Volume One

YOUNG PEOPLE'S PERCEPTIONS REGARDING MOTIVATIONS TO PLAY VIDEO GAMES: IMPLICATIONS FOR GAMIFICATION IN EDUCATION

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Volume One of a thesis submitted to the University of Birmingham for the degree of

APPLIED EDUCATIONAL AND CHILD PSYCHOLOGY DOCTORATE

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June 2020

ABSTRACT

Gamification is “the use of game design elements in non-game contexts” (Deterding et al., 2011, p.10.) so as to try to replicate the experiences of motivation and engagement afforded when playing video games. However, the theoretical underpinnings of gamification have been insufficiently explored. Practice has outpaced theory and without such guidance and theoretical grounding, the majority of empirical studies provide no justification for the game design elements and subsequent gamification mechanisms used in their research. Evidence suggests that this has led to an insufficient implementation of gamification in education, particularly concerning an over-emphasis on points, badges and leaderboard (PBL) mechanisms, which I maintain cannot alone satisfy the wide variety of motivations children and young people have for playing video games.

As such, a framework of ideas for gamification in education is proposed which provides educators and researchers alike with a range of ideas as to how they might implement gamification, beyond PBL mechanisms, into educational contexts.

The overarching theoretical framework used in producing this research report was Self-Determination Theory (Deci & Ryan, 1985), which situated video game engagement and play within a context of motivation and basic psychological need satisfaction. The empirical aspect of the project included semi-structured interviews with 6 young people about their motivations to play video games. A subsequent thematic analysis outlined a wide variety of motivations to play video games. Such motivations were mapped onto the basic psychological needs explicated within self-determination theory, namely competence, autonomy and relatedness. Together, such theoretical and empirical grounding provided the foundation for the framework of ideas proposed.

ACKNOWLEDGEMENTS

Firstly, I would like to thank all of the participants who took part in this piece of research and gave up their time to do so.

I would like to thank Nick Bozic for his help, support and guidance over the last three years. Our conversations regarding the highs and lows of West Bromwich Albion will be sorely missed.

I would also like to thank the wider tutor team for all of their hard work in ensuring the doctoral training was challenging, thought-provoking and informative. As well to Stephanie Herriotts-Smith, for all of her help and support during my doctoral placement.

I am grateful to my course mates for being a lovely bunch of people. Thank you all for the emotional containment you have provided, the many laughs we have shared and ensuring I never quite managed to catch the last train home.

I would like to thank my friends who have helped provide the opportunity for much needed work-life balance, even though I remain the perennial loser at fantasy football.

Finally, to my beautiful wife Abigail, and our son Dexter. Thank you for your unwavering support; I love you both to the moon and back. I can’t wait to meet the newest addition to our family in September 2020. Here’s to many adventures ahead.

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- ADHD – Attention Deficit Hyperactivity Disorder
- AET – Academic Engaged Time
- BPNT – Basic Psychological Needs Theory
- BPS – British Psychological Society
- ELT – Experiential Learning Theory
- MMO – Massively Multiplayer Online
- MUD – Multi-User Dungeon
- OIT – Organismic Integration Theory
- PBL – Points, Badges, Leaderboards
- PEGI – Pan European Game Information
- PENS – Player Experience of Need Satisfaction
- SDT – Self-Determination Theory
- SENCO – Special Educational Needs Co-ordinator
- TA – Thematic Analysis
- VSC – Video Standards Council

CHAPTER 1: INTRODUCTION

This research project was carried out as Volume 1 of a two-part thesis completed in order to satisfy the requirements of an Applied Educational and Child Psychology Doctorate. This programme of study was undertaken at the University of Birmingham. The research project concerns the application of gamification in education. In particular, the project seeks to ground this practice within relevant psychological theory, as this was identified as a significant area of weakness with regards to the corpus of literature concerning gamification in education.

1.1 Researcher Positionality

This research project was conducted within an interpretivist paradigm. As such, I inevitably adopted a position which had wide-reaching implications as to how data was collected, analysed and synthesised. Rather than seeking unobtainable objectivity however, I sought to accept the "centrality of subjectivity" (Thomas, 2017, p.112); this involved wholly accurate and transparent reporting; extensive reflexivity; and an acknowledgement of my own positionality (Ibid., 2017) with regards to the research project. In this way, researcher positionality may be seen as interchangeable with my 'personal rationale' for conducting this piece of research.

1.2 Personal Rationale

I have played video games all of my life and look back on memories playing them with my family and friends fondly. However, within my professional role as a practicing

trainee educational psychologist, the vast amount of discourse concerning children and young people playing video games is negative in nature. Moreover, such a pastime is vilified within popular media and this serves to create moral panics such as “Do video games cause violence?” despite spurious empirical evidence to indicate that this is the case. I personally see such a positionality on behalf of most, not all, educators as a missed opportunity – a wasted chance to align alongside children and young people and take a genuine interest in an activity they enjoy.

