> To what extent do underlying socio-cultural assumptions and values manifest in expected uses of technology in educational settings?
>
> In what ways does the interplay of academic rigour and practice orientated research create conflict or tension?

Again, these research questions were not the research questions that I started my professional doctorate with. They were retroactively created through reflecting on my journey as an educational practitioner. This contribution has relevance to researchers, developers, and users of technology in educational settings – especially for those stemming from technical backgrounds. For them, my contribution is directive through rationalizing the need to move away from positivistic, interventionist or otherwise 'solutionist' epistemologies. In support of

this move, I use the research situations to illustrate the necessities, challenges, and assurances of adopting an interdisciplinary, reflective, and critical approach. A directive then to ask themselves the same questions I have posited here, but also guidance on the answers they can expect.

For educational researchers and practitioners who already adopt a critical and holistic perspective, and recognize its necessity, the contribution is less directive, and instead reinforces existing discourses through the addition of illustrative examples. In articulating this contribution, I will begin with retroactively assembling the different perspectives of educational technology through the lens of legitimation. This notion of legitimacy emerged through my research, and now forms a useful way of capturing the different ways in which the appropriate use of technology in educational settings is constructed. Indeed, legitimation provides a useful frame of reference to answer my reflectively assembled research questions.

As has been discussed and will be further highlighted in this conclusion, there are indeed numerous underlying socio-cultural assumptions and values that affect the adoption of technology in education. The further my research progressed in trying to understand the utility of technology in education, the less concerned with technology it became. Instead, my research became concerned with the ideologically driven justifications for technology's adoption and usage. Further, and of direct relevance to the educational practitioners who follow a similar trajectory to mine, there is a necessity to negotiate the practical and the theoretical.

As will be discussed through the lens of legitimation theory there is a challenge of undertaking research in a space between the complex, abstracted theorizing of educational settings and the immediate, material, and pragmatic applications. This brings me to my second question. There is an inherent tension between the need for rigorous, and thus abstracted and complex, academic discussions and the pragmatic, actionable contributions to practice. This would be true of any research practitioner. Within the field of educational technology specifically however, this tension is mediated and further problematized by

competing discourses that focus on the pragmatic through an overly simplistic construction of education. An overly simplistic construction that, again, is informed by wider ideological and 'solutionistic' constructions of technology.

This chapter will bring together any potential discursive contributions already made within each research chapter. That is, bring together the various ways in which educational practices with technology are, or are not, legitimized. Crucially however, it will highlight that what constitutes legitimate educational practice is unavoidably impacted by power differentials between different groups of people, institutions, and commercial organizations. In doing so it will reinforce the necessity for educational researchers and practitioners to be conscious of these processes, especially in how they may be contributing to them. It will then discuss the challenges of transitioning to an interdisciplinary, reflective, and critical perspective. In doing so, I provide a reflective account of my experiences, in the hope they are of value, and reassurance, for other researchers and practitioners.

Seeking Legitimacy

> "From the fact that we discover new moral ideas which make previous solutions to moral problems appear questionable, there can indeed result another kind of critique. In the light of such ideas, certain problematic features of these solutions, which have previously gone unnoticed or been taken as self-evident, often first become perceptible." (Weber quoted in Habermas 1976, p. 333)

My contribution is drawn from a critical treatment of the inherited value systems that influenced my initial ontological and epistemological perspectives. Interestingly, before starting on this doctorate I intended to develop technology for educational settings through a commercial social enterprise. It was not until after I had spoken with educators that I realised that I did not know enough about educational practices, or the prescriptions of the educational system, to effectively support educators through developing technology. This was the catalyst for

beginning this doctorate. It is an irony that in seeking certainty over educational practices much of the focus of this discussion is on critically unpacking the certainty put-forward by different groups.

It is not that I do not *know* what effective educational practice looks like. It is that my knowing is inevitably influenced by my own subjective ideology, and this is true of any practitioner entering this field. Further, the more I investigated the more I began realising that nothing can be taken for granted or treated as uncontested. Indeed, nothing should be taken for granted when researching the highly axiologically, epistemologically, and politically contested spaces within which children learn. As discussed, the term that emerged through my research was the notion of legitimacy. As in, what constitutes legitimate use of technology regarding children's education and learning? Fruitfully, legitimacy provides a useful theoretical underpinning for my analysis here that captures the contested, value-driven, and contextualised discourses that justify the ways in which technology should or should not be used.

Legitimacy as an academic concern has a long history in Western philosophical thought dating back to Plato's *The Republic* and Aristotle's *Politics* (Zelditch 2001, Costa-Lopes et al. 2013). Indeed, there is significant scope to the domains in which legitimacy is examined, understood, and prescribed. Interestingly, earlier uses of the term legitimacy were typically concerned with understanding the source of political stability and power. According to Weber:

> "the basis of every system of authority, and correspondingly of every kind of willingness to obey, is a belief, a belief by virtue of which persons exercising authority are lent prestige" (Weber quoted in Habermas 1976, p. 382).

This framing of legitimation is influential in social sciences in its capturing of the necessity for a common belief system through which authority is garnered. This is applicable here as it will become necessary to understand the source of legitimacy for those seeking to inform or prescribe educational practices with

technology – including myself as an educational practitioner. Berger and Luckmann's theory of legitimation is perhaps the most broadly applicable as it is not directly concerned with issues of power and authority, but instead sees legitimation as a natural aspect of any social group.

According to Berger and Luckmann, Legitimation is a second-order process that integrates new meaning into pre-existing meaning that is *"attached to disparate institutional processes"* (Berger and Luckmann 1966, p. 110). The legitimacy of a given practice then is not derived through people's direct belief in that practice, instead legitimacy is derived if justifications for this practice are concordant with an underlying system of beliefs (Zelditch 2001). The focus on the justification of practices in relation to pre-existing values is key to my contribution here.

Focussing on the connection between values and what is perceived as legitimate practice conceptualizes the space between values and practice - a space within which educational practitioners find themselves. Again, within this space there are numerous overlapping means for justifying these practices that are value informed. A key and insidious issue for educational practitioners is that different values do indeed inform educational practices, however these values are often in contest and are not always explicitly examined. Further, as posited by Berger and Luckmann the what is seen to be legitimate *"will depend more on the power than on the theoretical ingenuity of the respective legitimators"* (Berger and Luckmann 1966, p. 126).

The need for critical self-reflectivity has been discussed in the methodology chapter of this thesis. However, the concern is not just methodological in terms of the validity or rigour of any research outcomes. Instead, the concern is two-fold. First, the practitioner's values, not just their epistemology, ontology, and general biography, will shape their practice. As such, it is necessary to critically consider these values as they inform practice. Second, without critical consideration there is a danger of becoming complicit in enacting the value systems of powerful actors.

Typically, this will manifest in discourses of deficiency, deviance, or dismissiveness that are informed by wider socio-cultural ideologies.

Discourses of Deficiency and Deviance

> "any radical deviance from the institutional order appears as a departure from reality. Such deviance may be designated as moral depravity, mental disease, or just plain ignorance." (Berger and Luckmann 1966, p. 83)

Though the specific designations of deviance put forward here are not entirely applicable, save perhaps 'ignorance', the offhand dismissal of critical perspectives or those who do not align with institutional order is apparent in discussions of educational technology - and has been for a while:

> "Teachers, again, will receive rebukes for closing the classroom door to the magic of another technology. Debates over whether computers should be used in classrooms, under what conditions, and to what degree – if at all – will be buried in the scorn heaped upon intransigent teachers." (Cuban 1985, p. 99)

In the research presented in this thesis, dismissal of 'deviance' was typically captured as a sense of deficiency in parents or teachers fulfilling their expected role. For instance, in *Mediating Family Play* broader cultural assumptions of the purpose of play and the role of the parent informed both the development of the mobile application and my frame of reference when undertaking the study. Play was seen as developmentally important, but parents were seen as deficient in their capacity to provide developmentally purposeful forms of play. Though the position of *Hide & Seek* was framed sympathetically, it still reinforced a power dynamic that was disempowering to parents, and justified the company's role in helping parents through technology.

In *Mediating Family Play*, my role as a practitioner in that space cannot be ignored either. It was not until I reflected upon the response from parents that I

recognized my own complicity in reinforcing *Hide & Seek*'s position. Partly due to an epistemological framing that lacked socio-cultural consideration, but also due to an unexamined presumption that technology can provide unproblematic solutions. Indeed, it took this realization and the personal discomfort it brought, to force a deeper axiological reflection such that the value judgements I held:

> "in the light of revised convictions about the facts, [proved] to be incompatible with certain value convictions which we previously held" (Weber quoted in Habermas 1976, p. 333).

I quote Weber here because it presents a focus on the role of values, and the reflecting and articulation of these as convictions about the 'facts'. However, from *Mediating Family Play,* my revised conviction about the facts was that they are contested. Taking facts to mean universally agreed, positivistic, and evidenced understandings, then understanding the value judgements at play in educational spaces is an imperative for practitioners as we are not working with facts. Instead, we work with constructions of education and related actors that are legitimated by those with power.

Informed by this new conviction, the initial intent of *Game Makers* was to develop educational practices that were concordant with what I believed to be valued within that educational space. It was not until after the project completed that I reflected on my complicity in furthering instrumentalist notions of digital skills. However, given the intersection of ideologically driven conceptions of literacy (Auerbach 1992), within wider arguments over the purpose of schooling, a reconciliation with this instrumentalism was both inevitable and complicated by competing constructions.

In discussing what 'literacies' we should be teaching children, digital or otherwise, we are discussing second-order constructions of meaning that are justified as 'correct' through broader normative beliefs and values. Divergence from this is then disincentivised through OFSTED inspections, performance-metrics,

league tables, or other reductive instruments of assessment. Indeed, the initial justification and planning for the *Game Makers* research project was centred on the reconciliation between instrumentalist and socio-critical constructions of educational settings. My rationale for doing so was that any divergence from the institutionalized construction of legitimate educational practice is not only seen as a deficiency on the part of the school and educators but is measurably so.[50]

For my role as an educational flâneur, I was conscious of the degree of privilege I had in how I chose to reconcile with this construction of education. However, as discussed within *Digital Families* particularly, I increasingly found my values at odds with the way The Academy approached the use of educational technology, which was more, to my mind, rooted in performance than pedagogy. Naturally, this is perhaps inevitable given the wider pressures schools face to be 'doing education' with technology, because of the wider perceptions of technology's affordances. Just as *Gamer Makers* became about the Academy's reconciliation with wider legitimating powers, *Digital Families* became about the Academy's own power to legitimate educational practices.

There was a notion of deficiency apparent in *Digital Families* that is comparable to the notion of deficiency that emerged in *Mediating Family Play.* However, the construction of parents as deficient by the Academy was perhaps more closely related to a moralistic assumption as captured in the opening quote to this section. Though parents were using technology, their usage was presumed to be inadequate according to the constructions of learning used by the academy. Crucially, and a clear indicator for why a critical perspective is needed by practitioners, this presumption was mediated by value judgements of them as parents generally. Parents were not just deficient with technology; they were

[50] This was perhaps a projection on my part, but I distinctly remember being very self-conscious about what the ICT teacher had offered in allowing me to take over her classes temporarily. This was rooted in anxiety over thinking if my teaching practices were not adequate in accordance with the checkpoints of the standard curriculum, it was she who would be accountable for this.

deficient broadly. To requote the justification of one member of staff at the Academy "some [parents] don't realise how inadequate they are".

For some stakeholders within the Academy then, parents were framed more as delinquent in their duties than simply deficient in their capabilities. With a less critical and reflective perspective, there was a danger in becoming complicit in this reinforcement of educational practices that are justified through a localized culture of othering due to socio-economic stratification. Indeed, if I had the same uncritical, unconsidered value convictions from *Mediating Family Play* it is likely that I would have been complicit in this reinforcement of ideas of delinquency.

The Value of Simplism

> "Diagnosing what's wrong with young people is not only a favourite activity of digital pundits but also a distinctly profitable one. One result is to legitimate a simplistic discourse about complex matters" (Livingstone 2017, p. 117)

Paralleling and intersecting with the discourses of deficiency discussed throughout this thesis are discourses of overly reductive, simplified perspectives. In undertaking this research, I moved from viewing these discourses as naïve initially, to now an insidious contributory factor to some of the critical issues in educational settings. That is, the legitimacy of these simplistic discourses comes from two sources. First, the fact that they are simple – or easily reconcilable with common sense maxims, or practical implementations. Second, that these are legitimated with reference to dominant ideological belief systems and commercialized practices. Here I will discuss the former before addressing the latter in the following section.

According to Berger and Luckman, our frame of reference for engaging with the world is *"dominated by the pragmatic motive*" (Berger and Luckmann 1966, p. 36). As such, knowledge that does not support current or future pragmatic purposes is deprioritized if not outright disregarded. Therefore, the issue of

simplicity in discourses of educational technology becomes something dialectical across different systems of legitimation. That is, the simplicity offered by "digital pundits" can be viewed as desirable if only because it is easier to integrate into a pragmatic system of meaning. In undertaking research in educational settings, it is therefore necessary to consider this pragmatic frame of reference, not only because of the researchers' intentions to contribute to practice, but also because the pragmatism of any research outcome can become another marker of legitimacy for some.

Later in this chapter I will directly address the challenges of interfacing the abstracted and pragmatic discourses of academic and professional practices. Here however, it is necessary to clearly understand the challenge of undertaking research in educational settings with reference to the pragmatic dominance or frame of reference. In practical terms, this means unpacking, negotiating, or acquiescing to a pre-theoretical *"assemblage of maxims, morals, proverbial nuggets of wisdom, values, beliefs, myths"* (Berger and Luckmann 1966, p. 83). Though there is debate over the role of 'myth' in 'primitive' and contemporary cultures, myths serve an explanatory and moralistic purpose. That is, myth can be seen as a *"primitive science"* (Malinowski 1948, p. 113) or narrative representation of societal values (Lincoln 1999). The reference to 'myths' here is especially illustrative of interfacing the abstracted and pragmatic as the notion of the 'digital native' is now frequently dismissed as such (Livingstone et al. 2009, Ravi et al. 2009, Selwyn 2009, Margaryan, A., Littlejohn, A., & Vojt 2011).

Though dismissed within academic settings the notion of the digital native was still present in my research. This includes with educational practitioners, parents, other scholars, or the various 'digital pundits' that encircle educational settings. Further, even if the term digital native is no longer used, the underlying assumption that children are inherently more skilled than their parents still pervades. With a degree of self-consciousness, I still frequently use the term 'digital native' in discussions with parents and educational practitioners. In my use of the

term, ‘digital native’ is a pre-theoretical, simplistic, discursive representation of a collective perception of generational difference. As discussed in this thesis the term holds currency in certain contexts, despite its critical dismissal in academia. Accordingly, I use the term ‘digital native’ as an initial point of engagement, as something akin to a linguistic shortcut that, according to legitimation theory, speaks to a preeminent, pre-theoretical frame of reference.

To be clear however, it would be elitist to assume that parents who ask questions of their children’s technology usage are unable or unwilling to engage in bigger discussions of socio-material relativism - nor that the pursuit of complexity in academic inquiry is not warranted. Rather, discussions of complexity are not as immediately satisfying of pragmatic considerations. As Livingstone and Sefton-Green observe:

> “but do parents give time to reimagining the education system? They know that they must ensure their child gets to school on time, ready to learn. They know they must check their children’s planner and attend the periodic parent-teacher appointments.” (Livingstone and Sefton-Green 2016, p. 169)

Parents were concerned with the pragmatic necessities of supporting their children’s school education. Again, this does not mean that they did not appraise the school’s approach to learning, augmenting it in the home where necessary. However, their considerations of the education system, or the impact of technology, are teleological and in service of a pragmatic endpoint. To a degree this framing of parents was reflected in the participants *Digital Families.* When undertaking research concerning education and technology then there is a necessity to consider this pragmatic orientation as this may be the dominant framing of research participants. There is, however, a need to be empathic to this pragmatic orientation as it is influenced by the wider framing of parents as deficient.

Throughout the research presented in this thesis, and in my current research and educational experiences, there is a consistent sense of anxiety amongst some parents and teachers regarding the use of technology. This anxiety is understandable when considering the persistent, at times taken for granted, positioning of parents and teachers as ill-equipped to effectively utilize technology. This anxiety is especially understandable when contextualizing this presumed deficiency in wider discourses that increasingly, but vaguely, elevate the importance of technology in education. There is a persistent reference to some inevitable revolutionary disruption to education - reflected in wider assumptions of technology as positively disruptive generally. Technology is not just to be used by parents, teachers and children. Instead, framing it teleologically, technology will enter the domains of education and the home and reshape educational practices.

Again, the reference to significant change is also simplistic and vague – leaving an impression of some inevitable sweeping change afoot, but no pragmatic conception of what this change will look like. According to Morozov "*the paralyzing influence of epochalism induces passivity and limits our response to change*" (Morozov 2014, p. 36). The point I wish to reinforce here is the need for critical engagement as educational researchers and practitioners. Initially, my assumption was that those who drew on simplistic discourses to justify educational practices were doing so pragmatically and, potentially, naively. That is, the focus on the immediate, localized, day-to-day practices of technology speaks to their priorities in that moment. However, there is a reassurance in the simplicity as a counter to vague neologisms, and techno-revolutionary discourses.

In undertaking this research, I increasingly became aware of the pernicious issue of the ideological roots that constitute legitimate educational practices. Further, simplistic discourses are accepted not only because they are simple in the face of complexity, but because they are in some way concordant with wider ideological values. Given the wider assumption that technology is good, the framing of its implementation vaguely, and the positioning of users as deficient, there is

profitability in simplicity. I will discuss the wider ideological considerations and subsequent challenges presented by this elevated valuing of simplistic discourses in the following section.

Conflicting Certainties

> "This brings us to another, equally important, possibility of conflict – that between rival coteries of experts. As long as theories continue to have immediate pragmatic applications, what rivalry may exist is fairly amenable to settlement by means of pragmatic testing." (Berger and Luckmann 1966, p. 137)

As discussed, there are multiple intersecting and competing value systems that inform various constructions of legitimate educational practice. According to Berger and Luckmann, these various value systems bring rise to 'rival coteries of experts', in this instance taking the form of digital pundits, self-styled parenting experts, or new-media evangelists. This section will discuss the use of simplistic discourses by 'experts' in this field, and the competing discourses that they proffer. I will reflect on my experiences in navigating these competing discourses in relation to my axiological reification and epistemological evolution. This section will therefore contribute an articulation of the challenges, and necessity, of adopting a critical stance in educational research and practice.

Throughout this doctorate there was a need for self-reflection and negotiation with educational expectations that go beyond typical considerations of epistemology. My initial positivistic approach was in part driven by my *"cognitive quest for absolute assurance"* (Dewey 1929, p. 28), naively presuming that it was appropriate, or possible, to separate theory from practice. I will address the relation of theory to practice later in this chapter. Here, I wish to discuss how this 'quest' intersects with the self-legitimizing simplistic discourses surrounding educational technology. The value of simplistic discourses is, again, that they offer certainty. Take for example the use of the term 'solution' apparent in justifications

of educational technology. As put forward by Berger and Luckmann, the *"fundamental legitimating 'explanations' are, so to speak, built into the vocabulary".* (Berger and Luckmann 1966, p. 112).

Descriptions of classroom learning technologies as solutions are self-legitimizing though their simultaneous problematizing and simplifying of educational contexts. This notion of a 'solution' became a source of personal consternation and axiological negotiation after I attended the 2013 British Educational Technology Tradeshow (BETT). Consternation as it was assuming an overly simplistic perspective that to a point, profited from the anxieties of teachers and parents and the pressures schools experience to be using technology. Axiological negotiation as the assurance offered by the rhetoric justifying various technology solutions was, to a degree, reflected in my own goal to seek, and subsequently provide, certainty in the use of educational technology.

BETT is, of course, not entirely representative of the complex relationship between educational institutions, commercial organizations, and governing bodies. However, it is usefully illustrative of the self-elevation and self-legitimizing of commercial entities and professional nomenclaturists that seek to offer certainty in the form of learning 'solutions' and pseudo-academic texts. Both of which legitimate educational practices with reference to ideologically instrumentalist constructions of learning and, at times, reinforce the presumed deficiency of certain stakeholders. A common discursive mechanism deployed here is the production of *"vague neologisms*" (Berry and Dieter 2015, p. 4) that become self-legitimizing. According to Morozov (2014, p. 36):

> "for the novel buzzword – coined only because we are apparently on the brink of a new era – is fed back into the system as definite proof that the era is indeed new."

The challenge I faced as an educational researcher and practitioner when entering a field that is influenced by these simplistic, self-justifying discourses were

internal and external. Internally, it was necessary to reconcile these wider discourses and subsequent expectations of practice, with my own epistemology and axiology. They offered certainty, which was something I valued. In addition, however, there is an allure to being able to offer certainty. Presenting simplistic rhetoric, punctuated by in-fashion buzzwords and neologisms, may be easier and more readily accepted than discussions of socio-material complexity and qualified recommendations for practice. Externally the legitimacy of any educational research and practice must be reconciled with pre-eminent, ideologically rooted pragmatic systems of meaning reinforced through self-appointed, uncritical, *"full-time legitimators"* (Berger and Luckmann 1966, p. 113) of simplistic discourses.

The tension between the complexity of academic inquiry and pragmatic implementation will be discussed in the next section. Here I wish to make explicit that this tension exists within wider systems of legitimation that are mediated by power. As suggested by Berger and Luckman, theoretical competition may be settled through pragmatic implementation. However, the lens through which pragmatic implementation is evaluated is ideologically rooted either through the reinforcement of wider socio-cultural beliefs, or directly measured against instrumentalized constructions of education.

Of course, it would be impossible and self-defeating to decouple the socio-cultural from the instrumental - though there is a temptation to do so for the purpose of clearly demarcating the various forces that might affect educational research. Instrumentalism of educational practices is informed by the socio-cultural and ideological, and vice versa. The instrumentalism of educational settings discussed in *Game Makers* illustrated, to a point, the wider ideological neoliberalisation of the education system. Indeed, within the *Game Makers* project, having reflected on my experiences in *Mediating Family Play*, there was a conscious effort to undertake research that was concordant with instrumentalised notions of education. Within this project I was complicit in reinforcing this dominant construction of education out of a sense of deference to this model of education.

In retrospect the intention of *Game Makers* was perhaps naïve. It was not until after the project concluded that I reflected on my complicity in furthering instrumentalist notions of digital *skills*. Of course, this is not necessarily a bad thing, but it is something that should be approached with critical, reflective awareness. For instance, had I presented a project to the academy that was not aligned with this instrumentalist notion it is unlikely that the project would have been undertaken - especially if this project had been presented as a direct resistance or subversion of the learning practices the academy necessitated. However, this tension between the dominant ideologies of education and my axiological position did reach an ontological tipping point in *Digital Families.*

Cultivating Crisis

> "present curriculum planning is based on the premise that traditional patterns could as well be otherwise. Administrative planning produces a universal pressure for legitimation in a sphere that was once distinguished precisely for its power of self-legitimation." (Habermas 1976, p. 71).

Legitimation Crisis is a theory posited by Jürgen Habermas to capture emergent resistance to administrative intervention from institutions, or those generally in power (Habermas 1976, Plant 1982). This resistance is in response to a tension between neoliberal modes of administrative modelling or accountability and its structural dissimilarity with areas of cultural tradition or areas of practice. Reflecting Berger and Luckmann's elevation of the pragmatic in constituting legitimate knowledge, according the Habermas the cultural tradition and 'nature-like' practices of pre-codified education are self-legitimizing. It is only when the this cultural tradition is "objectivistically prepared and strategically employed"(Habermas 1976, p. 71) are explicit processes of legitimation required.

Here, I use this notion of legitimation crisis to capture the legitimation processes that are taking place in education and, crucially for my contribution,

focus on the position of the educational researcher or practitioner. To revisit my first research question:

> To what extent do underlying socio-cultural assumptions and values manifest in expected uses of technology in educational settings?