The inspiration that led me to come across the corpus of literature concerning gamification occurred during a conversation with a school special educational needs co-ordinator (SENCO) whilst on my doctoral placement within a West Midlands Local Authority. During a consultation, the SENCO informed me that the pupil in question may have attention deficit hyperactivity disorder (ADHD) “because he can’t pay attention in maths for more than 30 seconds at a time”. However, later on in the same consultation, the SENCO shared that the pupil will play “Fortnite [a popular video game] for up to 6 hours at a time”. In light of this information, as well as quickly dismissing the ADHD hypothesis, this led me to consider what it was about video games that could sustain the young person’s attention and engagement with that activity for such a long period of time, when attention on a mathematical learning task was seemingly limited to 30 seconds or less. And moreover, could I utilise whatever was happening in this regard to promote engagement in learning tasks? Herein I came across the concept of gamification, which is “the use of game design elements in non-game contexts” (Deterding et al., 2011, p.10).

1.3 Professional Rationale

The concept behind gamification is such that adding game design elements to non-game contexts such as education will help to replicate the experiences of motivation and engagement afforded when playing video games. The rationale as to why gamification should be applied to education concerns the well-founded notion that academic attainment and achievement is significantly associated with the amount of time pupils are engaged in academic tasks (Gettinger & Walter, 2012; Gettinger & Ball, 2007). For reference, game-design elements incorporate the 'building blocks' of what constitutes a video game, e.g. experience points, narrative, characters, competition etc. When applied, game-design elements become gamification mechanisms.

However, although a nascent technology, the theoretical underpinnings of gamification have been insufficiently explored. Practice has outpaced theory and without such guidance and theoretical grounding, the majority of empirical studies provide no justification for the game design elements and subsequent gamification mechanisms which have been utilised in their research. Evidence suggests that this has led to an insufficient implementation of gamification in education, particularly concerning an over-emphasis on points, badges and leaderboard (PBL) mechanisms. Reasons for such a situation will be explored in greater detail in the main body of the research report. Notably, I maintain that such mechanisms cannot satisfy the wide variety of motivations children and young people have for playing video games.

1.4 Research Aims

The overarching research purpose of the present research project is to propose a framework of ideas for gamification in education, underpinned by relevant psychological theory, i.e. SDT, which provides educators and researchers alike with a clear framework which consolidates motivations to play video games, game design elements and gamification mechanisms. The purpose of this project is not to provide an exhaustive framework of all possible gamification mechanisms, but to situate proposed mechanisms in the context of motivational theory; bottom-up data from children regarding motivations to play video games; and game-design elements. This will help to provide educators with a structure for implementing gamification in educational contexts, beyond PBL mechanisms which only serve to satisfy a small number of motivations to play video games.

The proposed framework of ideas will be underpinned by three key features:

1. Explicit theoretical foundations regarding regnant theories of motivation;
2. Reference to different motivations to play video games;
3. Illumination of the vast array of game design elements utilised by video games to satiate such motivations;

And culminate in:

- Proposed gamification mechanisms which consolidate all of the above.

Information regarding theoretical foundations (feature 1) and game-design elements (feature 3) was ascertained through the literature review, as outlined in Chapter 2-3, and Chapter 4 respectively. Information regarding motivations to play video games (feature 2) encompassed the empirical aspect of this research project, as will be outlined throughout the following chapters.

The research questions are as follows:

- What motivates adolescent gamers (ages 12-14) to engage in, and maintain, playing video-games?
- With links to self-determination theory and participants' motivations to play video games, what gamification mechanisms can be proposed beyond the triad of points, badges and leaderboards when implementing gamification in education?

1.5 Research Report Structure

Following this chapter (Chapter 1), the research report begins in earnest. Chapters 2, 3 and 4 incorporate the literature review section of the research project. The following electronic databases were used in the gathering of relevant theoretical and empirical literature: PsychArticles, PsycINFO (1967-), Journals@Ovid and Google Scholar. A variety of search strategies were employed, including: accessing seminal articles, e.g. Deci & Ryan (1985); Boolean logic, e.g. 'gamification' AND 'education OR school OR classroom'; a snowballing technique utilising bibliographies and references from identified literature; and use of the 'cited by' function of electronic databases to conduct

somewhat of a ‘reverse snowball’, whereby one has access to all articles which have subsequently referenced an article of interest.

Chapter 2 provides the theoretical foundations for the research project, outlining definitions of motivation and engagement. Discourse is lent to self-determination theory (SDT) and the impact of motivation and engagement upon education. Chapter 3 concerns motivations to play video games. A brief history of research on this topic is outlined, before the report situates engagement in playing video games within the context of basic psychological need satisfaction (i.e. autonomy, competence and relatedness) using an overarching SDT framework. Chapter 4 focuses on the current state of gamification research. The concept of gamification is outlined, before noting its mixed impact to date. Then follows a critique of gamification research, with its shortcomings providing the rationale for the present research project. The current context of gamification in education is outlined, before the section concludes by summarising the wider literature review (chapters 2,3 and 4).