The answer to this is obvious, but incomplete. There are numerous socio-cultural assumptions and values that influence the expected use of technology in educational settings. Further, these assumptions and values manifest and affect practices in different ways. Again, this thesis cannot ascertain and outline these values with any sense of finality. The crucial takeaway, however, is not that there are assumptions and values that affect educational practices, but that they are ideologically rooted in powerful systems of legitimation. That is, these socio-cultural assumptions are frequently treated as taken-for-granted common sense, or instrumentally codified. According to Habermas, strategies for legitimation include discursive approaches that *"at once confirm and exploit existing structures of prejudice"* (Habermas 1976, p. 70).

The contribution then focusses on the role of educators and researchers in navigating, negotiating, or challenging these systems of legitimation. In Habermas' conception of the curriculum as an act of systematic legitimation by those in power, then teaching outside of the curriculum becomes an act of rebellion. Of course, for those who enact or are complicit in this standard curriculum, this rebellion can be viewed as an act of gross deviance or simple deficiency. Generally, the instrumentality of educational practices is frequently problematized in academic literature, but it is a necessary reality for most educational professionals. Even if the instrumentalist approach to education is not something they axiologically or epistemologically agree with, if they are employed in state schools there is a reconciliation with this instrumentalism. As captured by Gee when discussing the discursive construction of meaning:

> "Meanings are ultimately rooted between different social practices with different interests by people who share or seek to share some common ground. Power plays an important role in these negotiations" (Gee 1996, p. 12)

For some teachers then, there is a negotiation but with a significant power imbalance. However, for some stakeholders within educational or learning settings, it is not always clear that this is something to be negotiated. For instance, in *Game Makers* there was a sense of awareness amongst learners that there were certain educational conventions they were expected to conform to. Further, in *Digital Families* the vague, but tech-centric, framing of learning put forward by the Academy was deferentially accepted. In addition, educational spaces are porous with other powerful value systems contributing to expectations of legitimate practice that are, again, not always clearly negotiable - either because educational stakeholders are disempowered through discourses of deficiency, or because these values systems are treated as taken for granted and mediated by those with significant power. Again, when there are competing theories, a theory may be demonstrated:

> "to be pragmatically superior not by virtue of its intrinsic qualities, but by its applicability to the social interest of the group that has become its 'carrier'". (Berger and Luckmann 1966, p. 134)

Take, for example, the then Minister for Education Damian Hinds' opening speech at BETT 2019. This speech touches upon several discursive framings of educational technology raised in this thesis, such as the unmet expectations of technology not improving education, and the subsequent further expectations placed on technology. With reference to this, he suggests "in some ways I feel we are still in 1987" (Hinds 2019). To a point I agree with this, as the same rhetorical, naïve capitalistic justifications for technology are just as apparent as they were in the 1980s (Cuban 1985). As Hind argues, "we also need the EdTech companies to come up with more solutions" (Hinds 2019).

Given the context in which the speech is presented it is not surprising that Hinds further reinforces a perspective of naïve capitalism – referring to the need of having efficient markets, and an informed marketplace. Note the broader reference to the education system as needing to be an informed marketplace. The obvious implication that they are currently not informed. The less obvious, but more insidious implication, is the framing of educational settings as, again, deficient in some form of expertise in educational technology - all of which is of course wrapped in a neo-liberal, capitalist, framing that devolves responsibility for educational contexts to private organizations and schools themselves.

Now, the notion of an informed marketplace is surprisingly agreeable, to a point, from my critical, interdisciplinary-academic perspective. The neoliberal framing of commercialised solutionism aside, there is indeed a need to inform - and be informed by - educational practitioners. However, this neoliberal framing is too big an aside to ignore – in much the same way gendered associations of technology; instrumentality in schools; socio-economic class markers are too significant to ignore. Within this context then, the role of the educational researcher and practitioner is that of a cultivator of crisis. That is, taking the perspective of being aware of, and critically unpacking the source of, processes of legitimation.

There was a trajectory over this research that involved an internal interrogation with my own position as a researcher. This interrogation was primarily centred on critically reflecting on my inherited values and how they informed my research practices. This started from a naïve positivistic perspective, moving to an ontological fluidity and social constructivism. Indeed, as discussed within *Digital Families*, there was a frustration in the Academy's enactment of education and the reinforcement of this model to the parents I worked with. Of course, this was further frustrated by localised socio-cultural class dynamics and prejudice. This was part of my motivation for the loss of my demarcated identity as a researcher, and instead adopting something more akin to community outreach practitioner. At some point I had decided the Academy had a legitimacy deficit.

On reflection I now recognize that the Academy itself was itself buffeted by wider forces that dictated its adoption, and uses, of technology. Further, I recognize that this questioning of the legitimacy of the Academy was, and should have always been, a key part of this research. Indeed, the questioning of legitimacy should be a key part of any educational research or practice. This is not to undermine or be overly cynical - or even be antagonistic-by-default, but there is a necessity to 'cultivate crisis' through questioning the source of legitimacy. To do otherwise would be to present a blinkered perspective of the assemblages of meaning apparent in educational and learning settings.

The need for questioning the source of legitimacy for justifications of educational technology has led to two trends in my research as represented in this thesis. First, the further it explored technology in education, the less focused on technology it became. Second, in my efforts to understand and contribute to practice, the more abstracted and philosophical my approach became. The first trend is easy to reconcile. Not only is it necessary to view educational spaces as complex assemblages of meaning, but there is also an ethical necessity to be conscious of the ways in which technology's perceived role in education and learning is reflective of, and reinforces, issues of inequality. The second trend cannot be reconciled here with a sense of fixed finality, though it is a necessary point of discussion and directly answers my second research question.

Abstracting Contributions

There is a core tension in the write up of this concluding chapter, and the articulation of my contribution to practice. This tension is centred on the necessity to balance the abstracted and complex discussions in academia with the discourses of educational practices which are "*dominated by the pragmatic motive"* (Berger and Luckmann 1966, p. 36). Indeed, as I undertook this research and reflected upon it in this thesis the less confident I became in being able to lay claim to a tangible, concrete contribution. Nonetheless, there is a contribution to be made in

documenting and reflecting on these challenges – especially with regard to my second research question:

> In what ways does the interplay of academic rigour and practice orientated research create conflict or tension?

There is a tension, and this tension is not easily or immutably reconcilable and, as I argue here, nor should it be. Previously in this chapter I have articulated the importance of considering the ideologically rooted values and assumptions that inform educational practices through socio-cultural discourse or institutional codification. In this articulation I have addressed, where appropriate, the role of the researcher as having the potential to serve an emancipatory role, or at the least to not be naively complicit in the reinforcement of problematic power dynamics. Here it is necessary to consider the role of the researcher in enacting their own processes of legitimation through symbolic theorizing.

According to Berger and Luckmann, as well as a horizontal intersection of different expectations of legitimate practices across systems of meaning, legitimation can be analysed 'vertically' from initial awareness to the development of "*bodies of theoretical tradition"* populated with "*full-time legitimators"* (Berger and Luckmann 1966, p. 113). This framing of the full-time legitimator is a useful, if slightly awkward, way of capturing the position of the educational researcher, and the power that they hold to legitimate knowledge. Of course, what constitutes legitimate knowledge is consistently questioned, investigated, and developed within academic contexts. What is of interest for my contribution is the trend toward increasing complexity and a potential abstracted perspective from practical realities.

In the *Quest for Certainty* John Dewey posited that philosophers and empirical researchers prioritized abstract theory and cultivated *"depreciation of action, of doing and making"*(Dewey 1929, p. 4). He argues that prioritizing

knowledge acquired through 'cognitive means', at the exclusion of practical reality, creates a disconnect from reality. From the perspective of legitimation, the:

> "disclosure of the characteristics of antecedent existence and essences, and that properties of value found therein provide the authoritative standards for the conduct of life." (Dewey 1929)

This is in agreement with Berger and Luckmann's framing of bodies of theoretical tradition that transcend "*[t]he sphere of pragmatic application*" (Berger and Luckmann 1966, p. 113). As such, knowledge deemed legitimate in academia may be valued differently in practical contexts. Further, there is an additional consideration in the current approaches to researching educational technology that moves away from tech-centric, or reductive discourses. A movement away from, to borrow a term from the field of Computer Science, *"abstraction as a process [of] ignoring (or dropping, or neglecting) features with which one is not concerned"* (Colburn and Shute 2007, p. 171). For instance, as argued by Cathy Burnett and Guy Merchant:

> "materiality of the research process is elided in scientific studies along with all its messiness, nuances, uncertainties and regularities". (Burnett and Merchant 2016a, p. 28)

Burnett and Merchant advocate for the Baroque as a means of codifying research complexity without becoming a self-defeating exercise. Indeed, this engagement with 'messiness' as a necessary part of understanding literacy and meaning-making is reflected in the transformative process of undertaking this thesis. That is, I started this research from a positivistic perspective, moving to embracing and advocating for 'messier' research that highlights complexity. As a researcher then there is a necessity to engage with these messier research approaches as, within academic contexts, simplistic discourses are illegitimate. The challenge, again, is the intersection of the academic and practical domains, whilst flanked by wider commercially driven, reductive discourse.

In the afterword of the *Digital Media, Culture and Education: Theorizing Third Space Literacies*, there is a collective reflective discussion by four formative academics in the field of education research.[51] Among several points of concern for Julian McDougall, John Potter, Cathy Burnett, and Neil Selwyn, is the importance of language and the loss of meaning, or intent, as *"powerful and politically astute concepts"* (Selwyn quoted in Potter and McDougall 2017, p. 169) are used in the educational field. As articulated by Cathy Burnet in use of *third space* theory in educational settings:

> "I share concerns about how the idea of *third space* gets translated in practice. I worry it gets seen simply in terms of special projects. I worry it gets seen simply in terms of special projects or 'not school' activities; *third space* becomes an add-on – or enhancement – which deflects from more radical reworkings of education and the role of digital media." (Burnett quoted in Potter and McDougall 2017, p. 170)

To reiterate, there is a risk then that theoretical intention is misconstrued, misinterpreted, or lost as theory is operationalized into practice. This is reflected by Berger and Luckmann's discussion of the transmission of meaning as *"institutional meanings tend to become simplified in the process of transmission".* (Berger and Luckmann 1966, p. 87). Of course, my intention is not to imply that those outside of academia are using this language illegitimately for not understanding meaning constructed in academia. Instead, my intention is to make explicit the potential disconnect between what is considered legitimate by academics compared to other stakeholders. That is, the quest for generalizable *uncertainty* in research does not readily translate to pragmatic, operationalizable, *certainty* desired in practice.

> 'Of all the questions I am regularly asked by journalists, policy-makers and parents, the most common is "at what age children should be allowed a

[51] Or to use the terminology of Berger and Luckman, "*officially accredited definers of reality "* in educational research at least (Berger and Luckmann 1966, p. 115).

> smartphone'. My answer – when a child is ready for it, depending on the child and the circumstances – is generally unwelcome. (Livingstone 2017, p. 1)

As I am frequently viewed as an expert in this area, I am frequently asked the same questions and experience the same subsequent tensions that Sonia Livingstone captures above. Further, I imagine this internal tension is common to academics working in this discipline and is reflective of the intersection of theory and practice. It is certainly a situation I frequently find myself in. To provide a simple answer would be disingenuous, but to expound the complexity of the question is rarely, in my experience, satisfactory. This necessity for actionable research is informed by the pre-eminence of pragmatic systems of meaning and the emergence of self-appointed, uncritical, "*full-time legitimators"* (Berger and Luckmann 1966, p. 113) of simplistic discourses.

There is a need to be axiologically clear and fixed considering the critical issues at play in educational spaces, but epistemologically and ontologically flexible to understand and inform practices within these spaces. Or, the researcher's capacity to inform practices is predicated on the "*limits of theoretical ambition and ingenuity*" (Berger and Luckmann 1966, p. 115). Its for this reason that I made the decision to adopt the bricoleur (Latour 1993) approach outlined in the methodology chapter of this thesis. Further, it is the reason that I centre my contribution on articulating the necessity and challenges of transitioning to this researcher position.

Closing Reflections

This thesis presented a retroactive, reflective assemblage of three research situations. Individually, these research situations captured different assumptions that inform the expected and subsequent uses of technology in educational and learning settings. Collectively, they are presented as a part of my developmental trajectory as a researcher toward a critical, holistic perspective. Within this chapter, I articulate the specific contributions I make through this reflective assemblage. In

accordance with other researchers in this area, I demonstrate some of the different ways that technology usage is mediated by ideologically rooted power dynamics. Additionally, I make a direct contribution to researchers following a similar trajectory.

For researchers adopting a positivistic perspective, there is necessity to consider socio-cultural and critical issues. There is not anything inherently problematic with a positivistic perspective, but to do so without acknowledging socio-cultural or critical issues is to miss important insights and to, potentially, reinforce problematic power-dynamics. Further, as researchers it is necessary to balance and mediate this need for holistic, increasingly complex perspectives, with the potential pragmatic orientations of educational practitioners, and the dominance of instrumentalist constructions of education.

References

Adams, T., Holmon Jones, S., and Ellis, C., 2015. *Autoethnography: Understanding Qualitative Research*. Oxford: Oxford University Press.

Alnawajha, S. K., 2014. PARENTAL PERCEPTIONS OF THE IMPORTANCE OF COMPUTER USAGE IN THE EDUCATIONAL PROCESS OF THEIR CHILDREN IN ELEMENTARY SCHOOLS : AN EXPLORATORY STUDY, 2 (9), 65–72.

Apperley, T. and Beavis, C., 2013. A model for critical games literacy. *E-Learning and Digital Media*, 10 (1), 1–12.

Apperley, T., Jayemanne, D., and Nansen, B., 2016. Postdigital Literacies: Materiality, Mobility and the Aesthetics of Recruitment. *In*: Parry, B., Burnett, C., and Merchant, G., eds. *Literacy, Media, Technology: Past, Present and Future*. London: Bloomsbury Publishing PLC, 203–219.

Arendt, H., 1958. *The Human Condition*. Chicago: University of Chicago Press.

Asbjornsen, D., Bevort, E., De Vos, S., Eggert, A., Pereira, S., and Verbist, T., 2016. *Discovering Media Together: Why Good Parenting also Includes Media Education.* Media Literacy in Europe: Inspiring Ways to Involve Parents. Antwerp.

Atkinson, P. and Hammersley, M., 1994. Ethnography and Particiapnt Observation. *In*: *Handbook of Qualitative Research*. Thousand Oaks: Sage Publication, 248–261.

Auerbach, E., 1992. Literacy and Ideology. *Annual Review of Applied Linguistics* [online], 12, 71–85. Available from: https://www-cambridge-org.acces.bibl.ulaval.ca/core/services/aop-cambridge-core/content/view/5FB4A5285E49EDE84D50AC822CBDE4D1/S0267190500002154a.pdf/literacy_and_ideology.pdf.

Austin, W., Knaus, C., and Meneguelli, A., 1997. Who talks to their kids about TV: A clarification of demographic correlates of parental mediation pattern. *Communication Research Reports*, 14 (4), 418–430.

BAFTA, 2018. *BAFTA Young Game Designers*. BAFTA.

Ball, S., 1993. Self-doubt and Soft Data: Social and Technical Trajectories in Ethnographic Fieldwork. *In*: Hammersley, M., ed. *Educational Research: Volume One: Current Issues*. 32–48.

Ball, S. J., 1990. Self-doubt and soft data: social and technical trajectories in ethnographic fieldwork. *International Journal of Qualitative Studies in*

Education [online], 3 (2), 157–171. Available from: http://dx.doi.org/10.1080/0951839900030204.

Ball, S. J., 2003. The teacher's soul and the terrors of performativity. *Journal of Education Policy*, 18 (2), 215–228.

Bascom, W., 1983. Malinowski's Contributions to the Study of Folklore. *Folklore*, 94 (2), 163–172.

Bayne, S. and Jen, R., 2011. 'Digital Native' and 'Digital Immigrant' Discourses. *In*: Ray, L. and Bayne, S., eds. *Digital Difference*. 159–169.

Bebell, D., Russell, M., and O'Dwyer, L., 2004. Measuring Teachers' Technology Uses: Why Multiple-Measures Are More Revealing. *Journal of Research on Technology in Education (International Society for Technology in Education)* [online], 37 (1), 45–63. Available from: https://hpu.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=14315440&site=ehost-live&scope=site.

Benson, S., 2010. "I Don't Know If That'd Be English or Not": Third Space Theory and Literacy Instruction. *Journal of Adolescent & Adult Literacy*, 53, 555–563.

Bergen, D., 2002. The role of pretend play in children's cognitive development. *Early Childhood Research & Practice*, 4 (1), n1.

Berger, P. L. and Luckmann, T., 1966. *The social construction of reality* [online]. Penguin Group. London: Penguin Group. Available from: http://qix.sagepub.com/content/1/1/19.short.

Berry, D. and Dieter, M., 2015. Thinking Postdigital Aesthetics: Art, Computation And Desgin. *In*: Berry, D. and Dieter, M., eds. *Postdigital Aesthetics: Art, Computation And Desgin*. London: Palgrave Macmillan, 1–11.

Bettey, J., 1970. *The Island and Royal Manor of Portland: Some aspects of its History with particular reference to the period 1750 - 1851*. Weymouth: Sherren and Son Ltd.

Bhabha, H. K., 1992. The World and The Home. *Social Text*, 39 (31), 141–153.

Bishop, J. and Curtis, M., 2001. *Play today in the primary school playground*. Buckingham: Open University Press.

Blaikie, N., 2007. *Approaches to Social Inquiry*. 2nd ed. Cambridge: Polity.

Blum-Ross, A. and Livingstone, S., 2016. *MEDIA POLICY BRIEF 17 Families and screen time : Current advice and emerging research*. London.

Bogost, I., 2007. *Persuasive games: The expressive power of videogames* [online]. Cambridge, MA: The MIT Press. Available from: http://onlinelibrary.wiley.com/doi/10.1002/cbdv.200490137/abstract [Accessed 6 Jan 2012].

Bogost, I., 2011. *How to do things with videogames*. U of Minnesota Press.

Bohman, J., 2016. *Critical Theory* [online]. The Stanford Encylopedia of Philosophy. Metaphysics Research Lab, Stanford University. Available from: https://plato.stanford.edu/archives/fall2016/entries/critical-theory/ [Accessed 7 Jun 2017].

Bourdieu, P., 2008. *Pierre Bourdieu: Sketch for a Self-Analysis*. Chicago: University of Chicago Press.

Bourdieu, P. and Wacquant, L. J. D., 1992. *An Invitation to reflexive sociology*. London: Polity Press.

Braun, V. and Clarke, V., 2006. Using Thematic Analysis in Pscyhology. *Qualitative Research in Psychology*, 3, 77–101.

Brenoff, A., 2017. There's No Such Thing As 'Digital Natives'. *Huffington Post* [online], 24 August 2017. Available from: https://www.huffingtonpost.co.uk/entry/digital-natives-dont-actually-exist_us_599c985de4b0a296083a9e8a?guccounter=1&guce_referrer_us=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvLnVrLw&guce_referrer_cs=OQf_OnAUuCXN3kK72vrg8w.

Broadhead, P., 2003. *Early Years Play and Learning: Developing Social Skills and Cooperation*. London: Routledge.

Broadhead, P., 2006. Developing an understanding of young children's learning through play: the place of observation, interaction and reflection. *British Educational Research Journal*, 32 (2), 191–207.

Bruner, J. S., 1961. The act of discovery. *Harvard educational review*.

Bryman, A., 2015. *Social Research Methods*. 4th ed. Oxford: Oxford University Press.

Buckingham, D., 2007a. *Beyond Technology: Children's Learning in the Age of Digital Culture*. 1st ed. Cambridge, UK: Polity Press, Wiley.

Buckingham, D., 2007b. Digital Media Literacies : rethinking media education in the age of the Internet. *Research in Comparative and International Education*, 2 (1), 43–55.

Buckingham, D., 2008. *After the Death of Childhood*. Blackwell.

Buckingham, D., 2009. `Creative' visual methods in media research: possibilities, problems and proposals. *Media, Culture & Society*, 31 (4), 633–652.

Buckingham, D., 2010a. Do We Really Need Media Education 2.0? Teaching Media in the Age of Participatory Culture. *In*: *Digital Contnet Creation* [online]. Available from: http://eric.ed.gov/ERICWebPortal/recordDetail?accno=EJ745810.

Buckingham, D., 2010b. Young People, the Internet, and Civic Participation: An Overview of Key Findings from the CivicWeb Project. *International Journal of Learning and Media*, 2 (1), 15–24.

Buckingham, D., 2011. Defining Digital Literacy: What do young people need to know? *In*: Lankshear, C. and Knobel, M., eds. *Digital Literacies: Concepts, policies, and practices*. 263–277.

Buckingham, D., 2013. Is there a Digital Generation. *In*: Buckingham, D. and Willet, R., eds. *Digital Generations: Children, Young People and the New Media*. Mahwah: Erlbaum, 1-.

Buckingham, D. and Burn, A., 2007. Game Literacy in Theory and Practice. *Journal of Educational Multimedia and Hypermedia* [online], 16 (3), 323–349. Available from: http://eprints.ioe.ac.uk/4224/.

Burn, A., 2013. Computer games on the playground: ludic systems, dramatized narrative and virtual embodiment. *Children, Media And Playground Cultures: Ethnographic studies of school playtimes*, 120–144.

Burn, A., 2016a. Liber Ludens: Games, Play and Learning. *In*: Andrews, A., Haythornthwaite, C., Ransman, J., and Kazmer, M., eds. *The Sage Handbook of e-learning Research*. London: Sage.

Burn, A., 2016b. Games, films and media literacy: frameworks for multimodal analysis. *In*: Knobel, M. and Lankshear, C., eds. *Researching New Literacies: Design, Theory and Data in Sociocultural Investigation (New Literacies and Digital Epistemologies)*. New York: Peter Lang, 1–38.

Burn, A., Bryer, T., and Coles, J., 2016. Playing Beowulf: Bringing Literature, Drama, Media and Computing togetehr in English for the new curriculum. *Teaching English*, 69 (12).

Burnett, C., 2013. Learning , literacies and new technologies : the current context and future possibilities. *In*: Larson, J. and Marsh, J., eds. *The SAGE Handbook of Early Childhood Literacy.* London: SAGE, 575–587.

Burnett, C., 2014. Investigating pupils' interactions around digital texts: A spatial perspective on the 'classroom-ness' of digital literacy practices in schools. *Educational Review*, 66 (2), 192–209.

Burnett, C., Daniels, K., Gray, L., and Myers, J., 2015. Investigating student teachers' presentations of literacy and literacy pedagogy in a complex context. *Teacher Development*, 19 (3), 275–293.

Burnett, C. and Merchant, G., 2016a. Boxes of Poison: Baroque Technique as Antidote to Simple Views of Literacy. *Journal of Literacy Research* [online], 48 (3), 258–279. Available from: https://doi.org/10.1177/1086296X16668625.

Burnett, C. and Merchant, G., 2016b. Assembling Virtual Play in the Classroom. *In*: Parry, B., Burnett, C., and Merchant, G., eds. *Literacy, Media, Technology: Past, Present and Future*. London: Bloomsbury Publishing PLC, 219–230.

Burnett, C., Merchant, G., Pahl, K., and Rowsell, J., 2014. The (im) materiality of literacy : the significance of subjectivity to new literacies research . *Discourse: Studies in the Cultural Politics of Education*, 35 (1), 90–103.

Burnett, C., Merchant, G., and Parry, B., 2016. Past, Present, Future. *In*: Burnett, C., Merchant, G., and Parry, B., eds. *Learning, Media, Techology: Past, Present and Future*. London: Bloomsbury Publishing PLC, 233–243.

Burr, V., 2015. *Social Constructionism*. London: Routledge.

Calleja, G., 2007. Digital games as designed experience: Reframing the concept of immersion. *Unpublished Doctoral Thesis, Victoria University of …* [online], 256. Available from: http://www.gordoncalleja.com/GordonCalleja_Digital_Games_as_Designed_Experience.pdf.

Chandler, D., 1995. *Technological or media determinism*.

Chartier, A., 2009. The Teaching of Literacy Skills in Western Europe: An Historical Perspective. *In*: *The Cambridge Handbook of Literacy*. New York: Cambridge University Press, 451–467.

Chung, K. K. and Silva, A. D. De, 2013. Effects of a Pretend Play Intervention on Executive Functioning Tasks.

Clara, O. and Brooks, G., 2012. *Evidence of the Wider Benefits of Family Learning : A Scoping Review*. London.

Clark/Keefe, K., 2009. Between Antagonism and Surrender. *Creative Approaches to Research*, 2 (1), 22–38.

Clark, L., 2013. *The Parent App: Understanding Families in the Digital Age*. Oxford Uni. Oxford.

Clifford, J., 1986. *Writing Culture: The Poetics and Politics of Ethnography*. University. Berkeley.

Cochran, M. and Woolever, F., 1983. Beyond the Deficit Model. *In*: Sigel, I. E. and Laosa, L. M., eds. *Changing Families* [online]. Boston, MA: Springer US, 225–245. Available from: https://doi.org/10.1007/978-1-4684-4502-2_8.

Cohen, D., 2007. *The Development of Play Third Edition*. London: Routledge.

Cohen, L., Manion, L., and Morrison, K., 2007. *Research Methods in Education*. New York: Routledge.

Colburn, T. and Shute, G., 2007. Abstraction in computer science. *Minds and Machines*, 17 (2), 169–184.

Collier, A., 2007. *In Defence of Objectivity*. Routledge.

Collins, A. and Halverson, R., 2009. *Rethinking Education in the Age of Technology: The Digital Revolution and the Schools* [online]. New York: Teachers College Press. Available from: http://ocw.mit.edu/courses/media-arts-and-sciences/mas-714j-technologies-for-creative-learning-fall-2009/readings/MITMAS_714JF09_read03_coll.pdf.

Connolly, T. M., Boyle, E. A., Macarthur, E., Hainey, T., and Boyle, J. M., 2012. Computers & Education A systematic literature review of empirical evidence on computer games and serious games. *Computers & Education* [online], 59 (2), 661–686. Available from: http://dx.doi.org/10.1016/j.compedu.2012.03.004.

Conteh, J., 2005. *On writing educational ethnographies: The art of collusion*. Sterling: Trentham Books.

Correa, T., 2014. Bottom-Up Technology Transmission Within Families: Exploring How Youths Influence Their Parents' Digital Media Use With Dyadic Data. *Journal of Communication*, 64 (1), 103–124.

Costa-Lopes, R., Dovidio, J. F., Pereira, C. R., and Jost, J. T., 2013. Social psychological perspectives on the legitimation of social inequality: Past, present and future. *European Journal of Social Psychology*, 43 (4), 229–237.

Crawford, C., 1982. The Art of Computer Game Design by Chris Crawford. *Computer* [online], 81. Available from: http://www.amazon.ca/exec/obidos/redirect?tag=citeulike09-

20&path=ASIN/0881341177.

Crotty, M., 1998. *Foundations of social research*. London: Sage Publications.

Cuban, L., 1985. *Teachers and Machines*. 1st ed. New York: Teachers College Press.

Curtis, H., 1915. *Education through Play*. New York: The Macmillan Company.

D'Angour, A., 2013. Plato and Play: Taking Education Seriously in Ancient Greece. *American Journal of Play*, 5 (3), 293–307.

Davies, B., N, S., B, F., and A, W., 2013. *Family Learning Works: The Inquiry into Family Learning in England and Wales* [online]. NIACE (National Institute of Adult Continuing Education). Leicester. Available from: http://shop.niace.org.uk/media/catalog/product/n/i/niace_family_learning_report_reprint_final.pdf.

Davies, C., 2011. Digitally strategic: How young people respond to parental views about the use of technology for learning in the home. *Journal of Computer Assisted Learning*, 27 (4), 324–335.

Denzin, N. K., 2018. Interpretive Autoethnography. *In*: Holmon Jones, S., Adams, T. E., and Ellis, C., eds. *Handbook of Autoethnography*. New York: Routledge, 123–142.

Denzin, N. K. and Lincoln, Y. S., 2005. Introduction: The Discipline and Practice of Qualitative Research. *In*: Denzin, N. K. and Lincoln, Y. S., eds. *The SAGE Handbook of Qualitative Research*. New York: SAGE Publications, 1–33.

Denzin, N. K. and Lincoln, Y. S., 2018a. *The Sage handbook of qualitative research*. 5th ed. Los Angeles: Sage.

Denzin, N. and Lincoln, Y., 2018b. Introduction: The Discipline and Practice of Qualitative Research. *In*: Denzin, N. K. and Lincoln, Y. S., eds. *The SAGE Handbook of Qualitative Research*. Los Angeles: sage, 29–71.

Dewey, J., 1929. *The Quest for Certainty*. New York: Balch & Company.

Dewey, J., 1938. *Experience and Education*. New York: Simon and Schuster.

DiCebro, K., 2015. *Taking Serious Games Seriously in Education*. Educase Review.

Douglas, K. and Carless, D., 2013. A History of Autoethnographic Inquiry. *In*: Holman Jones, S., Adams, T., and Ellis, C., eds. *Handbook of Autoethnography*. California: Routledge, 84–106.

DSS, 2010. Social and Emotional Aspects of Learning (SEAL) programme in secondary schools: National Evaluation. *Search*, (October 2010), 1–2.

Duke, R. D., 1974. *Gaming, the future's language* [online]. New York: John Wiley & Sons. Available from: http://ocw.metu.edu.tr/pluginfile.php/6890/mod_resource/content/2/74duke-gamingthefutureslanguage-100211123056-phpapp02.pdf.

Van Eck, R., 2006. Digital Game-Based Learning: It's Not Just the Digital Natives Who Are Restless. *Educause Review*, 41 (2), 16–30.

ECORYS, 2016. *Digital skills for the UK economy*.

Edward, J., Amsterdamska, O., Lynch, M., and Wajcman, J., 2008. *Science and Technology Studies Handbook*. 3rd ed. Cambridge, MA: The MIT Press.

Elder-vass, D., 2012. Towards a realist social constructionism. *Sociologia, Problemas e Pr_aticas*, 70, 9–24.

Elder-vass, D., 2015. Disassembling actor-network theory. *Philosophy of the Social Sciences*, 45 (1), 0–23.

Elkind, D., 2009. *Ties that stress: The new family imbalance*. Cambridge, MA: Harvard University Press.

Ellis, C., Adams, T., and Bochner, A., 2011. Autoethnography: An Overview. *Forum: Qualitative Social Research*, 12 (1).

Erikson, E. H., 1963. Childhood and society, 2nd. *New York: WW*.

Faircloth, C., 2014. Intensive Parenting and the Expansion of Parenting. *In*: *Parenting Culture Studies*. Basingstoke: Palgrave Macmillan UK, 25–50.

Feenberg, A., 1999. *Questioning Technology*. London: Routledge.

Feenberg, A., 2017. Critical theory of technology. *In*: Rayvon, F., Miller, C., and Smith-Doerr, L., eds. *The SAGE Handbook of Digital Technology Research*. Cambridge, MA: Sage, 121–129.

Finlay, L., 2002. 'Outing' the researcher: the provenance, process, and practice of reflexivity. *Qualitative health research*, 12 (4), 531–545.

Fisher, K. R., Hirsh-Pasek, K., Golinkoff, R. M., and Gryfe, S. G., 2008. Conceptual split? Parents' and experts' perceptions of play in the 21st century. *Journal of Applied Developmental Psychology*, 29 (4), 305–316.

Flanagan, M. and Nissenbaum, H., 2014. *Values at Play in Digital Games*. Cambridge, Massachusetts: MIT Press.

Fleer, M., 2016. Theorising digital play: A cultural-historical conceptualisation of children's engagement in imaginary digital situations. *International Journal in Early Childhood Education*, 7 (2), 75–90.

Fleetwood, A., 2013. *Tiny Games, being indie, and having a relationship with your players* [online]. Gamasutra. Available from: https://www.gamasutra.com/blogs/AlexFleetwood/20130208/186296/Tiny_Games_being_indie_and_having_a_relationship_with_your_players.php [Accessed 7 Feb 2017].

Fleetwood, A., 2014. *The Hide & Seek Story* [online]. Hide & Seek: Inventing New Kinds of Play. Available from: https://web.archive.org/web/20170209024352/http://hideandseek.net/story/ [Accessed 9 Feb 2017].

Freire, P., 1970. *Pedagogy of the Oppressed*. New York: Continuum.

Fruedi, F., 2002. *Paranoid Parenting*. London: Bloomsbury.

Le Gallais, T., 2008. Wherever I go there I am: reflections on reflexivity and the research stance. *Reflective Practice: International and Multidisciplinary Perspectives* [online], 9 (2), 145–155. Available from: http://www.tandfonline.com/loi/crep20%5Cnhttp://dx.doi.org/10.1080/14623940802005475%5Cnhttp://www.tandfonline.com/%5Cnhttp://www.informaworld.com.

Gaskins, S., Haight, W., and Lancy, D. F., 2007a. The cultural construction of play. *In*: *Play and development: Evolutionary, sociocultural, and functional perspectives*. Mahwah, NJ: Lawrence Erlbaum, 179–202.

Gaskins, S., Haight, W., and Lancy, D. F., 2007b. The cultural construction of play. *Play and development: Evolutionary, sociocultural, and functional perspectives*, 179–202.

Gauntlett, D., 2007. *Creative Explorations: New Approaches to Identities and Audiences*. London: Routledge.

Gee, E., Takeuchi, L., and Wartella, E., 2017. *Children and families in the digital age: Learning together in a media saturated culture*. Routledge.

Gee, J., 2011a. *An Introduction to Discourse Analysis*. 3rd ed. New York: Routledge.

Gee, J., 2011b. Discourse Analysis: What Makes it Critical? *In*: Rogers, R., ed. *An*

Introduction to Critical Discourse in Education. New York: Routledge.

Gee, J. P., 1996. *Social Linguistics and Literacies*. London: Routledge.

Gee, J. P., 2003. *What video games have to teach us about learning and literacy*. Computers in Entertainment.

Geertz, C., 1973. *Thick Descripion: Toward an Interpretive Theory of Culture* [online]. The interpretation of cultures: selected essays. New York: Basic Books. Available from: http://www.ncbi.nlm.nih.gov/pubmed/10180297.

Gilchrist, A. and Taylor, M., 2016. *The Short Guide to Community Development*. Bristol: Policy Press.

Glesne, C., 2006. *Becoming qualitative researchers: an introduction* [online]. Boston: Pearson/Allyn & Bacon. Available from: https://search.ebscohost.com/login.aspx?direct=true&db=edshlc&AN=edshlc.011817066.X&site=eds-live&scope=site.

Goffman, E., 1953. *The Presentation of Self in Everyday Life*. New York: Doubleday Anchor Books.

Goodson, I. F. and Mangan, J. M., 1996. Computer literacy as ideology. *British Journal of Sociology of Education*, 17 (1), 65–79.

Gordon, E. and Mihailidis, P., 2016. *Civic Media: Technology, Design, Practice*. Cambridge, Massachusetts: MIT Press.

Gov, U., 2013. *National curriculum in England: computing programmes of study* [online]. Department for Education. Available from: https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study/national-curriculum-in-england-computing-programmes-of-study [Accessed 18 Jun 2016].

Gov, U., 2014. *Government Digital Inclusion Strategy*. London.

Graham, R., 1988. *Concrete Mathematics: a foundation for computer science*. New York: Addison-Wesley.

Grant, L., 2011. 'I'm a completely different person at home': Using digital technologies to connect learning between home and school. *Journal of Computer Assisted Learning*, 27 (4), 292–302.

Green, B. and Beavis, C., 2012. *Liteacy in 3D: An Integrated Perspective*. Victoria: Camberwell.

Guba, E. G. and Lincoln, Y. S., 1994a. Competing Paradigms in Qualitative Research. *In*: Denzin, N. K. and Lincoln, Y. S., eds. *Handbook of qualitative research*. Thousand Oaks, 105–117.

Guba, E. G. and Lincoln, Y. S., 1994b. Competing Paradigms in Qualitative Research. *In*: Denzin, N. and Y., L., eds. *Handbook of qualitative research*. Thousand Oaks, CA: Sage, 105–117.

Gutiérrez, K. D., 2008. Developing a Sociocritical Literacy in the Third Space. *Reading Research Quarterly*, 43 (2), 148–164.

Habermas, J., 1976. *Legitimation crisis*. London: Heinemann Educational Books Ltd.

Hague, C. and Payton, S., 2010. *Digital Liteacy Across the Curriculum*. Bristol.

Halpern, B., 1961. 'Myth' and 'Ideology in Modern Usage'. *History and Thoery*, 1 (2), 129–149.

Hammersley, M., 2003. Can and Should Educational Research be Educative? *In*: *Oxford Review of Education* [online]. 3–25. Available from: http://www.tandfonline.com/doi/abs/10.1080/03054980307433.

Hammersley, M. and Atkinson, P., 2007. *Ethnography: Principles in Practice*. London: Routledge.

Hardyment, C., 2007. *Dream Babies: Childecare Advice from John Lock to Gina Ford*. London: Frances Lincoln.

Hart, R. A., 2013. *Children's participation: The theory and practice of involving young citizens in community development and environmental care*. New York: Earthscan.

Heidegger, M., 1977. *The Question Concerning Technology, and other Essays*. New York: Harper and Row.

Heilborner, R., 1994. Technological Determinism Revisited. *In*: *Dos Technology Drive History*. Cambridge, MA: MIT Press, 67–78.

Higgens, M., 2010. Excuse Me, Is This Seat Taken? *New York Times* [online], 2010. Available from: https://www.nytimes.com/2010/02/28/travel/prac28fat.html.

Hill, A., 2010. Parents are forgetting how to play with their children, study shows. *The Guardian* [online], 26 August 2010. Available from: https://www.theguardian.com/lifeandstyle/2010/aug/26/parents-children-playtime.

Hinds, D., 2019. *Damian Hinds: School leaders should ditch email culture to cut workload*. Department for Education.

Hollingworth, S., Mansaray, A., Allen, K., and Rose, A., 2011. Parents' perspectives on technology and children's learning in the home: Social class and the role of the habitus. *Journal of Computer Assisted Learning*, 27 (4), 347–360.

Holloway, I., 1997. *Basic Concepts for Qualitative Research*. Oxford: Blackwell Science Ltd.

Horkheimer, M., 2002. *CRITICAL THEORY Selected Essays*. The Sociological Review. New York: Continuum.

Hudlicka, E., 2008. Affective Computing for Game Design. *Scientist* [online], 5–12. Available from: http://www.imgd.wpi.edu/speakers/0910/Hudlicka_GAMEON_TUT_01.pdf.

Hughes, B., 2002. *A Playworker's Taxonomy of Play Types*. 2nd ed. London: PlayLink.

Huizinga, J., 1971. *Homo Ludens: A Study of the Play-Element in Culture*. 1st ed. Boston: Beacon Press.

Hunleth, J., 2011. Beyond *on* or *with* : Questioning power dynamics and knowledge production in 'child-oriented' research methodology. *Childhood* [online], 18 (1), 81–93. Available from: http://journals.sagepub.com/doi/10.1177/0907568210371234.

Jenkins, H., Ito, M., and Boyd, D., 2015. *Participatory Culture in a Networked Era: A Conversation on Youth, Learning, Commerce, and Politics*. New York: Polity Press, Wiley.

Jenkins, H., Purushotma, R., Weigel, M., and Clinton, K., 2008. *Confronting the Challenges of Participatory Culture*. Cambridge, Massachusetts: MIT Press.

Jewitt, C. and Parashar, U., 2011. Technology and learning at home: Findings from the evaluation of the Home Access Programme pilot. *Journal of Computer Assisted Learning*, 27 (4), 303–313.

Jung, C. G., 2014. *The archetypes and the collective unconscious*. New York: Routledge.

Kafai, Y. B., 2006. Playing and Making Games. *Games and Culture* [online], (October 2001), 36–40. Available from: http://www.mendeley.com/catalog/playing-making-games/.

Kafai, Y. B., 2012. *Constructionism in Practice: Designing, Thinking, and Learning in a*

Digital World. London: Routledge.

Kafai, Y. B. and Burke, Q., 2016. *Connected Gaming: What Making Video Games Can Teach Us About Learning and Literacy*. Cambridge, MA: MIT Press.

Kahne, J., Middaugh, E., and Evans, C., 2008. *The Civic Potential of Video Games* [online]. Group. Cambridge, Massachusetts: MIT Press. Available from: www.digitallearning.macfound.org.

Kernan, M., 2007. Play as a context for Early Learning and Development. *Ncca*, 1–42.

Kiili, K. and Arnab, S., 2013. Integ rating Games into the Classroom: Towards New Teachership. *In*: Freitas, S. De, ed. *New Pedagogical Approaches in Game Enhanced Learning: Curriculum Integration*. IGI Global, 114–135.

Kimmel, H. and Deek, F. ~E., 1995. Instructional technology: A tool or a panacea? *Journal of Science Education and Technology*, 4, 327–332.

Kincheloe, J. L., 2005. On to the Next Level: Continuing the Conceptualization of the Bricolage. *Qualitative Inquiry*, 11 (3), 323–350.

Kincheloe, J. L., 2011a. Critical Ontology. *In*: Hayes, K., Steinberg, S. R., and Tobin, K., eds. *Key Works in Critical Pedagogy*. Rotterdam: Sense Publishers, 201–217.

Kincheloe, J. L., 2011b. On to the Next Level: Continuing the Conceptualization of the Bricolage. *In*: Hayes, K., Steinberg, R., and Tobin, K., eds. *Key Works in Critical Pedagogy*. Rotterdam: Sense Publishers, 253–277.

Kincheloe, J. L., Mclaren, P., Steinberg, S., and Monzó, L. D., 2018. Critical Pedagogy and Qualitative Research: Advancing the Bricolage. *In*: Denzin, N. K. and Lincoln, Y. S., eds. *Handbook of Qualitative Research*. Los Angeles: SAGE, 418–465.

Kincheloe, J. L., Mclaren, P., and Steinberg, S. R., 1995. Moving to the Bricolage: Partisan Research in a " Neutral " Academic Culture. *Moving to the Bricolage*, 2–163.

Kincheloe, J. and McLaren, P., 2011. Rethinking Critical Theory and Qualitative Research. *In*: Hayes, K., Steinberg, S., and Tobin, K., eds. *Key Works in Critical Pedagogy*. Boston: Sense Publishers, 288–311.

Kirschner, P. A. and Bruyckere, P. De, 2017. The myths of the digital native and the multitasker. *Teaching and Teacher Education* [online], 67, 135–142. Available from: http://dx.doi.org/10.1016/j.tate.2017.06.001.

Klimmt, C., 2009. Serious games and social change: Why they (should) work. *Serious games: Mechanisms and effects*, 248–270.

Kottak, C., 2006. *Mirror for Humanity*. New York: McGraw Hill.

Lankshear, C. and Knobel, M., 2008. *Digital literacies: Concepts, policies and practices*. Names.

Lareau, A. and Shultz, J. J., 1996. *Journeys through ethnography: realistic accounts of fieldwork* [online]. Boulder, USA: Westiview Press. Available from: http://books.google.co.uk/books?id=oD-AAAAAMAAJ.

Lather, P., 1986. Research as Praxis. *Harvard Educational Review* [online], 56 (3), 257–278. Available from: http://hepgjournals.org/doi/10.17763/haer.56.3.bj2h231877069482.

Lather, P., 2006. Paradigm proliferation as a good thing to think with: teaching research in education as a wild profusion. *International Journal of Qualitative Studies in Education*, 19 (1), 35–57.

Latour, B., 1993. *We Have Never Been Modern*. Cambridge, Massachusetts: Harvard University Press.

Latour, B., 1996. On actor-network theory: A few clarifications. *Soziale Welt* [online], 47 (4), 369–381. Available from: http://www.jstor.org/stable/40878163.

Latour, B., 2007. *Reassembling the Social: An Introduction to Actor-Network-Theory*. New York: Oxford University Press.

Latour, B., Harman, G., and Eredelyi, P., 2011. *The Prince and The Wolf: Latour and Harman at the LSE*. Winchester: Zero Books.

Lauricella, A. R., Barr, R., and Calvert, S. L., 2014. Parent-child interactions during traditional and computer storybook reading for children's comprehension: Implications for electronic storybook design. *International Journal of Child-Computer Interaction*, 2 (1), 17–25.

Le, T., 2010. *The End of Education Is the Dawn of Learning* [online]. Fastcodesign.com. Available from: http://www.fastcodesign.com/1662358/the-end-of-education-is-the-dawn-of-learning [Accessed 22 May 2016].

Leander, K. and Boldt, G., 2013. Rereading 'A pedagogy of Multiliteracies': Bodies, texts, and emergence. *Journal of Literacy Research*, 45 (1), 22–46.

Lee, A., 2013. *Fun anywhere, anytime: Hide & Seek talk Tiny Games* [online]. Develop-Online. Available from: https://web.archive.org/web/20151015030359/develop-online.net/interview/fun-anywhere-anytime-hide-seek-talk-tiny-games/0185129 [Accessed 27 May 2016].

Lee, C. H. and Soep, E., 2016. None But Ourselves Can Free Our Minds: Critical Computational Literacy as a Pedagogy of Resistance. *Equity & Excellence in Education* [online], 49 (4), 480–492. Available from: https://doi.org/10.1080/10665684.2016.1227157.

Lee, E., 2014. Experts and Parenting Culture. *In*: Lee, E., Fairclouth, C., and Macvarish, J., eds. *Parenting Culture Studies*. Basingstoke: Palgrave Macmillan UK, 51–75.

Leonardi, P., 2013. Theoretical foundations for the study of Sociomateriality. *Information and Organization*, 23 (2), 59–76.

Lett, J., 1990. Emics and etics: Notes on the epistemology of anthropology. *In*: Headland, T. N., Pike, K., and Harris, M., eds. *Emics and etics: The insider/outsider debate*. Newbury Park: Sage, 127–142.

Leu, D., Kinzer, C., Coiro, J., Castek, J., and Henry, L., 2017. New Literacies: A Dual-Level Theory of the Changing Nature of Literacy, Instruction, and Assessment. *Theoretical Models and Processes of Reading* [online], 197 (2), 1150–1181. Available from: http://www.literacyworldwide.org/General/Publications/Books/bk710/toc.aspx.

Levi-Strauss, C., 1955. The Structural Study of Myth. *The Journal of American Folklore* [online], 68 (270), 428–444. Available from: http://doi.wiley.com/10.1111/an.1965.6.9.3.2.

Li, Q., 2010. Digital game building: learning in a participatory culture. *Educational Research*, 52 (4), 427–443.

Lievrouw, L. and Livingstone, S., 2002. *Handbook of New Media: Social Shaping and Consequences of ICTs*. 1st ed. Thousand Oaks, CA: SAGE.

Lillard, A., 2007. Playful Learning and Montessori Education s. *American Journal of Play*, 5 (2), 157–186.

Lillard, A. S., Lerner, M. D., Hopkins, E. J., Dore, R. A., Smith, E. D., and Palmquist, C. M., 2013a. The Impact of Pretend Play on Children ' s Development : A Review of the Evidence. *Psychological bulletin*, 139 (1), 1–34.

Lillard, A. S., Lerner, M. D., Hopkins, E. J., Dore, R. A., Smith, E. D., and Palmquist, C. M., 2013b. The impact of pretend play on children's development: A review of the evidence. *Psychological bulletin*, 139 (1), 1.

Lincoln, B., 1999. *Theorizing myth: Narrative, ideology, and scholarship*. Chicago: University of Chicago Press.

Livingstone, S., 2012a. Digital learning and participation amon youth: critical reflections on future research priorities. *International Journal of Learning and Media* [online], 4 (1), 9–24. Available from: http://www.mitpressjournals.org/doi/abs/10.1162/IJLM_a_00085.

Livingstone, S., 2012b. Digital learning and participation amon youth: critical reflections on future research priorities. *International Journal of Learning and Media*, 4 (1), 9–24.

Livingstone, S., 2014. The mediatization of childhood and education: Reflections on The Class. *In*: Kramp, L, Carpentier, N, Hepp, A, Tomanic-Trivundza, I, Nieminen, H. and Kunelius, R, Olsson, T, Sundin, E and Kilborn, R., eds. *Media Practice and Everyday Agency in Europe edited* [online]. Lumière, 55–68. Available from: http://eprints.lse.ac.uk/62120/.

Livingstone, S., 2017. iGen : why today's super-connected kids are growing up less rebellious, more tolerant, less happy – and completely unprepared for adulthood. *Journal of Children and Media*, 2798 (December), 1–5.

Livingstone, S., Buckingham, D., and Davies, C., 2009. ' Digital natives': a myth? *Technology* [online], (November), 17. Available from: http://eprints.lse.ac.uk/35789/1/digitalnatives.pdf.

Livingstone, S., Haddon, L., Görzig, A., and Ólafsson, K., 2011. *EU Kids Online II: Final Report 2011* [online]. Available from: http://www.lse.ac.uk/collections/EUKidsOnline/.

Livingstone, S. and Helsper, E. J., 2008. Parental Mediation of Children's Internet Use. *Journal of Broadcasting & Electronic Media* [online], 52 (4), 581–599. Available from: https://doi.org/10.1080/08838150802437396.

Livingstone, S., Mascheroni, G., Dreier, M., Chaudron, S., and Lagae, K., 2015. *How parents of young children manage digital devices at home : The role of income , education and parental style*. London.

Livingstone, S., Ólafsson, K., Helsper, E. J., Lupiáñez-villanueva, F., and Veltri, G. A., 2017. Maximizing opportunities and minimizing risks for children online : the role of digital skills in emerging strategies of parental mediation. *Journal of Communication*, 67 (1), 82–105.

Livingstone, S. and Sefton-Green, J., 2016. *The Class Living and Learning in the Digital Age*. 1st ed. New York: New York University Press.

Lomax, H., 2012. Contested voices? Methodological tensions in creative visual research with children. *International Journal of Social Research Methodology*, 15 (2), 105–117.

Losch, A., 2009. On the Origins of Critical Realism. *Theology and Science*, 7 (1), 85–106.

Lunette, F., 1825. *AN HISTORICAL AND DESCRIPTIVE ACCOUNT OF THE PENINSULA OF PORTLAND FROM THE EARLIEST TO THE PRESENT* [online]. London: S. McDOWALL. Available from: http://www.pbenyon.plus.com/Portland/PYB/Portlanders.html.

Mackenzie, D. and Wajcman, J., 1985. *The Social Shaping of Technology*. 1st ed. Milton Keynes: Open University Press.

Madison, D. S., 2005. *Critical Ethnography: Method, ethics, and performance.* Thousand Oaks, CA: Sage Publications.

Malinowski, B., 1948. *Magic , Science and Religion and Other Essays*. Glencoe, Illnois: The Free Press.

Margaryan, A., Littlejohn, A., & Vojt, G., 2011. Are digital natives a myth or reality? University students' use of digital technologies. *Computers and Education* [online], 56 (2), 429–440. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.172.7940&rep=rep1&type=pdf.

Marsh, J., Plowman, L., Yamada-rice, D., Bishop, J., and Scott, F., 2016. Digital play : a new classification. *Early Years* [online], 36 (3), 242–253. Available from: http://dx.doi.org/10.1080/09575146.2016.1167675.

Marx, L., 1994. The Idea of Technology. *In*: Roe Smith, M. and Marx, L., eds. *Does Technology Drive History? The Dilemma of Technological Determinism*. Cambridge, MA: MIT Press, 237–257.

Marx, S., Pennington, J., and Chang, H., 2017. Critical Autoethnography in Pursuit of Educational Equity: Introduction to the IJME Special Issue. *International Journal of Multicultural Education*, 19 (1).

Mascheroni, G., Livingstone, S., Dreier, M., and Chaudron, S., 2016. Learning Versus Play Or Learning Through Play? *Media Education*, 7 (2), 261–280.

McDougall, J., 2016. How Does Boy 17 Read a Game? *In*: Parry, B., Burnett, C., and

Merchant, G., eds. *Literacy, Media, Technology: Past, Present and Future*. London: Bloomsbury Publishing PLC, 183–199.

McDougall, J., Berger, R., Fraser, P., and Zezulkova, M., 2015. Media Literacy, Education & (Civic) Capability: A Transferable Methodology. *Journal of Media Literacy Education* [online], 7 (1), 4–17. Available from: www.jmle.org.

McDougall, J., Wilkinson, P., and Readman, M., 2016. *From Digital Literacy to Capability Project Report and Impact Evaluation*. Bournemouth.

McKernan, J., 1987. Action research and curriculum development. *Peabody Journal of Education*, 64, 6–19.

McLuhan, M. and Watson, W., 1970. *From Cliche to Archetype*. New York: Viking Press.

Mendoza, K., 2013. PROTECTION AND EMPOWERMENT: EXPLORING PARENTS' USE OF INTERNET MEDIATION STRATEGIES WITH PRETEENS. Temple University.

Merchant, G., 2007. Writing the future in the digital age. *Literacy*, 41 (3), 118–128.

Microsoft, 2018. Kodu. [online]. Available from: https://www.kodugamelab.com/.

Mihailidis, P., 2014. *Media Literacy and the Emerging Citizen: Youth, Engagement and Participation in Digital Culture*. Oxford: Peter Lang.

Mihailidis, P., 2018. Civic media literacies: re-Imagining engagement for civic intentionality. *Learning, Media and Technology*, 43 (2), 152–164.

Mills, K., 2010. A Review of the 'Digital Turn' in the New Literacy Studies. *Review of Educational Research*, 80 (2), 246–271.

Misuraca, G., 2012. Digital Games for Empowerment and Inclusion (DGEI) D3 Final Vision and Roadmap A Roadmap for Action on Digital Games for Empowerment and Inclusion in Europe A Report of the Study : [online], 1–20. Available from: http://is.jrc.es/pages/EAP/eInclusion/games.html%5Cn1.

Montola, M., 2005. Exploring the edge of the magic circle: Defining pervasive games. *In*: *Proceedings of DAC*. 103.

Morozov, E., 2014. *To Save Everything Click Here*. 1st ed. Penguin Books.

Morris, S., 1985. *Portland: An Illustrated History*. Wimborne: The Dovecote Press.

Nakamura, J. and Csikszentmihalyi, M., 2009. Flow theory and research. *Handbook of positive psychology*, 195–206.

Nations, U., 1989. *Convention on the Rights of the Child*. United Nations.

Nyes, D., 2007. *Technology Matters: Questions to Live With*. 1st ed. Cambridge, Massachusetts: MIT Press.

O'Leary, M., 2013. *Classroom Observation: A guide to the effective observation of teaching and learning*. New York: Routledge.

O'reilly, K., 2012. *Ethnographic methods*. New York: Routledge.

O'Reilly, K., 2012. Going ' Native '. *In*: *Key Concepts in Ethnography*. London: SAGE Publications Ltd, 88–92.

O'Shea, S., Lysaght, P., Roberts, J., and Harwood, V., 2016. Shifting the Blame in Higher Education--Social Inclusion and Deficit Discourses. *Higher Education Research and Development* [online], 35 (2), 322–336. Available from: https://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1094218&site=eds-live&scope=site.

Ofcom, 2016. *Children and parents: media use and attitudes report* [online]. London. Available from: http://stakeholders.ofcom.org.uk/binaries/research/media-literacy/media-use-attitudes-14/Childrens_2014_Report.pdf.

Oppenheim, A. N., 2000. *Questionnaire Design, Interview and Attitude Measurement*. Norfolk: Pinter Publications.

Orlikowski, W., 2010. The sociomateriality of organisational life: considering technology in management research. *Cambridge Journal of Economics*, 34 (1), 125–141.

Papert, S., 1980. *Mindstorms: Children, computers, and powerful ideas*. Basic Books, Inc.

Papert, S., 1988. Does easy do it? Children, games, and learning. *Game developer magazine*.

Papert, S., 1993. *The Children's Machine: Rethinking School in the Age of the Computer*. New York: Basic Books.

Papert, S. and Harel, I., 1991. Situating constructionism. *Constructionism*, 36, 1–11.

Parry, B., Taylor, L., and Haerizadeh-Yazadi, N., 2016. Time Travels in Literacy and Pedagogy: From Script to Screen. *In*: Parry, B., Burnett, C., and Merchant, G., eds. *Literacy, Media, Technology: Past, Present and Future*. London: Bloomsbury Publishing PLC, 147–159.

Partnership, T. T., 2018. *Essential Digital Skills* [online]. Available from: https://www.thetechpartnership.com/wp-content/uploads/2018/05/EssentialDigitalSkillsFramework-29May18.pdf.

Patton, M., 1990. *Qualitative Evaluation and Research Methods*. 2nd ed. Newbury Park: SAGE.

Pellegrini, A. D., 2009. *The role of play in human development*. Oxford University Press, USA.

Peterson, R., 2000. *Constructing Effective Questionnaires*. 2nd ed. Thousand Oaks: Sage Publications.

Piaget, J., 1977. *The development of thought: Equilibration of cognitive structures.* Viking.

Piaget, J. and Cook, M., 1952. *The origins of intelligence in children*. International Universities Press New York.

Plant, R., 1982. Jürgen Habermas and the Idea of Legitimation Crisis. *European Journal of Political Research*, 10 (4), 341–352.

Plato, 1971. The collected dialogues, Laws, I. *In*: Hamiliton, E. and Cairns, H., eds. *The Collected Dialogues of Plato*. Princeton, NJ: Princeton University Press, 1243.

Plowman, L., McPake, J., and Stephen, C., 2010. The technologisation of childhood? Young children and technology in the home. *Children and Society*, 24 (1), 63–74.

Pole, C. and Morrison, M., 2003. *Ethnography For Education Doing Qualitative Research in Educational Settings*. London: McGraw-Hill.

Postman, N., 1993. *Technopoly: The Surrender of Culture to Technology*. New York: Knopf.

Potter, J. and McDougall, J., 2017. *Digital Media, Culture and Education*. London: Palgrave Macmillan.

Potter, J. and McDougall, J., 2019. Digital media learning in the third space. *MEDIA PRACTICE AND EDUCATION*, 20 (1), 1–11.

Prensky, M., 2001. Digital Natives, Digital Immigrants. *On the Horizon*, 9 (5), 1–6.

Prensky, M., 2006. *'Don't bother me Mom, I'm learning!': how computer and video games are preparing your kids for twenty-first century success and how you*

can help! [online]. Minneapolis: Paragon House. Available from: http://www.amazon.com/dp/1557788588%5Cnwww.gamesparentsteachers.com%5Cnhttp://books.google.nl/books?id=aP0rAQAAIAAJ%5Cnhttp://www.amazon.co.uk/Dont-Bother-Me-Mom-Learning/dp/1557788588.

Prensky, M., 2012. *From Digital Natives to Digital Wisdom*. Thousand Oaks, CA: Corwin.

Pring, R., 2010. *Philosophy of Educational Research* [online]. London,: Bloomsbury Publishing PLC. Available from: http://ebookcentral.proquest.com/lib/bournemouth-ebooks/detail.action?docID=564292.

Prinsloo, M. and Rowsell, J., 2012. Digital literacies as placed resources in the globalised periphery. *Language and Education* [online], 26 (4), 271–277. Available from: https://doi.org/10.1080/09500782.2012.691511.

Ramaekers, S. and Suissa, J., 2011. The question of 'parenting'. *Ethics and Education*, 6 (2), 101–108.

Rapoport, R. N., 1970. Three Dilemmas in Action Research. *Human Relations* [online], 23 (6), 499–513. Available from: https://doi.org/10.1177/001872677002300601.

Ravi, R., Sean, C., and Zane, B., 2009. Digital Natives vs. Digital Immigrants: Myth or Reality? *International Journal of Instructional Technology and Distance Learning*, 6 (2), 3–10.

Reed-Danahay, D. E., 1997. *AutoEthnography: Rewriting the Self and the Social*. Oxford: Berg.

Reng, L. and Schoenau-Fog, H., 2011. Problem Based Game Design. *In*: *Digra Digital Library: Proceedings of Digra 2011 Conference: Think Design Play*. Digital Games Research Association.

Rheingold, H., 2008. Using participatory media and public voice to encourage civic engagement. *Civic Life Online: Learning How Digital Media Can Engage Youth* [online], (December 2005), 97–118. Available from: http://www.mitpressjournals.org/doi/abs/10.1162/dmal.9780262524827.097.

Richards, C., 2013. Framing and Interpreting Children's Play. *In*: *Children, Media and Playground Cultures*. London: Palgrave Macmillan.

Rideout, V. and Katz, V. S., 2016. *Opportunity for All?: Technology and learning in lower-income families* [online]. The Joan Ganz Cooney Center. New York. Available from: http://www.dwp.gov.uk/docs/strategyandindicators-

fullreport.pdf.

Roben, D., 2010. Digital Adults: Beyond the Myth of the Digital Native Generation Gap. Fielding Graduate University.

Robertson, J., 2012. Making games in the classroom: Benefits and gender concerns. *Computers and Education* [online], 59 (2), 385–398. Available from: http://dx.doi.org/10.1016/j.compedu.2011.12.020.

Robins, K. and Webster, F., 1999. *Times of the Technoculture: From the Information Society to the Virtual Life*. London: Routledge.

Rogers, M., 2012. Contextualising Theories and Practices of Bricolage Researcher. *The Qualitative Report*, 17 (48), 1–17.

Rogers, M., 2016. Problematising participatory video with youth in Canada: the intersection of therapeutic, deficit and individualising discourses. *Area* [online], 48 (4), 427–434. Available from: http://10.0.4.87/area.12141.

Rowsell, J. and Walsh, M., 2011. Rethinking literacy education in new times: Multimodality, multiliteraceis, & new literacies. *Brock Education*, 21 (1), 53–62.

Rubin, H. and Rubin, I., 2005. *Qualitative Interviewing - The Art of Hearing Data*. 2nd ed. New York: Sage Publication.

Salancik, G. R., 1979. 'Field Stimulations for Organizational Behavior Research'. *Administrative Science Quarterly*, 24, 638–649.

Salen, K. and Zimmerman, E., 2003. *Rules of Play: Game Design Fundamentals*. The MIT Press.

Saomya, S., 2013. *Kurt Squire on Civic Engagement Through Digital Games* [online]. EdTechReview. Available from: https://edtechreview.in/e-learning/558-civic-engagement-through-digital-games [Accessed 19 May 2016].

Scarborough, M., 1994. *Myth and Modernity: Postcritical Reflections* [online]. New York: State University of New York Press. Available from: https://books.google.co.uk/books?id=lvchKKENpUUC.

Schaub, M., 2010. Parenting for cognitive development from 1950 to 2000: The institutionalization of mass education and the social construction of parenting in the United States. *Sociology of Education*, 83 (1), 46–66.

Schwandt A., T., 2000. 'Three epistemological stances for qualitative inquiry: Interpretivism, hermeneutics and social constructivism' IN: Handbook of qualitative research. *In*: Denzin, N. K. and Lincoln, Y. S., eds. *The handbook of*

qualitative research [online]. London: SAGE, 189–213. Available from: http://www.library.mmu.ac.uk/secure/index.php?cat_file=&filename=y_220a0001_schwandt_three.pdf.

Schwandt, T. A., 1994. Constructivist, interpretivist approaches to human inquiry. *In*: Denzin, N. and Lincoln, S., eds. *Handbook of qualitative research* [online]. Thousand Oaks, CA: Sage, 118–137. Available from: http://psycnet.apa.org/psycinfo/1994-98625-006.

Scott, D., 2005. Critical Realism and Empirical Research Methods in Education. *Journal of Philosophy of Education*, 39 (4).

Sefton-Green, J., Nixon, H., and Erstad, O., 2009. Reviewing Approaches and Perspectives on "Digital Literacy". *Pedagogies: An International Journal*, 4 (2), 107–125.

Select Commitee on Digital Skills, 2015. *Make or Break: The UK's Digital Future*. London.

Selwyn, N., 2009. The digital native: myth and reality. *Aslib Proceedings* [online], 6 (4), 364–379. Available from: http://www.emeraldinsight.com/10.1108/00012530910973776.

Selwyn, N., 2011. *Education and Technology Key Issues and Debates*. London: Continuum.

Selwyn, N., 2013. *Distrusting Educational Technology: Critical Questions for Changing Times*. London: Routledge.

Selwyn, N., 2016. *Is Technology Good For Education?* 1st ed. Cambridge, UK: Polity Press, Wiley.

Selwyn, N., Banaji, S., and Clark, W., 2011. Providing a platform for parents ? Exploring the nature of parental engagement with school Learning Platforms. *Journal of Computer Assisted Learning*, 27, 314–323.

Sen, A., 1993. Capability and Well-Being. *In*: Sen, A. and Nussbaum, M., eds. *The quality of life*. Oxford: Clarendon Press, 30–53.

Shor, I., 1993. Paulo Freire's critical pedagogy. *In*: Leonard, P. and McLaren, P., eds. *Paulo Freire: A Critical Encounter*. London: Routledge, 24–37.

Simpson, B., 2006. 'You Don't Do FieldWork, Field Does You': Between Subjectivation and Objectivation in Anthropological Fieldwork. *In*: Hobbs, D. and Wright, R., eds. *The SAGE Handbook of Fieldwork*. Sage.

Slussareff, M., Braad, E., Wilkinson, P., and Strååt, B., 2016. Games for Learning. *In*: Dörner, R., Göbel, S., Kickmeier-Rust, M., Masuch, M., and Zweig, K., eds. *Entertainment Computing and Serious Games* [online]. Cham: Springer International Publishing, 189–211. Available from: http://dx.doi.org/10.1007/978-3-319-46152-6_9.

Smith, J., Skrbis, Z., and Western, M., 2012. Beneath the 'Digital Native' myth: Understanding young Australians' online time use. *Journal of Sociology*, 49 (1), 97–118.

Smith, P., 2010. *Understanding Children's Worlds: Children and Play*. Chichester: Wiley-Blackwell.

Squire, K. and Jenkins, H., 2003. Harnessing the power of games in education. *Insight*, 3, 5–33.

Stewart, J., Lizzy, I., All, A., Mariën, I., Schurmans, D., Looy, V., Jacobs, A., Willaert, K., and Grove, F. De, 2011. Digital Games for Empowerment and Inclusion (DGEI) The Potential of Digital Games for Empowerment and Social Inclusion of Groups at Risk of Social and Economic Exclusion : Evidence and Opportunity for Policy, 1–223.

Strauss, L., 1962. The Science of the Concrete. *The Savage Mind*, 17, 157–174.

Street, B., 1984. *Litearcy in Theory and Practice*. Cambridge, UK: Cambridge University Press.

Street, B., 2003. What's 'new' in New Literacy Studies?: Critical approaches to literacy in theory and practice. *Current Issues in Comparative Education*, 5 (2), 77–91.

Suissa, J., 2009. Constructions of Parents and Languages of Parenting. *In*: Kerdeman, D., ed. *Philosophy of Education Yearbook2*. Washington: University of Washington, 113–116.

Sutton-Smith, B., 1997. The Ambiguity of Play. *Cambridge, Massachusetts, London, Harvard University*.

Tapscott, D., 2009. *Grown Up Digital*. Focus. New York: McGraw-Hill.

Tashakkori, A. and Teddlie, C., 2003. *Handbook of Mixed Methods in Social & Behavioral Research*. Sage Publication.

Terry, G., Hayfield, N., Clarke, V., and Braun, V., 2017. Thematic Analysis. *In*: Willing, C. and Stainton-Rogers, W., eds. *The SAGE Handbook of Qualitative Research in Psychology*. London: SAGE Publications Ltd.

The New London Group, 1996. A Pedagogy of Multiliteracies: Designing Social Futures. *Harvard Educational Review* [online], 66 (1), 60–93. Available from: http://hepgjournals.org/doi/10.17763/haer.66.1.17370n67v22j160u.

The Scottish Government, 2016. *REVIEW OF FAMILY LEARNING SUPPORTING EXCELLENCE AND EQUITY* [online]. Edinburgh. Available from: https://www.education.gov.scot/improvement/Documents/Family-Learning-Executive-Summary.pdf.

Tricoglus, G., 2001. Living the theoretical principles of critical ethnography' in educational research. *Educational Action Research*, 9 (1), 135–148.

Tullis, J., 2013. Self and Others: Ethics in Autoethnographic Research. *In*: Holmon Jones, S., Adams, T., and Ellis, C., eds. *Handbook of Autoethnography2*. California: Routledge, 244–261.

Turkle, S., 1984. Video games and computer holding power. *In*: *The second self: Computers and the human spirit*. 64–92.

Vanderlinde, R. and van Braak, J., 2010. The gap between educational research and practice: views of teachers, school leaders, intermediaries and researchers. *British Educational Research Journal* [online], 36 (2), 299–316. Available from: http://doi.wiley.com/10.1080/01411920902919257.

Vannatta, R. A. and Fordham, N., 2004. Teacher Dispositions as Predictors of Classroom Technology Use. *Journal of Research on Technology in Education*, 5191, 253–271.

Vasudevan, L., Kerr, K. R., Hibbert, M., Fernandez, E., and Park, A., 2014. Cosmopolitan Literacies of Belonging in an After-school Program With Court-Involved Youths. *Journal of Adolescent & Adult Literacy*, 57 (7), 538–548.

Verenikina, I. and Kervin, L., 2011. iPads, digital play and pre-schoolers. *He Kupu*, 2 (5), 4–19.

Vygotsky, L., 1978. Interaction between learning and development. *Readings on the development of children*, 23 (3), 34–41.

Wajcman, J., 2014. *Pressed for Time*. Chicago: University of Chicago Press.

Waldie, A., Foylan, A., Wootton, R., Holland, J., and De Ionno, D., 2017. *Ofcom Children's Media Lives*. London.

Watters, A., 2015. *And So, Without Ed-Tech Criticism* [online]. Available from: http://hackeducation.com/2015/08/15/criticism [Accessed 26 Apr 2016].

Webb, E. J., Campbell, D. T., Schwartz, R. D., and Sechrest, L., 1966. *Unobtrusive Measures: Nonreactive Measures in the Social Sciences*. Chicago: Rand McNally.

Wilkinson, P., 2013. Affective educational games: Utilizing emotions in game-based learning. *In*: *Games and Virtual Worlds for Serious Applications (VS-GAMES), 2013 5th International Conference on*. IEEE, 1–8.

Wilkinson, P., 2016a. Entertainment Computing and Serious Games. *In*: Dorner, R. and Gobel, S., eds. *Entertainment Computing and Serious Games* [online]. 17–41. Available from: http://link.springer.com/10.1007/978-3-319-46152-6.

Wilkinson, P., 2016b. A Brief History of Serious Games BT - Entertainment Computing and Serious Games: International GI-Dagstuhl Seminar 15283, Dagstuhl Castle, Germany, July 5-10, 2015, Revised Selected Papers. *In*: Dörner, R., Göbel, S., Kickmeier-Rust, M., Masuch, M., and Zweig, K., eds. [online]. Cham: Springer International Publishing, 17–41. Available from: http://dx.doi.org/10.1007/978-3-319-46152-6_2.

Wilkinson, P., 2016c. *Brief history of serious games*. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics).

Williams, R., 1974. *Television Technology and Cultural Form*. New York: Schoken Books.

Willis, P., 2013. *The Ethnographic Imagination*. Hoboken: Wiley.

Winner, L., 1977. *Technology, Autonomous: Technics-out-of-Control as a Theme in Political Thought*. Lighthouse Press.

Wittgenstein, L., 1958. *PHILOSOPHICAL INVESTIGATIONS*. 2nd ed. Oxford: Basil Blackwell.

Wohlwend, K., 2013. *Literacy Playshop: New Literacies, Popular Media, and Play in the Early Childhood Classroom*. New York: Teachers College Press.

Wood, W., 2012. *CHILDREN ' S PLAY And Its Place in Education*. 3rd ed. New York: Routledge.

Wyatt, S., 2008. Technological Determinism is Dead ; Long Live Technological Determinism. *In*: *The Handbook of Science and Technology Studies*. Cambridge, Massachusetts: MIT Press.

Young, I. M., 1988. Five Faces of Oppression. *The Philosophical Forum*, 14 (4), 270–291.

Young, I. M. and Allen, D. S., 2020. Five Faces of Oppression. *In*: *Justice and the Politics of Difference*. 39–65.

Zelditch, M., 2001. Theories of legitimacy. *In*: Jost, J. T. and Major, B., eds. *The Psychology of legitimacy: Emerging perspectives on ideology, justice and intergroup relations*. New York: Cambridge University Press, 33–53.

Zimmerman, E., 2008. Gaming Literacy. *In*: Perron, B. and Wolf, M., eds. *The Video Game Theory Reader* [online]. New York: Routledge, 23–31. Available from: http://scholar.google.com.au/scholar?hl=en&lr=&q=related:O6qSKM2oa1IJ:scholar.google.com/&um=1&ie=UTF-8&sa=X&ei=evhBUIySIo6RiQeW2IGQBQ&ved=0CGkQzwIwCw#8.

Appendix A: Mediating Family Play – Initial Project Proposal

Project Proposal - Assessing Playful Experiences

Timescale

- 3 Months: Commencing July 1st through to September 30th

Relevant Parties and Individuals

Hide and Seek	**Bournemouth University**		
	Center for Digital Entertainment	**Center for Excellence in Media Practice**	**Design Engineering and Computing**
Alex Fleetwood *Director*	Phillip Wilkinson *Researcher Engineer*	Dr Mark Readman *Academic Supervisor* *Creative Pedagogy & Discourse Analysis*	Dr Jacqui Taylor *Academic Supervisor* *Cyber psychology* *Child psychology*
Chris Pheasey *Head of Production*	Daniel Cox *Project Manager*		
Dan Borthwick *Technical Director*			

Background and Justification

During the initial meeting between myself and Alex, Dan and Chris at Hide and Seek it came to light that there is limited opportunity to assess the effectiveness of games they have produced. This is due to the limited availability of appropriate tools and methodologies as well as commercial pressures dictating how much time can be spent on a given projects. Therefore, this project will create reflective insight

into the current practices of Hide and Seek and generate a process for assessing the effectiveness of the games they develop in relation to its intended outcomes. In this context 'process' refers to methods for information gathering, intervention points, analytical approaches and assessment criteria. Research undertaken will form part of the researchers methodological section of his larger research focus on creating games for social and emotional learning.

Aims and Objectives

- To develop a process / tool for assessing the effectiveness of playful experiences,
    - Define what is meant by effectiveness and the intended outcomes of playful experience,
    - Mark out development process for development of games from inception to development and assessment,
    - Decide key points in development process in which assessment can occur,
    - Present benefits to adopting a quantitative, qualitative or mixed methods approach to assessment,
    - Analyse what data is currently being generated and highlight areas for further data generation
    - Review relevant methodological approaches for assessing playful experiences,

Requirements from Hide and Seek

To ensure the project is successful I will require a small time commitment from staff to conduct interviews and access to production materials (e.g. story boards) and development meetings for observations.

Outcome

The outcome of this project will be a process for assessment of playful experiences developed by Hide and Seek. This process will be presented through a workshop that demonstrates the chosen methodologies and analytical approaches. Along with this a report will be created that contains the following sections:

- Overview of the games development process at Hide and Seek
- Analysis of company culture and philosophical approach to games development
- Explanation of assessment process
- Justification for chosen methodologies and analytical approaches
- Highlighted areas for further research

Potential Challenges and Solutions

Challenge	Solution
Finding a suitable game that can be used as the basis for the initial process' creation,	Multiple projects can be used to provide insight into games development process, however this may effect timescales.
Developing a process for assessing the effectiveness of a given game that is also flexible enough to be used in future projects,	Transfer knowledge regarding process' creation and methodologies chosen so that it can be adapted in house
Managing time commitments between relevant parties	Schedule fixed meeting points at the beginning of the project,
Project overrunning	Use sub-sections of report as milestones to be generated at specific times (can coincide with fixed meeting points)
Finding funding, resources and space for researcher and project,	Telecommute, Skype meetings, shared folders in Dropbox, highlight academic funding opportunities, CDE sponsor.

Research Areas and Discussion Points

- What research methodologies are appropriate whilst still generating relevant insights?
    - Can novel elicitation methods be adapted to games design?
- What data can be automatically generated regarding users playing habits?
    - Can this data be automatically analysed to generate insight?
- Can the information gathering or assessment process be designed to form part of the game itself?

    - Can information gathering / assessment / insight generation be a game in of itself? For example through the crowd-sourcing of ideas?
- Given this context, how are we framing the use of 'games'?

Sesame Street Tiny Games' (SSTG) Purpose

The purpose of SSTG is a fusion of the pursuits of Hide & Seek – creating playful experiences, and Sesame Street – educating children through engaging content. As such its purpose is two-fold; ***create a culture of parent-child game playing and making*** and ***promote executive function development***.

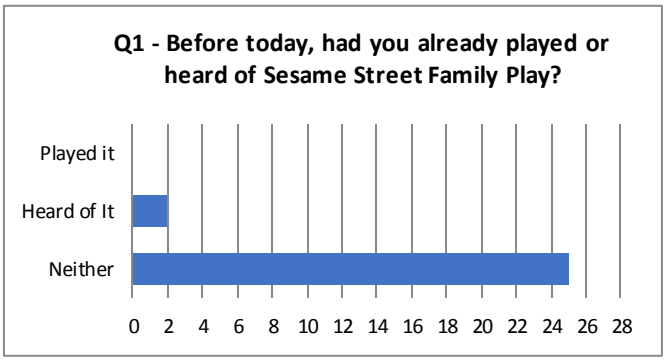
Aims

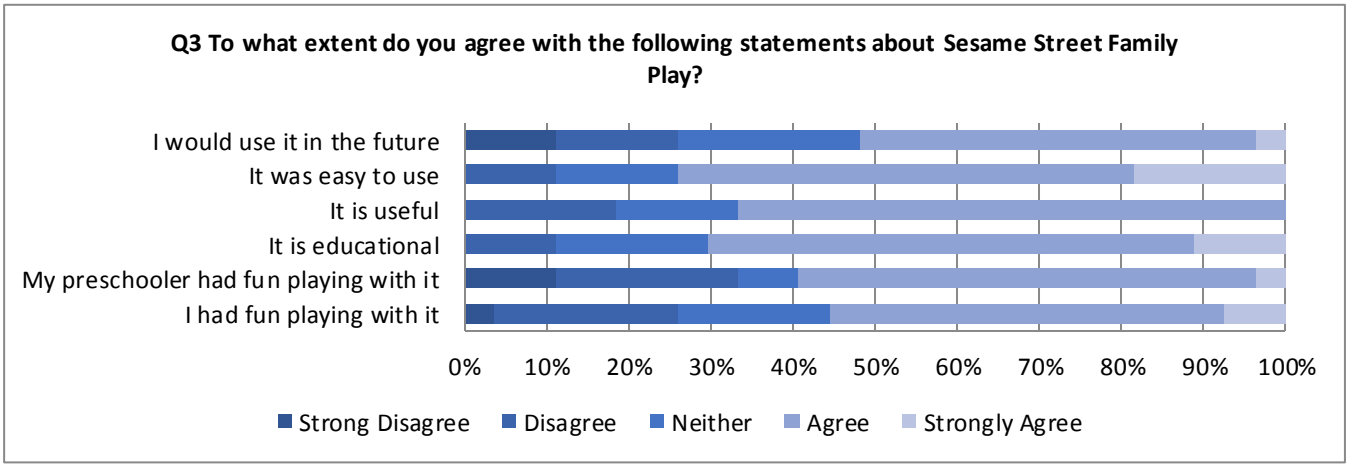
- Increase the amount of time parents spend playing with their children through contextually sensitive activities.
- Improve 'quality' of play between parents and children in terms of parental / peer involvement, enjoyment and relation to educational outcomes.
- Stimulate parents' creation of new games or tweaking of previously played games.
- Reframe parent's perceptions of play so they understand plays developmental value
- Promote the development of executive functions: self-control, cognitive flexibility and working memory.

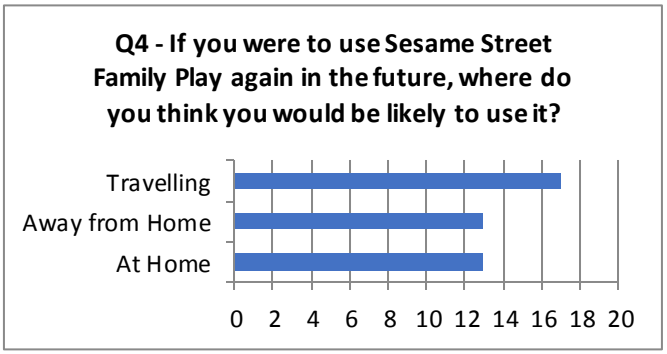
Why is this important?

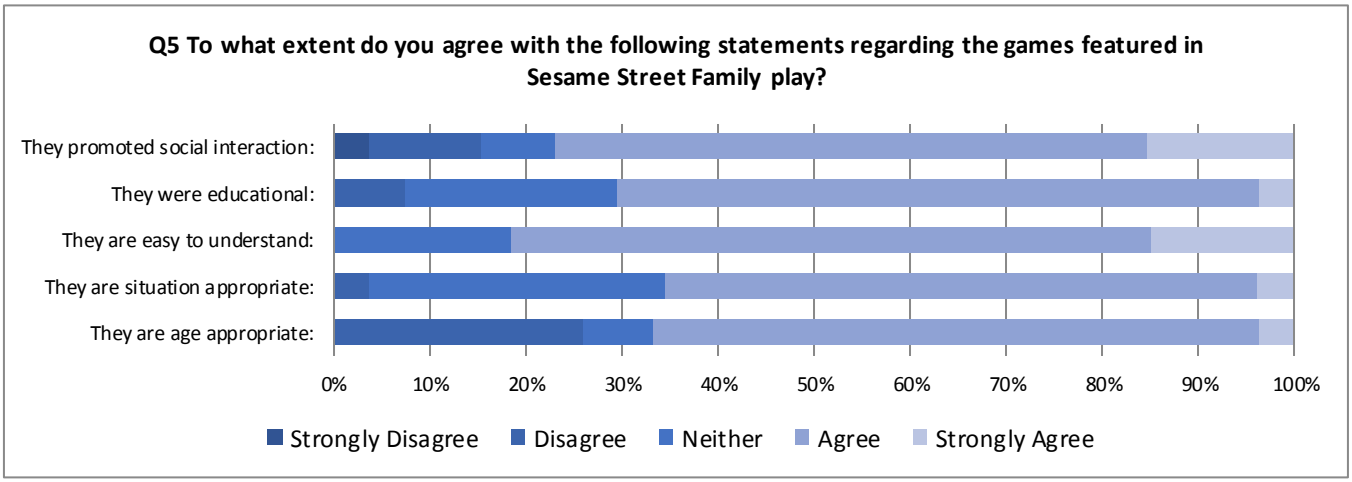
- Play is recognised in multiple theories of developmental psychology, educational psychology and neuroscience as important to children's cognitive, affective and psychomotor development.
- 59% of fathers and 42% of mothers spend less than 5 hours a week playing with their children and a third of parents feel guilty for playing with their children instead of doing housework.
- 46% of parents want help in and ideas on how to play with their children; 29% feel under pressure to have fun. As such there is an uncomfortable trend of compensation with 'digital pacifiers'.
- Parent's perceptions of play can influence children's ability to play in 3 ways: interactions between parents and their children; stimulus offered; and availability of toys or safe playful environments.
- When parents are involved in play, their children are able to overcome tasks beyond their level of development. Similarly playing with others is important for practicing social skills, safely exploring boundaries and passing on cultural norms.
- Executive functions, defined as working memory, cognitive flexibility and self-control is a greater indicator of academic achievement than intelligence alone.
    - Self-control is also linked with theory of mind and empathy.

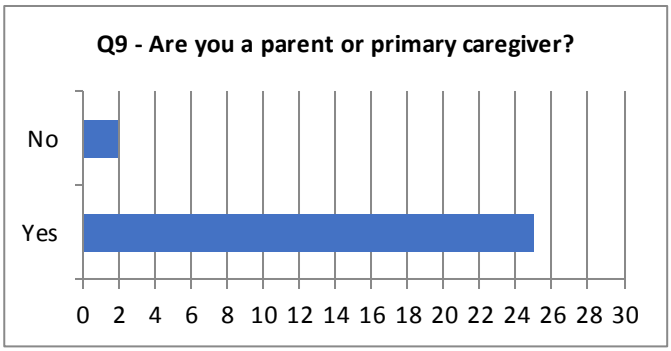
Appendix B: Mediating Family Play - Questionnaire Results

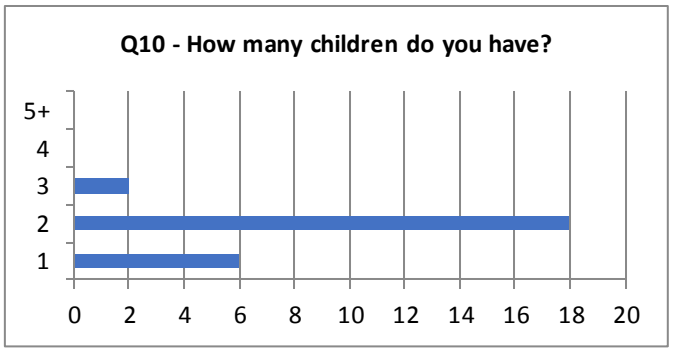


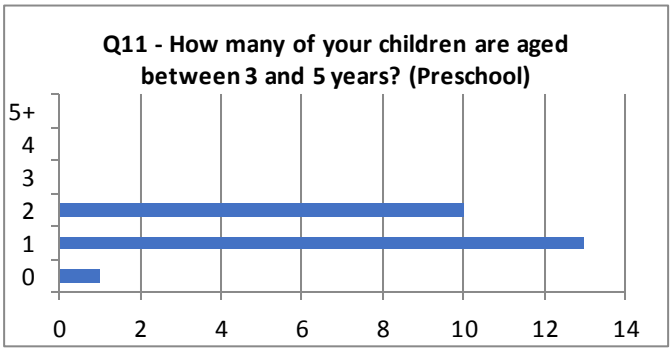




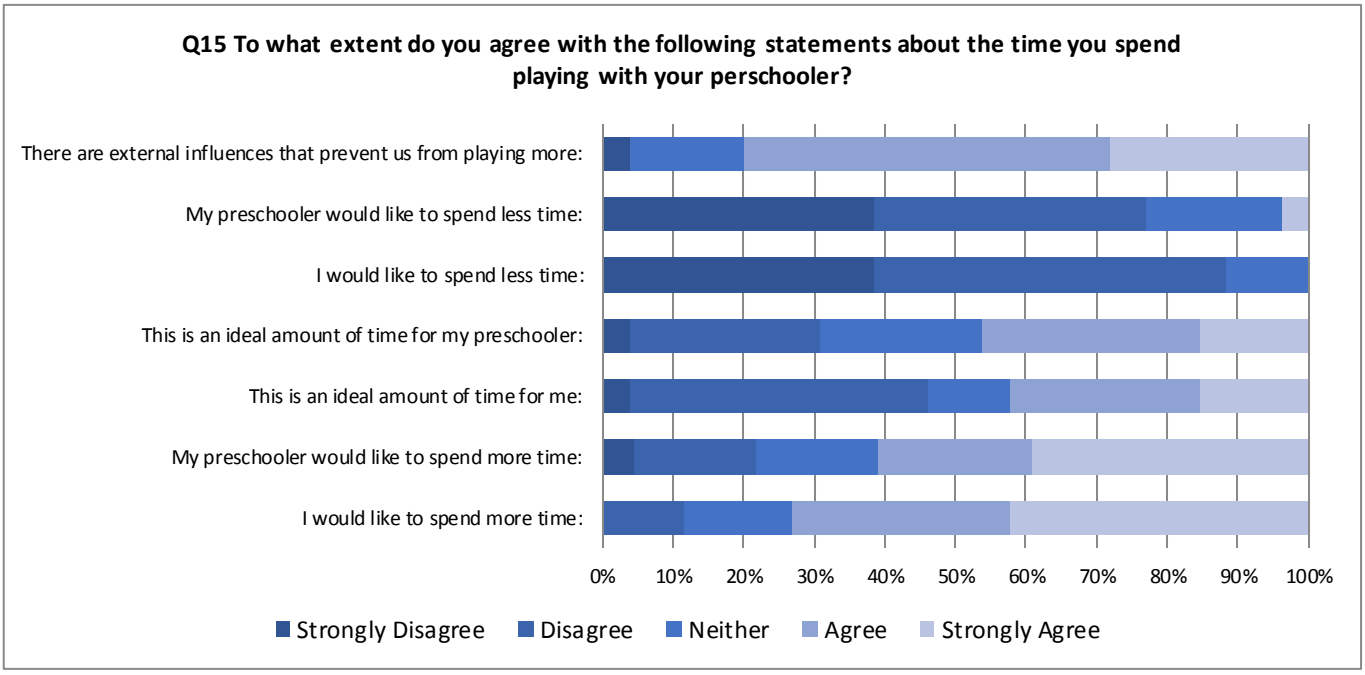


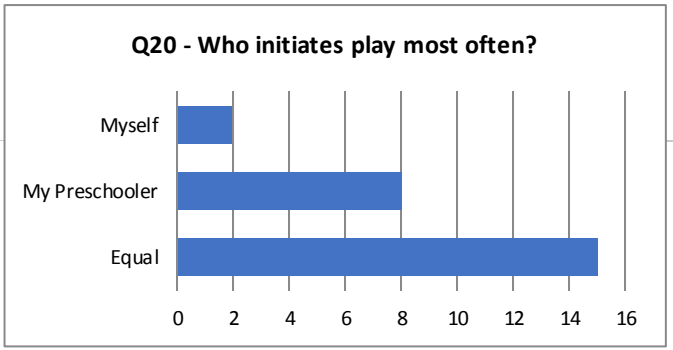

Q9 - Are you a parent or primary caregiver?
No
Yes
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

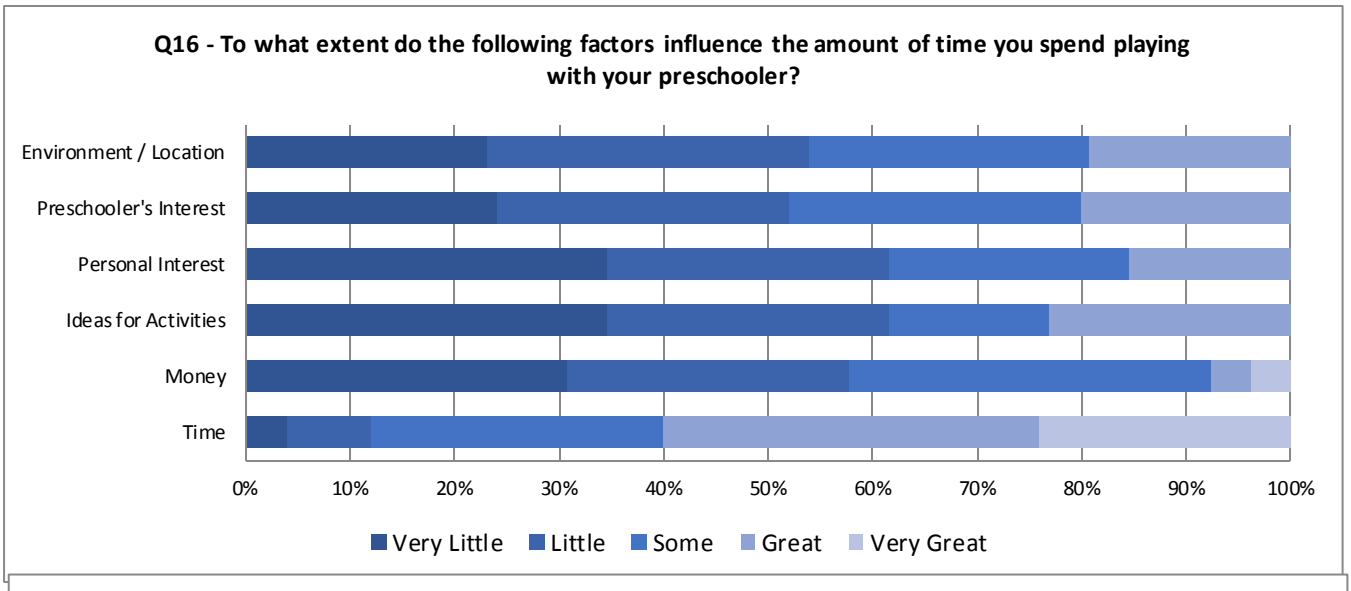

Q10 - How many children do you have?
5+
4
3
2
1
0 2 4 6 8 10 12 14 16 18 20

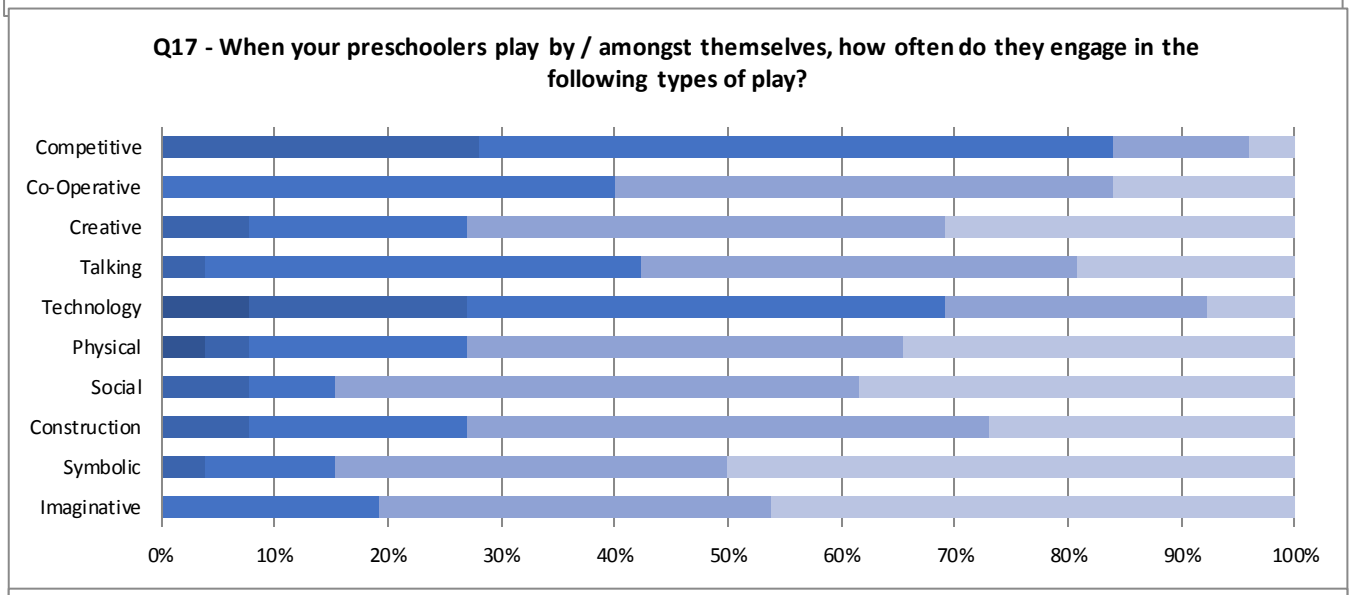

Q11 - How many of your children are aged between 3 and 5 years? (Preschool)
5+
4
3
2
1
0
0 2 4 6 8 10 12 14

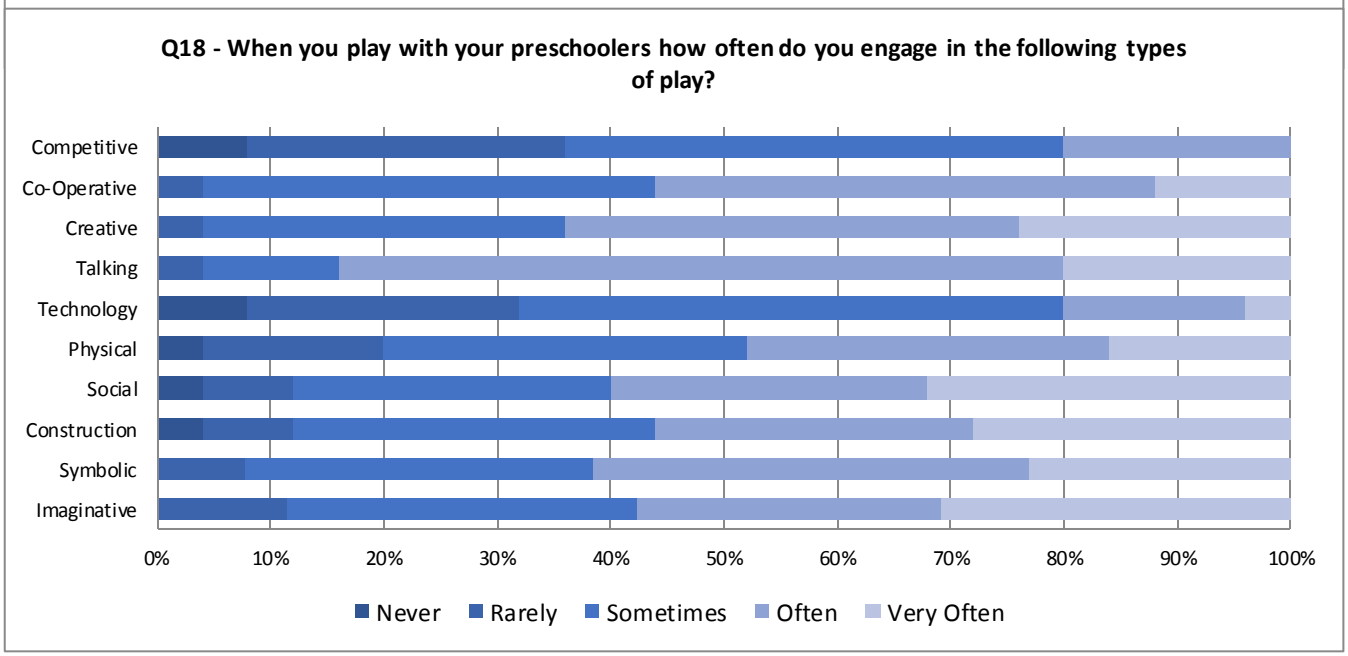

Q19 - Where do you most often play with your preschooler?
Travelling
Away from Home
At Home
0 2 4 6 8 10 12 14 16 18 20


Q15 To what extent do you agree with the following statements about the time you spend playing with your perschooler?
There are external influences that prevent us from playing more:
My preschooler would like to spend less time:
I would like to spend less time:
This is an ideal amount of time for my preschooler:
This is an ideal amount of time for me:
My preschooler would like to spend more time:
I would like to spend more time:
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Strongly Disagree
Disagree
Neither
Agree
Strongly Agree


Q20 - Who initiates play most often?
Myself
My Preschooler
Equal
0 2 4 6 8 10 12 14 16


Q16 - To what extent do the following factors influence the amount of time you spend playing with your preschooler?
Environment / Location
Preschooler's Interest
Personal Interest
Ideas for Activities
Money
Time
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Very Little
Little
Some
Great
Very Great


Q17 - When your preschoolers play by / amongst themselves, how often do they engage in the following types of play?
Competitive
Co-Operative
Creative
Talking
Technology
Physical
Social
Construction
Symbolic
Imaginative
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%


Q18 - When you play with your preschoolers how often do you engage in the following types of play?
Competitive
Co-Operative
Creative
Talking
Technology
Physical
Social
Construction
Symbolic
Imaginative
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Never
Rarely
Sometimes
Often
Very Often

Appendix C: Mediating Family Play - Information Sheet & Consent Form

Sesame Street Family Play

What Is This Study About?
We are looking to understand how families play together and the role digital media can play in helping parents and pre-schoolers play together.
Who is Behind this Study?
The Centre for Digital Entertainment, a doctoral training center run by Bournemouth and Bath University, is leading this study. It's funding comes from the Engineering and Physical Sciences Council. This study is being undertaken in collaboration with Hide & Seek and Sesame Street Children's' Workshop.
What Happens if I Agree to Take Part?
You will be given a copy of Sesame Street Family Play and an iPad. You are then encouraged to freely play with your preschooler's using Sesame Street Family Play for game ideas. Hands-off supervision by a trained researcher will be available. After this play sessions you will be asked to fill in a questionnaire.
What is the Time Commitment?
It is anticipated that the free play session will last from 10 to 20 minutes, this is up to your discretion, and the questionnaire will take 5 minutes to complete.
What are my Rights?
You can take part in this study at your discretion. Once you do agree to take part you can withdraw at any time without explanation. You have the right to confidentiality and all questionnaire responses will be kept anonymous. You are able to withdraw your data from the study up to 2 weeks from the completion of the questionnaire.
How is the Information Collected Used?
Information will be collected anonymously and will provide insight into families play habits. Only relevant data will be collected and will be destroyed after the completion of this study. Once collected and analysed it is intended that anonymous data will be published in research journals.
Who can I Contact for Further Information?
For further information about the aims of this research project, or questions about data usage you can contact the lead researcher (Phillip Wilkinson) via email: pwilkinson@bournemouth.ac.uk or phone: 07900930623.

Consent Form

I _____ agree to participate the above mentioned research study.

The purpose and nature of the study has been explained to me in writing.	
I am participating voluntarily.	
I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.	
I understand that I can withdraw permission to use the data within two weeks of the play session, in which case the material will be deleted.	
I understand that anonymity will be ensured during the publication of this research.	
The purpose and nature of the study has been explained to me in writing.	
I am participating voluntarily.	
I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.	

Signed _____ Date _____

Appendix D: Game Makers – Initial Project Proposal

Project Summary: Purposeful Games Development at IPACA

Summary

This project will blend principles of learner-led education with games-based learning; providing insight into these fields whilst offering students a valuable learning experience. Over 25 weeks, a team of students will develop a digital game designed to improve children's social and emotional learning. Development will be supported through a series of after school workshops – hosted at IPACA and facilitated by a lead mentor. Upon completion students will present their work through a booth at the Big Bang Fair 2014 and potentially achieve a Golden Crest Award from the British Science Association. Through the development process students will develop team work, project management, and presentation skills. Further to this they will gain an understanding of programming, psychological theories, and art & design among others. Research will be generated through students' reflections of the process and final game as well as observations made throughout the process.

Justification

Games-Based Learning is an increasingly popular endeavour in education as teachers seek to harness the motivational and engaging aspects of games to further learning. As well as using commercially available games – much like other media – as resources for knowledge transfer, discussion generation, and reflection games developed specifically for education are common place. However, learners are treated as passive subjects – with games developers only superficially involving them in the games development process. Moreover, the common approach in educational games is that of rote or quiz based learning with a game layer, primarily points or badges. The problem of this approach is two-fold. Firstly it limits the depth of learning to that of memory retention. Secondly, and perhaps the biggest problem, is that by creating a game in which learning is incentivized with a game element it implies that learning needs to be incentivized. Rather than creating a culture that celebrates learning, exploration, curiosity, and self-mastery there is a hidden educational game curriculum that promotes the idea that learning isn't fun and must only be done for external rewards.

Considering the recent approach to move towards learner-led education – in which exploration, curiosity, and self-mastery are celebrated - there is potential to combine this with the games-based learning paradigm. The act of making a game will deepen their understanding of the intended subject, provide a resource other

learners and educators can benefit from, and generate insight into the games development process. Moreover as games development is a cross-curriculum activity, it affords them the ability to put their understanding from STEAM subjects into practice through a team-orientated approach. Should the students require specialist equipment, resources, or research materials this will be procured through Bournemouth University via the lead mentor. Through the development of a game, it is intended that students should feel empowered through the acquisition of digital skills – the intension being to plant early seeds of digital entrepreneurialism. Rewarding the students for their efforts is a fundamental goal of this project, as such they will have their worked celebrated at the Big Bang Fair, achieve a Golden Crest Award, as well as be presented with opportunities after the project is completed.

Research generated from this project – through student and researcher reflections and gathering of feedback – will inform game-based learning development practice. Moreover, the application of the learner-led approach to game-based learning will generate insight into each field of enquiry and provide an opportunity to assess the efficacy of blending these approaches – especially in comparison to traditional game-based learning approaches.

Aims & Objectives

- Produce a student created educational / purposeful game
- Equip students with skills to work as a team and develop games
- Provide students with a hands-on understanding of the games development process
- Develop students team-work, presentation, and project management skills
- Empower students to go on and develop other games or mobile applications
- Generate insight into the application of learner-created educational games

Deliverables

- An Educational Game for Children's Social and Emotional Learning
- Review report providing a framework for other educators to establish similar programmes
- Academic paper discussing the projects findings

Time Scale & Commitment

The project will commence the week beginning **September 24th 2014** and finish the week commencing **March 9th 2015** for a total of 10 **weeks.** Though there may be opportunities for students to expand on their work.

Students will receive training through weekly **1 hour workshops**. Outside of these workshops students are expected to spend a further **2 hours** working on their project.

Delivery Format

Tuition and mentor support will be provided through a blended approach of face-to-face workshops and online support. Workshops will be delivered on **IPACA Campus** and online support will be delivered through **Google Docs** & **Twitter.** The overarching structure of the programme will follow typical process of commercial games development. The stages in this process, as well as its purpose, are as follows:

Stage	Purpose	Intended Learning Outcomes
Introduction	• Provide students with an understanding of the programme • Lay foundations for their future research directions • Students decide on their teams & individual roles	• Awareness of individual skills • Knowledge of the programme • Basic understanding of games design • Basic understanding of psychology • Knowledge of social and emotional learning
Research & Design	• Explore research surrounding games-based learning • Brainstorm ideas for potential ideas • Gather feedback and information from intended users • Develop early game prototypes • Produce a design document	• Knowledge of research skills and resources • Awareness of brainstorming techniques • Understanding of prototyping techniques • Understanding of games 'features' and 'requirements'
Project Planning	• Introduce students to agile software development • Prioritise features and requirements • Plan feature and requirement implementation • Create a 'Sprint Board'	• Understanding of Agile Development • Understanding of requirements and feature analysis • Develop project planning skills
Development	• Program the game according the decided features • Design and create art assets (characters, background etc) • Produce an early Alpha, Beta, then Complete game • Gather feedback from users in	• Understanding of programming techniques for games • Understanding of asset creation for games • Knowledge of user-feedback techniques • Develop project management

	cycles	skills • Develop communication skills
Review	• Reflect on their experiences and learning • Evaluate their own performance and that of their teams	• Awareness of their skills and how they have developed • Understanding of being reflective

Workshop content will initially be decided by the lead-mentor – with the intention of giving students a solid platform on which to pursue their own studies. Following workshops will be given a central theme and the content will be decided in collaboration between the mentor and students. Further workshops will have no central theme, though a set time will be allocated to cover anything that the students see as pertinent.

Appendix E: Game Makers – Learner Interview Transcript (Excerpt)

I: Hi! How are you doing?

A: Good thanks, you?

I: I am so tired.

A: So am I <laughs>

I: So, thankyou for agreeing to give feedback. You do actually have a choice, if you don't want to you can just tell me to go away.

A: I don't mind.

I: I guess you've been listening kind've to what other people are saying. [Yeah]. So you know I'm just looking to get feedback What was good, what wasn't good. What you think you learned.

A: Okay.

I: So, what did you think was good, what did you like about it?

A: I quite liked using new stuff like piskel I haven't used before and found interesting. It was annoying as well because sometimes you didn't know how to use it. Like finding your way around it was fun, but it got hard sometimes.

I: Did you find that quite difficult with Flowlab, the actual software we used to make a game.

A: Yeah, sometimes it was like the pixels were really hard because they were like square. And I didn't know how to change it.

I: I have to say people really liked your idea though [yeah]. Actually, yeah do you have a name for the game.

A: I don't think I got round to make a name for the game because I couldn't think of one.

I: Yeah, I think we were just calling it Motherhood Simulator [yeah] – but that's not a very good name [yeah]. If you do think of one, just send me an email.

I: Erm, 'm going around telling people about the games you all have designed, and they thought it was a really clever way of showing it. Can I ask is there a reason why you designed it so that you are a single mother, rather than having, like a partner.

A: So, I don’;;t really know. I just thought like it was based like on teenage pregnancy and obviously boys don’t get pregnant. So I kind of thought base it around girls. I thought it would be like a thing for girl.

I: That makes sense. It was a games designed for girls to play, not for boys.

A: Not for boys.

Appendix F: Game Makers – Lesson Plan Excerpt

Workshop 4 – Game Interactions and Mechanics

Workshop Content

Time	Content
5 minutes	**Introductory Activity – Play Some Games** ● Use their SmartPhones to play with any game they have already downloaded ● Ask them to pay attention to ***how*** they interact with it? .
20 minutes	**Interactive Technologies (Applied to Games)** ● 2 minute talk to introduce the field of Human Computer Interaction ● 5 minutes: How many different types of interactive technologies can you think of? ○ "Think of all of the different hardware that you use to 'input' information into the computer" ○ "Think about all of the different sense that you can use to interact with computers" ● 5 minutes: Quick overview of the different interactive technologies that are used - using game examples for each. ● 5 minutes to give examples of some ***emerging technologies*** that are being used (Kinnect, LEAP Motion, Emotiv). ● 3 minutes - Developing interactive technologies for people with disabilities https://www.youtube.com/user/GameOnForEVERYONE
5 minutes	**Applying Understanding of Interactive Technologies**

	● Which of these new interactive technologies ***COULD*** you use in your game? ● Which interactive technologies ***WILL*** you use in your game? ○ Why? Cost, Accessibility, Fun?

50 minutes	**Rules of Games Design**
	
	● 10 minutes - Recap the concept of 'game mechanics' and introduce specific game mechanics that they *might* use
	  ○ Relate these specifically to the different interactive technologies mentioned earlier
	● 5 minutes: Specific game mechanics or rules they need to account for:
	  ○ Victory Conditions:
	  ■ When does the game end, how do they win?
	  ○ Levels:
	  ■ Are there levels, how many are there?
	  ○ Resources:
	  ■ Are there any resources that the player can collect? or loses over time? (Health, Time, Money).
	  ○ Interactions:
	  ■ How does the player interact in the game world?
	  ● Press Space to Jump

20 minutes	**Plenary** Fill in reflective questionnaire to recap on their learning throughout the process so far.

Appendix G: Game Makers – Plenary, Reflective Questionnaire

Games for Social Change - Progress

Have you enjoyed the topic 'Games for Social Change'?
Yes

What did you like about it? (try and be as specific and describe where possible)

I liked the whole creative side of it,and I liked being able to work independently on most of the tasks after a discussion with the class.

Were there times where you felt you needed support and did not get it? If so what were the tasks?

Did you feel supported in some lessons? How did you receive this support?

I felt supported when it come to making the sprites,I was completely stuck on how and what to do and I was given lots of ideas which really helped me out. I was also given lots of ideas on other parts of the game which was also useful.

What did you learn about your social issue that you were not aware of before you started the topic of 'Games for Social Change'? (this could be facts/statistics/who it affects/how it affects others)

I've learnt about teenage pregnancy in general,looking at statistics i've learnt that it's a much bigger issue than I first thought. And also I learnt that Weymouth and Portland have previously faced the issue on a big scale and that Portland and Weymouth had the highest rates in the country for the past 10 years.

What have you learnt about games that you didn't know before? (eg serious games)

That games have been made that can actually make a difference for example free rice

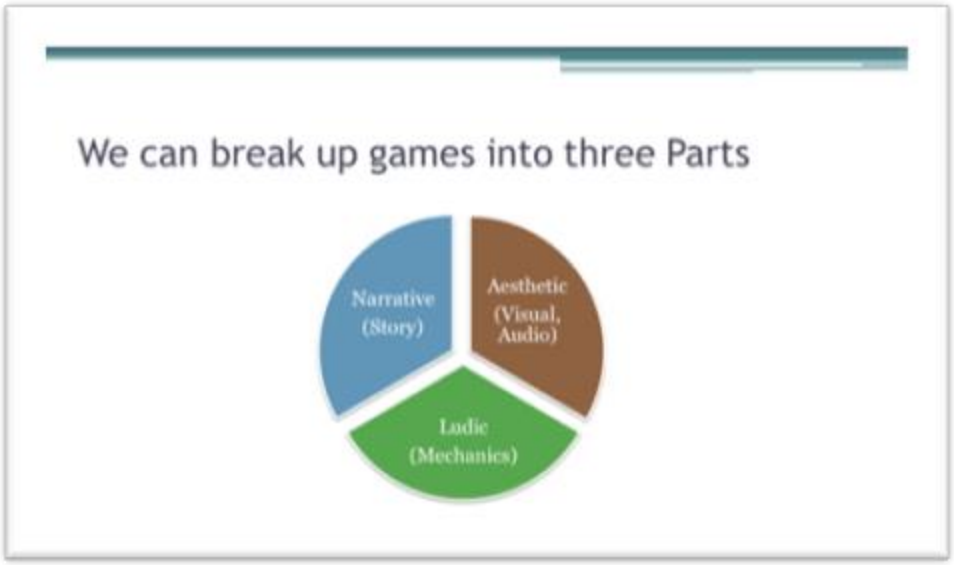
Do you think learning about your social issue through creating a game has been engaging?

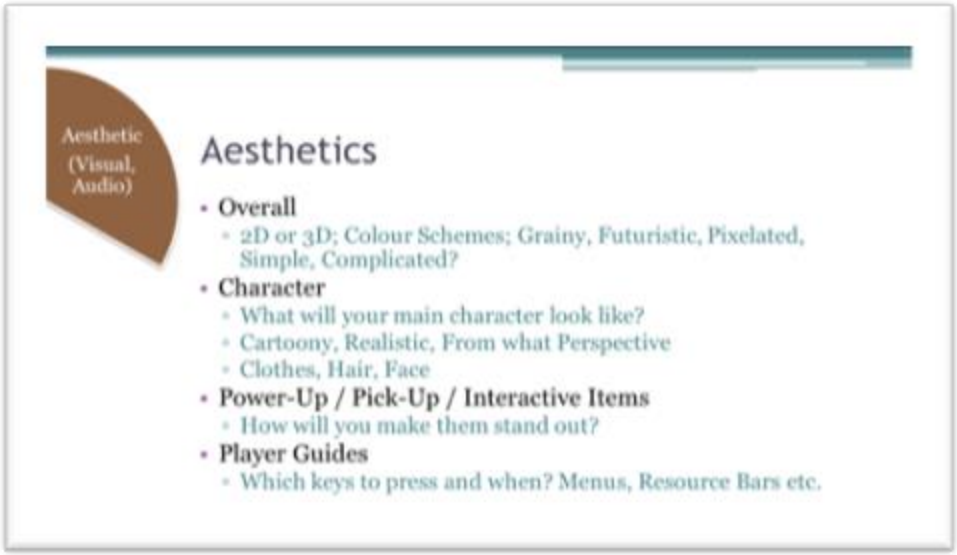
Yes,Its a different way of learning about the issue and you have to really think about how to put it into a game.

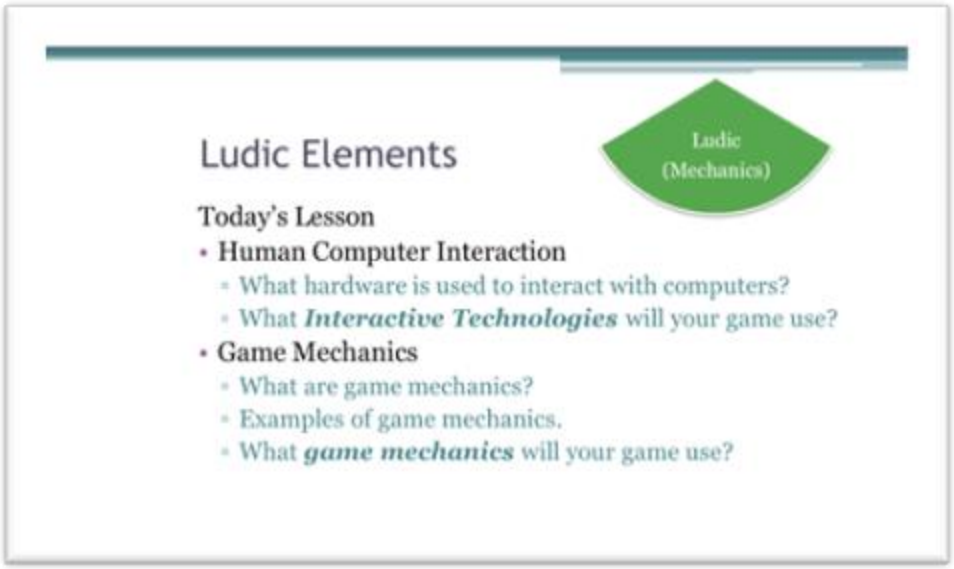
Do you think learning about a topic such as 'Medicine in History' through creating a game would make the learning less or more engaging than your usual lessons?

More engaging,Playing a game that educates you is more interesting than doing basic research or reading of a powerpoint or board.

Appendix H: Game Makers – Workshop 2 (Excerpt)







Appendix I: Game Makers – Table of Games Created

Game	Social Issue	Description	Representations
Smokeration	Smoking	Similar to the Operation physical game, the player must surgically remove body parts that have been affected by the patient's smoking habit.	The students have identified which specific body parts are affected by smoking. Aesthetically, they are attempting to create very 'viscerally disgusting' body parts in attempt to shock the player. It appears that this stems from their research that looked at the use of shocking images on cigarette packages.
Beggar Clicker	Homelessness	Based upon the popular game 'Cookie Clicker'. In this game the player must survive as a homeless person by 'clicking' to beg for change.	Students have attempted to identify the specific challenges of being homeless such as temperature, illnesses and hunger. These are represented using resource bars In addition when clicking there is a low chance that the player will actually receive money in an attempt to show a sense of desperation. Combined with characters that appear in the game and simply walk past the homeless player, it points to notion that homelessness is an ignored problem.
Kevin's Adventure	Bullying	This game is a side-scrolling 2D platformer. The player control's Kevin and must traverse certain locations, including areas around his home and school.	Students are attempting to create 'enemies' in the game that embody typical encounters with bullies. Additionally, they main character's abilities are being designed to represent the types of actions which a bullied person should take. However, they are finding it difficult to resolve the tension between wanting to fight back in the game – which is typical of the genre – with the real-world bullying advice that suggests the opposite.

The Masculine Jacqueline	Obesity	This mobile game constitutes a series of mini-games that represent gym-based exercises.	There is a central character who is obese, and through these exercises the player will visibly lose weight. Currently, the students are exploring the use of movement sensors in iPhones such that the mini-games played take input from moving the phone in certain ways – therefore attempting to create a games about exercise that actually provides exercise.
Motherhood Simulator	Teenage Pregnancy	Comparable to The Sims. A player controls a single mother with a new-born baby. From a top down perspective, the player must move the mother to interact with various items that represent her daily responsibilities.	Although the game is based on the social issue of teenage pregnancy, the game's narrative presents the player with single mother. There is an assumption here that teenage pregnancy must lead to motherhood. The game itself revolves around the constant interaction of various household items that represent the mother's new found responsibilities – in addition to a baby who will crawl around the home. Each item will alert the player that it requires attention. These alerts will occur with great frequency in attempt to leave the player feeling overwhelmed by the situation.
Stack Up	Generalised Anxiety Disorder	The game is a side-scrolling beat-em-up game. The player controls a character that moves through areas that represent real-world places. Occasionally the player is required to 'fight' their emotions.	It is worth noting here that the teacher has identified that the two students behind this game frequently suffer from anxiety. They are yet to design the specific representations of the emotions they will face in the game, however they have suggested the overall visual aesthetic of the game will change as the player intermittently has an anxiety attack. It will change from bright and colourful, to grey with a film-grainesque texture overlaid. The player can also use power to challenge bosses, these include medications, meditation, and breathing. They gathered these 'power-ups' from research they undertook to help tackle anxiety.

Appendix J: Game Makers – Observational Notes (Excerpt)

Games Design:

[Abby] looking at Teenage pregnancy as social issue and when creating her slides about game design she started to research the issue more in depth. She went to different website and looked up statistics. She looked at images and found good work about misconception of teenage pregnancy.

[Izzy], [Kate] and [Sara] were looking at smoking. They needed to think about the games design and levels etc, so they started to think about Operation game, this then led them to research about what parts of the body smoking effects and began to type this up.

[Harry] and [John] looked at bullying at when they were researching the issue they were surprised at the statistic (77% of school children felt they were being bullied).

[Joe] looked at homelessness and keen to research this - statistics

[Ben] and [Gregg] looked at obesity, researched this week, found out about they felt and that they felt trapped and unable to get out of the circle . Originally they were just looking at the physical effects of obesity and were unaware the images used could be seen as offensive, as a member of the class is overweight they began to realise there are other factors affecting obesity and started to look at this problem in a different light.

[James] and [Jake] and [Larry] looked at Anxiety and how this affects young people. This is a personal issue and researched this well when thinking about the games design and how they get to different levels. The different levels made pupils research this deeper to find out about characters, objects, levels.

Lesson 2 - need little more structure and focus. [Joe] worked better and was researching his issue on homelessness. Jamie looked at the world and stats and then started to look at uk and Dorset. What news is there about the social issue? [Joe] found article on Spiderman in Birmingham helping the homelessness - will this help him with his games design? Sparking ideas?

For homework pupils took photographs relating to key issue, these are seen in 'Social Issue is Portland'. This slide show has been shared with the class and each pupil is placing their image on a slide and describing the photo and writing up what the image represents. Any who did not complete the hw and not take a photo have found one off the Internet.

Pupils were discussing ideas and some started to draw, all engaged and enjoying the whole experience. 60 minutes in and pupils still very engaged with topic and researching using their ideas and looking at games on Playgen. Designing a game that they are going to create highly motivates the pupils on the task they are doing as they are going to actually create the game and it is real, rather than abstract.

….

Wed 6th May

Learning Outcomes: designing a game, using the appropriate software for the design (some paper and some screen based), some using paint which is not the best. Need to offer different types of suggested software and model this to the pupils who are unsure. Which appropriate characters/backdrops are being used - (LO) target audience and purpose needs to be clear.

They have made this clear and some groups more obvious than others. In 100 minutes students needs more structure as some needs that direction more than others. To do this can have clear objections on the board and more able will work at faster pace and will be able to do this by looking at the next steps/independently doing this without needing any help.

Some others who need more help will be able to look at the board for a reference and either use this and then continue or ask for help. The activity being used was about their design - make this more obvious on what design means but have this visually somewhere so the pupils can refer if they struggle to hold this type of information. Most started the design (LO), some made good progress and some not a lot - need to do the above

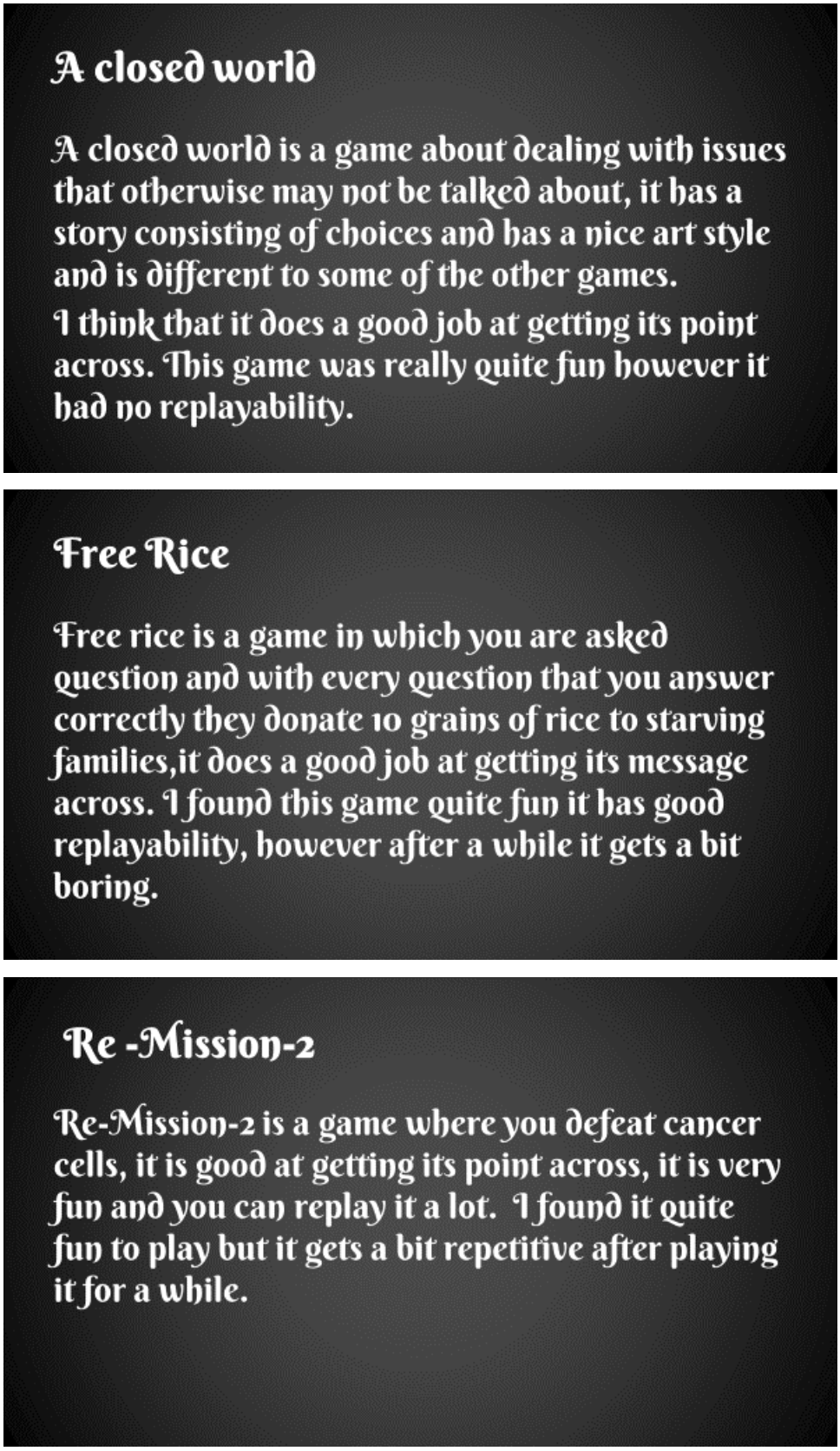
I think framing lessons through games design activities is an effective teaching approach, the students are engaged. Increased or decreased engagement is difficult to gage as the pupils are quite hard working and out of 'respect' to the teacher they are happy to do as they are told. They are quite a passive group of students however they are more engaged, for example: in a different lesson when they have finished a task for GCSE they will automatically revert back to the gaming task. [James] and [Jack] really enjoy it and are more engaged, as are the other pupils.It defintely improves their digital literacy skills and understanding what makes a game/good game, what a game is made up of. It gets them thinking about their social issue and by deciding on what their social issue is means they are more engaged than being told what to do.

Evidence to support that learning is taking place can be seen by the following:

- Pupils are using software they have never used before, just finding out how to use it independently and by asking their peers.

- They have created documents and slideshows with information about their game and social issue.
- Questions and answers
- Verbal feedback

Appendix K: Game Makers – Analysis of Existing Serious Games (Excerpt)



Appendix L: Game Makers – Guardian and Gatekeeper Consent Forms

Guardian Consent Form

Isle of Portland Aldridge Community Academy Game Makers Club

Researcher: Phillip Wilkinson, Researcher Engineer

pwilkinson@bournemouth.ac.uk

Supervisor: Mark Readman, Senior Lecturer

	Initial Here
I understand that my child's participation is voluntary and that I am free to withdraw them at any time, without giving reason and without there being any negative consequences. In addition, should I not wish to answer any particular question(s), complete a test or give a sample, I am free to decline.	
I give permission for members of the research team to have access to my child's anonymised responses. I understand that my child's name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.	
I give permission for members of the research team to make copies of the work that my child will produce. I understand that these copies will only be used for research and will not be shared.	
I give permission for my child to take part in the above research project.	

_____ _____ ___

_____

Name of Guardian Date Signature

_____ _____

_____

Name of Researcher Date Signature

Project Summary: Isle of Portland Aldridge Community Academy Game Makers Club

Introduction

Your child is being invited to take part in the IPACA Game Makers research project. Before you decide whether you give permission for them participate it is important that you understand what research is taking place and what it is being done. Please take time to read the following information carefully and discuss it with others if you wish. This research project is part of Phillip Wilkinson's (Lead Researcher) studies towards an Engineering Doctorate. Should you have any questions about this project please contact either Phillip Wilkinson, or his Academic Supervisor – Mark Readman.

Phillip Wilkinson - pwilkinson@bournemouth.ac.uk

Mark Readman – mark@cemp.ac.uk

Project Purpose

This project will explore learner-led development of educational games. Over 6 months, learners will form teams and develop a digital learning game about subjects they are studying at school. Development will be supported through a series of after school workshops – hosted at IPACA and facilitated by Phillip Wilkinson and Sarah Hyde. The aim of the research is to inform current approaches in games development, highlight children's perceptions of learning and their subjects, and explore the role of games development as an educational approach.

Why has my child been chosen?

Your child has been select by Sarah Hyde as they have demonstrated an interest in taking part in the Game Makers Club

Do they have to take part?

This project is entirely voluntary and you have the right to withdraw your child at any time. They also have the ability to withdraw themselves. Should you or your child choose to withdraw, you are not required to explain why. You or your child can chose to not have information collected about them whilst still taking part in the Game Makers Club. Please note that if you chose to withdraw from the Game Makers Club then you will automatically be withdrawn from the research project.

What do they have to do

Your child will be required to attend weekly workshops as part of the Game Makers Club. These workshops occur on a Friday afternoon and will run from 3:30pm to 6:00pm. Throughout these workshops they will be set tasks by Phillip Wilkinson and Sarah Hyde in order to facilitate the development of their game. These include brain storming ideas, creating initial designs, and undertaking research around your chosen community issue. At the end of the project your child will be asked to participate in a group discussion centred on the game they have developed.

What are the possible disadvantages and risks of taking part?

These workshops will fall outside of standard school hours, and are included in the schools after-school enrichment time. Therefore, there may be a requirement to arrange additional transport for your child(ren). However, the students will be supervisors throughout the workshops

What are the possible benefits of taking part?

Through the development process your child will develop team work, project management, and presentation skills. Further to this they will gain an understanding of programming, psychological theories, and art & design among others.

What information will be collected and how will it be used?

All the information that is collected during the course of the research will be kept strictly confidential. Your child will not be identified in any reports or publications. Information will be collected through the researcher observing your child working as well as collecting copies of the work that is produced. This may include taking photographs or photocopies of the work only. During the group discussions at the end of the project audio recordings will be taken. These recordings will be used to write up what was said only and will then be destroyed. Information collected in this research project may be used to inform further research that is occurring at the school. All responses will be kept anonymous and will be stored securely for 2 years. It is expected that your responses will be written up and available for you to see within 1 year.

Who is organising/funding the research?

This research is supported and funded by the Centre for Digital Entertainment at

Bournemouth University.

Contact Information

Doctoral researcher: Phillip Wilkinson, Researcher Engineer

Centre for Digital Entertainment, Bournemouth University, Fern Barrow, Poole, Dorset BH12 5BB

pwilkinson@bournemouth.ac.uk

Supervisor: Mark Readman, Senior Lecturer

Centre for Excellence in Media Practice, Bournemouth University, Fern Barrow, Poole, Dorset BH12 5BB

mark@cemp.ac.uk

Thank you for taking the time to read this information sheet. You will be provided with a copy to take with you.

Gatekeeper Consent Form

Isle of Portland Aldridge Community Academy Game Makers Club

Researcher: Phillip Wilkinson, Researcher Engineer

Centre for Digital Entertainment, Bournemouth University, Fern Barrow, Poole, Dorset BH12 5BB

Supervisor: Mark Readman, Senior Lecturer

Centre for Excellence in Media Practice, Bournemouth University, Fern Barrow, Poole, Dorset BH12 5BB

	Initial Here
I confirm that I have read and understood the project information sheet for the above research project and have had the opportunity to ask questions.	
I understand that participation is voluntary and that students are free to withdraw at any time, without giving reason and without there being any negative consequences. In addition, should they not wish to answer any particular question(s), complete a test or give a sample, I am free to decline.	
I give permission for members of the research team to have access to their anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.	
I give permission for members of the research team to make copies of the work that students will produce. I understand that these copies will only be used for research and will not be shared.	
I give permission for this research to take part at the Isle of Portland Aldridge Community Academy. I understand that I will be responsible for assisting with the provision of space and support regarding internal school Child Protection, Safeguarding, and Risk Assessment	

Policies.

I agree to take part in and facilitate the above research project.

_____	_____ __	_____
Name of Gatekeeper	Date	Signature

_____	_____	_____
Name of Researcher	Date	Signature

Appendix M: Digital Families – Observation Notes (Excerpt)

IPACA Journal #7

Before the meeting with the senior management team and other support staff I was met <school librarian>. She – as far as I know – the longest serving member of staff at the school. Accodring to her she had worked at the school for 30 years, attended IPACA primary school, and lived on the Island all of her life. She will be a source of knowledge about the school and I should listen carefully to what she has to say to gain insight into the school habitus. She has a very friendly and welcoming demeanour. Her work at the school has not reduced her enthusiasm in any way it appears. What is interesting is her broad discussions of the Island. She talked about her children leaving for work off the island, moving to the city. Apparently when her children return – who I can only assume are at least in their early 20s – they regress to their Portland routes. Described as being a Portland Lad, drinking beers and adopting surfer shorts, and flip flops – according to her son this would never happen in the city as it is too civilised. This element of insularity keeps cropping up as she described people moving to the island as 'incomers'. Something she self-acknowledged as othering. She then tried to trace the routes of this thinking. She drew comparisons to the former military presence on the island. The former military base, as itself an outside force / group that embedded itself on the island and insulated it from people there.

Appendix N: Digital Families – Parent Interview Transcript

I: So, just to check that you're okay. This is being recorded. [M1: Yeah] All your data will be kept confidential and not shared with anyone else. And you have the right to withdraw at anytime and you don't have to explain a thing to us. [Okay. Yeah, good.] Okay, great. So, can you start off by telling me, do you have two sons? [I do. I have two sons, two daughters] Oh wow, that's a big family. [Yeah and a step-son as well. So, the eldest one, but he lives with his dad most of the time.] You're collecting them. [Yeah – laughs] Can you tell me what the typical use of technology in the home is like?

M1: It's fairly confined at the moment with X-box and YouTube Apps and things like that. I do have a tablet and I haven't got my head around my tablet enough to be able to sit down and use it properly with the children. So basically, that's what I want to find out and what I want to know.

I: You say <Son>'s quite into technology.

M1: He is, yeah. I go to computer club here, Thursday nights. You know, computer and technology.

I: Cos I'm a kind of huge gamer and geek myself. Does he play Minecraft?

M1: Yeah, he's a huge Minecraft – we're just decorating his bedroom at home. I've got a little mural I'm putting up on the wall and it's actually solid wall, but it looks 3D and it's as if it's sunk in, but it's a little Minecraft man sat at a desk.

I: That's really cool. So, would you say there's like an equal split between them using it for like gaming and playing and..?

M1: Yeah. There's a lot of gaming obviously – there age is nine and six, so we are on top of the amount of time that they do use it. But yeah, mostly for gaming and that, but they go on YouTube and use YouTube Apps and different things on YouTube quite a lot. He likes his Amazon as well, when he likes to sit down and watch a film and that, yeah.

I: So Netflix. [M1: Mmm] So, can you tell me how try and stay on top of it?

M1: Just time. <son> especially - we've just had a week off – he will sit on his room and he will sit on the X-Box and the tablet and the phone and then he'll do that for as long as he can get away with it. So obviously we're: "Out the door, go and get some sunshine. Roll around, go dig."

I: Great. So can you tell me about how you see your children using technology in schools?

M1: Well, it's quite come apparent to me, with the youngest – well, she's here to start nursery today and she's already going through the Apps and picking YouTube and she actually goes through the search memory and finds out what she wants, you know. So, she recognises quite a few things on that. So, it's the only way forward for them. It's the only way.

I: Because <SON> has ASD – I was in the Spectrum – I think - what do they say? They say autism is a carrying extreme male brain. [Yeah] So it's like everyone could exist in that Spectrum to some extent.

M1: I do think I'm probably there as well. I used to teach Maps and things and I had a lot of problems in school. Just people understanding me really. I was the naughty little boy, and I didn't feel I was being naughty at all. They just didn't understand me.

I: Being misunderstood. [Yeah] Do you find that technology plays a role in that then?

M1: Yeah. I think it focuses him, it really does. If he's got to do something and he's like: "Right. We're gonna sit down and do this." He's there and he's on it, you know. That's him in it for as long as you can keep going really.

I: But you're finding the same with <son>?

M1: He's starting to pick things up really, really. Like we get quite a lot of arguments with the X-Box. They've got their own controllers, but then they want to play games on their own and they want to do their own worlds and what is it, texture-pack and things like that. They have to do different worlds. They're different but they're, you know, they're very much on the Minecraft at the moment, both of them.

I: Oh, do they play together quite a lot then?

M1: Yes, they play together, but like I say, we get arguments because they want to do their own world and they want to do this and that's where they clash.

I: It must be funny, just kind of taking a step back and just looking at that without – say if you had no idea what Minecraft was and just kind of hear some of the arguments that get texture packs.

M1: (laughs) I don't remember what the name of the worlds and the different texture packs and what have you. <son> likes to do one thing and <son> likes to do something completely different. And although they do play together and they do play well, that's where they do start pulling apart at the seams is their difference.

I: Do you ever find you have to kind of like take it away then?

M1: Normally a distraction. I normally go and sit <son> down on the tablet, or just get him to come downstairs and do something different. Because we don't know where we are with <son> at the moment it's just easier, a lot easier, to settle him to what he's doing and then distract the older one. Obviously it's not ideal but <son>'s actually living with me now. He needs a lot more attention and I must say, it was pretty much his decision to come and live with me – we wouldn't have it any other way. So, I'm happy to do that cos I can spend more time giving him the one-on-one that he does, I feel he does need. Certainly more than the others anyway.

I: Is it kind of like… the situation has changed recently when you've moved out.

M1: Yeah. It's getting better. I'm actually in the process of moving so <son>'s still with his mum and his siblings at the moment, cos his room's not ready. But he has got a room, so he knows that, he's aware and he's quite excited about it as well. He is the Daddy's boy out of the bunch. Like I say, he wouldn't have it any other way.

I: Yeah. And you kind of talked about it before, you left just as the computers were being introduced into schools. [Yeah] So how do you think school has changed between your experiences and <son>'s and <son>'s?

M1: Completely. It's a good thing. I do believe it's a good thing. But yeah, no it's a different world. A different world to my school days, certainly.

I: And we did send out a survey actually and one of the findings we got back was parents are almost scared – very cautious – of how much time children are spending on technology. [M1: Yeah] What are your thoughts on that?

M1: Gaming. Gaming, I can believe, certainly on the run up to bedtime, we do find – with my boys – that they do need to be taken away from it and just do something to settle their minds. <son>'s very good with books, as well. He's a bit of a Roald Dahl fan at the moment, with the "<son> and the Chocolate Factory" and all the rest of it. So, like I say, he's quite easy to distract cos he's quite happy to sit down and read his books. But it's not that I feel a need to be restricted, it's just they need that chill out time, certainly before bed. And with tablets and phone Apps and things like that, they try and take them to the meal table and stuff like that. No, we can't have that, you know.

I: So, you have to kind of like set, like you can play with your tablets but we're doing this now, or there's a specific kind of time when they can't.

M1: Yeah. Like I say, at the moment they only share the one tablet, which is mine. And they do - the older two, Jamie Jade and <son> – do have phones so they use their phone Apps and stuff. But yeah, when they can find them cos the younger two are always (laughs)

I: Do you live on the island here?

M1: Yeah. Verne Common Road, which is exactly up the hill, up towards the prison. I live number 8 and his mom lives number 52, three-quarters of the way up the road. [That's pretty good] Yeah. There's actually an alleyway. [Like connecting?] So, <son> and Jay Jay run freely up and down the road, cos there's only one little one-way street they have to cross.

I: Have you lived on the island all your life, or..?

M1: No, I'm a Dorset boy. I come from Wareham originally. I did Poole and Bournemouth College. When I first left school, I trained as a chef. But after that most of my days are sort of Dorchester, Weymouth, Portland. All around. I've been here on the island now, settled as a family group for about eight, nine years.

I: So you were here when IPACA was becoming a thing.

M1: All this was being and everything, yeah. My eldest step-son, all his schooling – up until he moved in with his Dad – was done through Brackenbury. Brackenbury is the old school, just up on the cliff-front there. And they've – like I was saying to Wendy – they've all been to that nursery that's still there now. It's privately owned, but they've all been to that building. When we first moved on the island, Ethan was at nursery and we took him out of one to stick him in that one like, so they've all been there. So we know all the teachers – pretty much all of them. Cos Ethan's coming up twelve now – eleven and a half. <son>'s just coming up ten. Shares his birthday with Jamie Jade and she'll be eight. And then there's <son>, six and the youngest.

I: Who's just now starting school.

M1: He's just starting nursery, yeah. Tomorrow.

I: **(10:46)**

M1: Yeah, but she's been to private nursery –the old Brackenbury **(10:49)**. But now that it's private she's actually been there for the last six months so. But no, we're not under the same roof, me and Louise. It's difficult to get her over there and manage to get the rest of them over here. So we've brought her here. Just it's part of the course really. But she was due to start September, so we've got funding for her to come to nursery.

I: That's great. So, when the kind of IPACA was happening and kind of looking back at it now, what do you see IPACA's role being in the community?

M1: I think they had their hiccups to start with, but it does bring the community together. I mean to say, we have coffee mornings down here and things like that. So the parents are pulled together. And I think that's good thing. You know, bringing back community spirit. The children as well, they have fun days and things like that. It's all good stuff. You know for the community bringing the people together because I do feel that now I'm fifty seeing community when I was at school and things like that. And there is a lot more people that talk to one another and they shut their doors. But I think certainly IPACA are trying to get rid of that mentality locally, with the local parents and things.

I: Good. That's great. Thank you.

END OF TRANSCRIPTION

Appendix O: Digital Families – Community Stakeholder Interview

Interviewer (I): So, yes, it should be quite a gentle interview then, compared to that. It's mostly just to get an idea of, and understanding of the kind of cultural context in (Portland).

Interviewee 1 (1): Yep.

I: What your thoughts are on the research project itself. What you think should be in place to make it successful. And what kind of outcomes you'd like to see at the end of it, and that's pretty much all we're looking for.

1: Ok.

I: So can you start by just giving me a bit of background about yourselves, so where you're coming from, how long you've been working at <social housing provider>. And how long you've kind of been working with, or co-ordinating with, or had a presence on Portland.

1: Do you want me to do that?

Interviewee 2 (2): Yeah, you can do all that.

1: So, obviously, <social housing provider>, or social housing landlord, we have 9,000 plus properties within Dorset and 27,000 across four counties. On Portland we've got about five, just over 500 properties, of which a high proportion of those are families, young families with children that attend the academy. I've been with <social housing provider> for 5 years, as a customer involvement and community development worker and manager. We obviously do a number of supportive projects on Portland, because it is a very key area, of deprivation. Not just from external statistics, but obviously from our internal figures that we look at. So in relation to unemployment, so those who are on housing benefit, also from our neighbourhoods team, we can see the number that potentially have to engage with food banks, etc. So it's one of our focused areas to work on.

I: Ok, great.

(… 2.11)

I: So just picking up on that kind of, those internal statistics that you use to measure deprivation and things, with that in mind, what do you think the people in Portland are kind of lacking, if they are lacking anything? Like, are there any kind of.

1: I think there's lots of different types of trends, from I think you have families that are very benefit dependent and I think that's historical. So you have a number of people that feel that that is all that is on offer, is that life on benefits, because their parents, their grandparents etc. have always lived in that way. I think, there is a barrier, there seems to be on engaging outside of Portland, from a number of families.

I suppose that could be from lack of local employment, I don't think there is the type of employment locally, that is accessible, for not just Portland, but Weymouth as well. And I think it's very difficult for them to make that step, to leave, to go away to employment. But yep, there's nothing on offer here.

2: I mean there are stats that a really high percentage of school leavers leave the island for work and training opportunities. And I think that says it all really. There's no, sort of structured volunteering or training into work placements, or very little.

1: Very minimal.

I: Yeah, (…. 3.45) to our statistics, paint the same picture, but it seems like a lot, but it's seasonal as well. So there's a lot of people on zero hour contracts, sort of.

1: Yeah and there's a lot of that, and that's not just in these holiday type homes, that we have, and that you know, the Haven Holiday Parks. But also, that filters into the supermarkets, the ASDAs, the Morrisons, they continue with that type of contract purely because they also know that unfortunately the local's isn't enough to sustain them. They're busiest periods are peak time, when holiday makers are in, so there's a lot of businesses that follow that trend, not necessarily just ones that are open during the seasonal period. I suppose there's not an excessive amount of office type work locally, it is more, the Bed and Breakfasts, the Hotels. You've also obviously got here on the (Granary) where there is a few companies, but not huge, I mean most of it is garages I think, type industry. And from Portland, the transport links are poor, because if they want to get to Dorchester or Poole, somewhere to actually go to work, it's gonna take them two buses just to start heading out of Weymouth, which time wise, is not viable if you're a young parent that still needs to get the child to nursery, or, well, even if you haven't got children restrictions, you couldn't possibly leave at four o'clock in the morning just to get to Poole.

2: Financial restrictions.

1: To do a days work, and then come back.

I: It feels like that's a lot of people, how a lot of people get trapped. So they can get a job, but if they're spending two hours a day commuting, two hours a day commuting back, there's no kind of opportunity to, for them to seek (…5.35) The first point you made, and I think we've talked about this before, this kind of learned helplessness. So are people so, kind of dependent on engagement with community services, are reliant on social workers, are relying on benefits. And because, it's kind of like this whole historical, kind of inherited thing. Do you think that kind of creates a lack of agency, or lack of like aspiration? Or lack of confidence?

1: I think Portland definitely has got a lack of confidence and aspiration. And again, I think that from historical and the way that's potentially communicated to them within the household. I think there's a lot of opportunities that Portland feel they miss. It is almost like an isolated island attached to Weymouth. And I think that brings a lot of

negativity, and I think that is potentially what keeps them quite insular to Portland. It's like their home, their heritage, and again that has a lot to play, because that's quite historical, the heritage in Portland and the way they feel about their island, and quite protective. So the fact that opportunities do tend to go to Weymouth, and Portland don't ever see an element of that, I feel that brings a lot of animosity as well, which then builds a barrier for them then to want to go and work, or whatever, outside of Portland.

2: Exactly.

I: No, no it's really interesting, this historical element, like when we first started doing this, like when we started doing this research project, we didn't really take that into account, or we didn't think about that, just the kind of historical heritage, passing down of this kind of like…

1: And they're very passionate about Portland, the older the generation the more passionate you get. And they are extremely passionate, even down to the Portland rock cake, they even get quite passionate about people that haven't got the right recipe. But they are really passionate about where that's come from and how Portland's grown and what it used to be and what it is now. And I suppose that, that's potentially what brings a number of the barriers when it comes to change, so even for example, (IPacker) the campus, that was a big change for Portland, they were almost in bedded in the, 'we've always been ok, so why would we need something more?' Yeah they don't seem to want to have more.

I: New opportunities.

1: No.

I: Strange, strange one, it's kind of like, almost like that directly has implications for the research we're trying to do, in terms of giving them technology, cos giving them technology, (…8.41) Samsung Community Spaces, almost like inherently quite a change.

2: Yeah, yeah. So I suppose the opinion of sort of, you know, 'what's in it for you' attitude as well. I don't know if you agree with that? It's just kind of, you know opportunities have been, have been developed and not really taken opportunity of. From feedback I've had, is that, you know that element of, 'what are you getting out of it?' Rather than just, this is just what we do.

1: And I think that comes from the fact that there has never been an offer in to Portland. It's almost, if we use the Olympics as a very, very good example, and one that's sort of most recent. You know, the fact that really, it was Portland's Olympics, but actually you would've never show cased, it was never show cased really as Portland, it was show cased as Weymouth, and that's where a lot of the investment went. That's where all the view points were, so all of that income, potential income, was Weymouth based. And a good scenario is, 'well what do you want from us?" And

that's what they did, they wanted Portland to take it, you know, sounded very good that that type of place would get an Olympic spot, but then when you took it all.

2: Even down to the infrastructure, and transport infrastructure. You know, they warned people off of using the main road that links Weymouth to Portland because of heavy traffic, and literally nobody went over to Portland….

1: No.

2: …and spent the money and stayed there, because of the new warnings. So that kind of, you can appreciate the struggle for the businesses.

I: Yeah, kind of almost ties back into the sense of insularity and animosity.

1: Yeah.

I: So in terms of the research project itself, well we're building this Samsung Community Space, that's the new name of it.

2: Community Space.

I: Community Space, every seems to have signed off on that now, which is good.

2: It's better than the other one which was.

I: (Digital classroom plus).

2: Scary. 'I go in the digital classroom plus.'

1: Yeah, no, that wouldn't go down well to be honest.

I: Didn't fancy hanging out in the Digital Classroom Plus?

1: No.

I: So yeah, the development's the Samsung Community Space, and the giving out tablets, they're Internet enable tablets to 10 families. What kind of impact do you think that will have? In terms of what they are currently lacking. Do you think the technology can help them overcome these barriers that we've just talked about?

2: I mean, I think, you know, potentially most of the young people will have some sort of Internet access, in those families. I think for me it's about, that further engagement, so hopefully if they get, well they will come down to the community centre to get support, or interact. But I think it's from that point in, it's the engagement to, you know further learning and the community element of it. So I see it as sort of more of a bigger picture, I think in some ways technology's really accessible, but in other ways, you know, it's kind of (…11.59) for nothing, but providing families with wi-fi and a Samsung tablet, will enable them to interact with their community.

1: I suppose what it, what it does is, for (IPacker), they are best placed to start to build the confidence within parents, that are linked to the children, that are engaging with

the school. Cos they're working with the children, you would hope that the parents wouldn't see as much of a barrier, if they're opening an offer into them as well, in an education type way, or just engagement route. So, the, I'm sure the hope and potential outcomes will be that those parents will start to build up that confidence with no just IPacker, but also actually coming to an environment where they can meet other people and slowly build that confidence to take on a learning option, whatever that may look like after the initial work's been done. But there's not, suppose there's not an adult learning type provider, I know you've got the skills learning out there, which will deliver anywhere, but actually there's never been that offering on Portland, or location, that actually enables parents to attend, on a quite a low level manner. Which will then really start to work with them, without actually probably the parent knowing the type of work is happening.

2: Yeah it's embedded. I mean it's, we've said it quite a lot about providing a half step approach for people that have been out of learning for a while, and that's kind of what we probably explained earlier, was that you know, I do see that as a sort of introduction to, not only sort of interaction, but like you just said, that half step into learning without actually realising you're learning. So you know, it's not classroom based, it's not in sort of a sterile environment, it's actually….

1: And I suppose the digital…

2: … interation.

1: … agenda, along with digital inclusion, is gonna hopefully, potentially open their eyes to what other things are out there. Cos I think there is a lot of isolation like that on Portland, that they don't actually know, what else, or other opportunities are available. And hopefully that access that they can have, will start to allow them to see that, that Portland's not it.

I: Yeah.

1: And they can still have Portland, but they can have what is across the water as well, and.

2: I think that link with the hub is just, you know, that for me is exciting part, really, is the link with the hub. And I'm coming down to that hub and interacting and you know, providing different courses in Health and Safety, but also in (acting). You know, and all these different options that can then, raise aspirations and skill.

1: It's just great for adults to have a space I think.

I: Yeah, yeah.

1: Cos there isn't enough spaces on Portland. If there is a space it is generally youth type space. Or, working men club.

2: Or Church, Church Halls.

1: Or Church. But actually to have a space that takes all those barriers, individual barriers away, and yes I know potentially could, initially be a barrier for parents, 'well I'm not going down there it's the school.' To actually not label it as that, and it to be a community space to try and support them, I think will be quite valuable, and I think it will grow by word of mouth probably.

2: Definitely.

1: More than launching, here we are.

I: But especially just getting over those kind of perception barriers about IPacker, as a, as like an outside force that's come onto the Island and taken away their schools that they went to.

1: I think it's now time Ipacker have been there, sort of progressing, for what, two years now. It's not time for them to let the parents know what other offering they've got, and it isn't just about coming over and taking over the school and the children, and all of that. But actually they made a sort of commitment, if you like, not that parents swore, it almost like, 'well that will never happen anyway.' But you know, but actually now is the opportunity for them to keep a commitment to support the parents as well as the children. And make them, you know, someone the parents want to go to. Rather than like you say, people that have come in and took over that academy that, you know, running it. So hopefully that'll break down a lot of the negative perception.

I: Yeah, I agree. So it's almost like, forgive me if I'm over simplifying, but it's almost like technology itself becomes like an enticement, or an incentive, just a reason for people to come to their space and engage, to raise their confidence, to kind of start almost just socialising with themselves.

2: I do see it as that, you know, I think like you said before, I think technology is accessible and I think, you know, just this sort of interaction with, you know, with yourselves and with IPacker, and with this project, it will allow them to move forward and get involved with the community, or whatever you're calling it. And the move forward into education, or different opportunities of learning.

1: And I think unfortunately you need that enticement.

2: You do, you do.

1: It's not just enough to say 'come along and see us.' You have to have something there, that is of interest to them.

2: Cos you can't, you know, it's pointing out that there is a value to stepping into this learning environment. And you know, and that enticement is sort of the first part of that. Because if you're working with people with low aspirations then they're not always going to see the value of them getting up at half 8 in the morning to attend a health eating course at 9 o'clock.

I: Yeah definitely.

2: But once they're in it and they see the value of it, then it becomes a natural progression.

1: But, and the, the digital provision that is on offer, is going to be so important over the next few years, for the parents, as we get into Universal credit and all of that coming in. We do know a high percentage of those are on benefits, and that's just not those that live in our properties, so to have provision where they can access what will become a digital world for people that are in receipt of benefit. It can become ever more important, so that fact that it's starting now, so that confidence, we would hope would build up, so actually when it is a, of need, they have to utilise that access procedure, we know that there's parents confident enough to then start to go down there and use it.

2: It's built a reputation by that point.

I: Yeah, hopefully. Can I just check about, cos you are kind of my source of insider information about the Universal credit change, now.

2: Turn it off.

1: How long have I got?

I: So what's supposed to be rolled out a couple of months ago, but now they've delayed it because, is it still being delayed? Like when's the actual date?

1: No, the (tranch) 1, 2, 3 and 4 have now just been announced, so the roll out started in February, and it will be done by tranches. I believe, there is no definite date for the way with Job Centre, cos that's obviously where the linkage will be, I think it's looking at August, September, for here locally. I think East Dorset is sort of June time, but it will just be for new claimants only. So you are very much at the moment, relying on someone losing work and having to go onto benefit, or it might be a case scenario that actually it's someone on benefits now, but cos of Universal Credit, and the way that they can work on Universal Credit, it may be that they move onto that because they can start to get employability and income from that stream. But it will generally be for new claimants, it will be for single people to start with and then it will roll out to couples. So actually, we say August, September, it shouldn't really have any impact to IPacker, cos it's single people only to start with anyway. There's not gonna be sort of huge numbers, cos as I say, you're reliant on people losing employment. Mind you, saying that, what will happen, thinking now, is actually, because we've got everyone that goes into seasonal work, will probably get quite a big impact, when the seasonal work ends.

I: Oh yeah.

1: Cos they will all then, where as normally they ply some work, there'll be a big increase, sort of.

I: So it'll be September, October time.

1: Yeah, probably, well yeah, probably going in December which is when the holiday parks officially shut. We could have, I suppose, quite a few numbers locally.

I: And just to check, so that means that people who want to apply for Universal Credit, they can no longer go to the local community service, like the Weymouth Drop in Centre, or to apply for it they have to do it online?

1: They could go into the Job Centre, cos there is IT facilities available, but they will need to apply online.

I: Ok.

1: So that's why this is really good, cos we've been looking at mapping where there is free wi-fi provisions, there's not a huge amount of them. The libraries, a lot of the libraries still hold that free facility, but I think people are uncomfortable with libraries. So actually on Portland this will probably be the only facilities that will allow people to walk in and say, you know, 'can I access the internet?' Or whatever that might be, on Portland.

I: Yeah.

1: You've got the library up the top, you've got nothing else (… 22.10), except from the Age Concern one.

I: And that's kind of why it's a big concern for us, and in the future.

1: Absolutely, because our, I mean our biggest stock on Portland is in (Under Hill). And probably the highest percentage of people on benefits, and obviously once Universal Credit comes in, their job will be to job search, so they're gonna have to be able to evidence all the job searching they do. And that needs to be sort of a 37 hour week, because their job is to job search. So again a facility which enables them to do that, if they haven't got the money to have access at home. Will actually, potentially, maintain their tenancy, because they'd actually be able to do what the job centres are telling them to do. They'd not get sanctioned.

I: Yeah.

1: So there probably is a potential that this computer hub, potentially moving forward, could turn into a job club type facility, because the access that's available, and be like a one stop shop if you like.

2: I think the sales and learning club is in the library.

1: It's at the top. There's no provision in Under Hill. And again, another barrier, if we're on barriers, top hill, under hill, there is a barrier between the two. I suppose it is quite difficult to access the top if you don't drive. Or haven't got, if you've not got a lot of extra money each week, you've still got to pay a bus fare. It's not something, unless you're healthy, that you can viably walk up and down, or just pop up.

I: And if you haven't evidenced that 37 hours per week, (…23.53) every day, twice a day.

1: Every day.

I: It just seems like such a ridiculous figure to me. So you have to be logged in to some kind of job search engine for 37 hours per week to evidence.

1: Yeah, 5 Job Centres concerned with the commitment, the Job Centre commitment, the Universal Credit commitment will be that their work, their employment while their paid benefits is to find work, that's their job, full time job. But then, you know, that gives employers lots of issues, because you will be getting the people applying for jobs that actually don't want the job. So you're gonna start getting hundreds of applications that each company's gonna have to spend time categorising or you know, sifting through for interviews. But obviously that's for Job Centre, you know, DWP to manage. So there's potentially gonna be a lot more sanctions, commitments not met.

I: Anyway, before we get too political. So, you both kind of touched on it, so the digital access is really important, but they can kind of already have access to digital technology, that's kind of something that's available. So in terms of us setting up this community space for them, which has, you know, computers and stuff they can use, and us giving them tablets and the internet, for them to kind of take on and use when and where they want to. What else needs to be in place, like what kind of provision needs to be made to make sure that there's some kind of positive outcome?

2: I think that what we spoke about before, about support and not necessarily, sort of (…25.34) supporting, but just some opportunities to link into support. And I think as well, from when this, this thing completes, that there is, you know, something to move into. Which again, we spoke briefly about, which is the sort of, you know capitilising on the momentum that you'll get. I mean in my eyes I can kind of see, you know, that again linking into the community space. And then those people almost being sort of champions of that space, sort of volunteering and mentoring opportunities, while linking into learning opportunities, and continuing on. And I think that's really important, I think the, you know, the wi-fi access and you know, handing out the tablets is a fantastic incentive. But I do think it's really thinking about the point that that completes, and not just dropping away. So somehow having something sort of in place that will capitalise that momentum.

1: Yeah. But there needs to be that mentoring support, without it being oversold as mentoring support. So it's almost like floating people that are there just to have conversations with them. And from the start to find out what other needs possibly local people have. But there's a lot of opportunities to potentially have drop in sessions where it might be (CAB) or, I don't know, for us as a, our organisation, it could be benefit and money advisors might be available at certain points of the month. Knowing that a lot of people that are going to come through that door are gonna be our customers, and it might not be such a barrier for them to speak to somebody at a

venue like that, as it would be to drive up here, or to even come and visit them in their homes. So it could, if it gets to be that comfortable spot people are happy to go to, cos they've built, that self esteem and confidence up, that would be really good extension, to what the provision can offer. And it potentially could be almost like that one stop shop.

I: Yeah. So other than not calling it a classroom. What other things can you do to kind of make it this comfortable spot?

1: Coffee, biscuits.

I: Cake and things.

2: That sort of soft assessment as well, you know, it's the right approach, it's building up a personal relationship with people that come in. That's really important, and also, it not being so focused on what it is, so you're just sitting and having a coffee and a chat is as important as 8 hours of constant graft, you know. I think that's really important.

1: Our ones that work best are purely just drop ins, where people come in, they've got no agenda to come in and be taught anything, they just come in knowing that they could potentially use the facilities. And you just have somebody there that, as I say, can have those conversations with them or, if they want support, or are stuck or whatever, then there is someone there for them to call on. But not necessary, necessarily there teaching them.

2: I think the other thing is as well, is sort of somebody that is in and around the support that can do soft assessment, so almost like verbal assessment, someone that can pull information from a conversation rather than sitting down and…

1: Yeah.

2: … having an individual learning plan that takes ages and becomes quite formal, it's just through a conversation, 'oh they're interesting in building, oh well there's thing that's happening,' and filter it in rather than it being a very sort of rash, hard subject.

1: Yeah, I mean what you wouldn't want it to get like is, like a children's, an (action of a children's centre provision), don't put this in, you can take snippets out. But obviously their provision, you have to go and you have to register to use it, and I think, for some time it is almost a concern for parents, like they're being watched.

2: Yeah, I've had that feedback.

1: Especially if they have issues at home, and it might be they haven't got a lot of money, or they are going to the food bank, or struggling to pay their rent. Or on the flip side, perhaps they could be in a domestic violence situation, a children's centre for some is a really big barrier to have to go in and start writing all your details down, and you cannot use that centre unless you do that. And that's what this mustn't become, it must be somewhere where of course you can find out who's using it, but in perhaps a

very relaxed way, to find out who's using it. Because that will become a barrier really quickly for young people or parents on Portland. Cos they'll start, you mustn't have it that the school's watching.

I: Yeah, it's, it's a difficult situation really cos it's in a school building. So no matter what they have to sign in, and they'll have to have name badges, or a sticker, just so they can be identified.

1: And I think that's fine, and the signing in is fine.

I: Yeah.

1: But, just steer away from registration for, everything like that must be completely steered away from I think. Especially, it might be that perhaps you see someone come three or four times, or five times of six times and think 'well you're really using it regularly, it'll just be really nice to have your details for monitoring,' or whatever it might be. But it'd be that rather than them thinking that they're having to put all their details down, and the school's watching. Cos that could actually be, they could feel then that the school's watching them. And they may very well, you know, they might have children that are going to school that might be poorly dressed perhaps, cos they're not, you know.

I: Child protection plans and things like that.

1: Absolutely, so then, it needs to feel like the school isn't there overseeing them, or watching for any changes, or problems, or, and it's how you make that area comfortable. But it is the Sixth Form part isn't it? So.

I: Yeah it's the Sixth Form. So it's quite a relaxed atmosphere.

1: So it's still away from the school school?

I: Yes. (….31.52) from this side, if you looked in the building you wouldn't be able to tell it was part of the school.

1: No.

I: Which is good. Ok, that's really useful, thank you. Just kind of making it explicit then, so what kind of things would you hope came out of this then? Like what kind of outcomes would you be looking for, for the people who, are engaging with the community space, and are chosen to take a tablet home with them.

2: I mean, for me, I think the raising aspiration, the raising the opportunities that are available, become seen. So I think, and I think the link from this opportunity into, like the community space, I think that's really integral, I think that's really something that'll get us a key part for these chosen people to kind of move forward, and obscure. And then I think it's, then it's the role of the (Senator) really, to provide those opportunities, cos you've already got them booked in on LinkedIn.

1: Yeah, yeah it's the confidence thing, but it is also then, perhaps longer term, starting to see the outcomes that actually have offered a space where people have been able to proactively look for work, or proactively do some training that has got them that volunteer employment, or whatever that is. So I think long term, it's the hard outcomes that will make it really successful.

2: It's the tracking of the..

1: But I think it will just be successful to start to get parents through the door.

I: Yeah.

1: Initially make, and you know, to have numbers there, that you think, 'do you know what, actually this is starting to work,' and then the harder outcomes will come later.

2: Yeah, it's them having the ownership over that space.

1: I am wondering if this is a (hapt).

I: Be great, be great to look at the impact of it.

1: What they really should be looking at, is what social impact this is having, and there is, I don't know if you want to record this or not? There is a social return investment calculator, that puts a figure, a monetary figure on the impact something's had. So, it was, I can't remember the guy who designed it, but what he did was, he collected all the data sets, from you know the, you get the Health Survey that goes out to say 10,000 people every year, etc. etc. There's about four or five separate ones, and over a period of time, he's collected all that data and started to put a value, so one year the Health Survey may come back and the question might be, 'how're you feeling this year?' One, 'what's changed?' And then further down it'll say, you know, what, 'so what's that job meant to you?' And it goes up higher, and he'll put a value on that person, because they're confidence or whatever had gone up. So he's put a value to all of those types of impacts that projects can have, so anything from confidence to IT access, to getting employment volunteering, going into training, even as much as 'now enjoying the neighbourhood', to whatever's on there, 'coming out of depression'. Which is the biggest value on there, which equates to sort of £36,000 per person, as a monetary figure, someone that was in depression, you took them out of depression has.

I: So does that figure represent that kind of training and resources that need to be spent to get them to that point.

1: No, it is almost, it is very complicated the data set that he's used to go into it. I'm not gonna sit and.

I: That's ok.

1: Yeah. But, no it's not so much about the resource you put in, it really is about what monetary term they say that impact has had. So it's almost like the same as giving

them, which they say that and I just think it's ridiculous the way they explain it. But this would be a really good project.

I: Yeah, that sounds great.

1: Now what, a lot of the calculate, you can use hard outcomes, so it will just be getting back to work employment. There is a survey element, so the confidence and the depression is a survey element, so the specific questions that have come out of those surveys, that you would ask before, and then you would ask again after, and I just had a really good idea on that. Cos we were just talking about don't have all the forms to start with, but what we could do, they do this in our training. Is you get a thing that says, 'how much did you know about social enterprise before you,' and they give it to you in the morning before you came in, and they make you evaluate later and go, 'how much do you know about it now that you've finished?" So rather than doing it at the start, you could almost wait 3 or 4 times and have it, 'when you first came to see us, how was your confidence level?'

I: To reflect back on it.

1: Yeah, and 'how would you rate you confidence level now?' And that would still give us the.

I: Yeah. Without the bombardment of paperwork.

1: When they first come in.

2: If you're interested in that, we could have a look at that, and show you through, walk you through it.

I: Yeah, definitely.

1: Cos if Samsung and IPACA can say, 'actually do you know what, although we've invested 50 grand, we've actually had a social return of investment of half a million," whatever million, and it puts a pound. So every pound, it works out the equation of every pound you put in, what social return you got, so for every pound it'll be 20 pound. So it is really good. And it's starting to be used Government, the Government has started to sort of, look at it, if you like.

I: Ok, good. So (…37.40) as a, as a key metric, cool.

1: Yeah. And I think it would have more way, if IPacker, if they were gonna explore more funding opportunities or bigger funding opportunities, so actually put down, 'well actually every pound that we've invested so far, has meant £20 of investment into those local people, because of the social return.' And start putting that value on that, funders are gonna look at that and think, 'well that's really powerful.' Cos they're looking at that measure, for what that impact has, or what that financial gain.

I: It's like an immediate representation of what the impact that this has. That sounds really good.

1: This will be really good, because at the start, it'd be really good to see how we could slot that into, not just the hard outcomes, but start to capture those confidence levels, especially for Portland.

I: Definitely, it sounds like it should have been designed as a research project. Ok, thank you!

END