Chapter 5 encompasses the methodology section of the report. Discussion is lent towards philosophical orientation; research design; procedure; participants; data collection; methods of analysis; and ethical considerations. Reflection and critique as to why certain methodological decisions were made are presented throughout.

Chapter 6 incorporates the findings of the research project. Here, the findings of the thematic analysis in relation to the specific research question, “What motivates adolescent gamers (ages 12-14) to engage in, and maintain, playing video-games?” are outlined. Following this analysis, a framework of ideas for gamification in education

is proposed. This framework consolidates relevant theory underpinning the concept of gamification (ascertained through the literature review chapters), game-design elements, and the findings from the thematic analysis, so as to propose a wide variety of gamification mechanisms which may be applied in an educational context.

Chapter 7 involves the discussion section of the research report. This section begins by outlining a number of reflections as to how the findings of this research project relate back to the literature reviewed in chapter 2-4. Discourse then focuses on implications for practice; a detailed critique of the research project regarding internal validity, external validity and reliability; and possible directions for future research. The section ends with concluding comments.

CHAPTER 2: MOTIVATION AND ENGAGEMENT

2.1 Motivation

Motivation is multi-dimensional in nature; rarely could an observed behaviour be attributed to but one cause. Motivation may be guided by any number of concurrent psychological, biological, social or emotional forces (Hoffman, 2015). Thus, human behaviour and motivation has been described through a number of theoretical models and frameworks, e.g. Social Cognitive Theory (Bandura, 1986); Control Theory (Carver & Scheier, 2001); Regulatory Focus Theory (Higgins, 1997); Terror Management Theory (Greenberg et al., 1986) etc. Ryan (2012) offers that no one theory can declare 'epistemological priority' over another as each constitutes "a different type of explanatory power and relevance to specific concerns and questions" (p.5). Therefore, what changes over time and from one piece of research to another is not the credibility of any one theory of motivation, but the relevance to the specific research and context being studied. Ryan & Deci (2006) maintain that such a stance promotes some theories as more 'regnant' than others in particular situations. Indeed, the regnant theory of motivation with regards to this research project concerns Self-Determination Theory (SDT) (Deci & Ryan, 1985).

2.2 Engagement

Whilst motivation may be guided by many psychological, biological, social or emotional forces as discussed, it also necessitates guidance from a cognitive system which is susceptible to distraction (Ryan, 2012). Therein lies the inherent dispositional nature of motivation (Spence, 1944), demonstrating its susceptibility to distraction from

a number of extraneous factors, e.g. one's environmental context, affect and mood, which can hinder or indeed increase, an individual's intensity and effort to reach their goal. Engagement is therefore a closely associated concept to motivation, indeed they seem to exist in symbiosis.

From an educational perspective, students exhibit a vast spectrum of academic engagement. This may range from active involvement in learning, otherwise known as Academic Engaged Time (AET) – a concept which will be expanded upon in due course – to academic passivity, underpinned by cognitive disengagement. At times, such disengagement may present as deliberate apathy and withdrawal from academic activities (Skinner et al., 2008; Hoffman et al., 2008). The importance of academic engagement is an enduring finding within the corpus of literature (Stevenson et al., 2019); it is associated with success in academic achievement (Ali & Hassan, 2018); academic motivation (Reeve et al., 2004); and student's quality of learning outcomes (Fredericks et al., 2004).

Engagement refers to 'the extent of a student's active involvement in a learning activity' (Reeve, 2009; 2012) or the quality of 'temporal interactions' with a learning activity (Bempechat & Shernoff, 2012). As motivation and engagement are fundamentally related with one another, a number of conceptualisations of the associated, yet separate, concepts share a high degree of likeness and resemblance within the wider literature base (Bempechat & Shernoff, 2012). Reeve (2012) draws a useful distinction between the two concepts, and one which this research project uses in earnest: "The distinction between the two constructs is that motivation is a private, unobservable, psychological, neural, and biological process that serves as an antecedent cause to the publicly observable behaviour that is engagement" (p.151).

This project adopts Self-Determination Theory (SDT) (Deci & Ryan, 1985) as the regnant theory of motivation, and considers engagement through the lens of Academic Engaged Time (AET).

2.3 Self-Determination Theory

In this research project, motivation regarding education and video game behaviour is viewed within a Self-Determination Theory framework (SDT) (Deci & Ryan, 1985). More specifically, the project utilises Basic Psychological Needs Theory (BPNT) (Deci & Ryan, 2000) through considering psychological need satisfaction. Individuals who perceive that their basic psychological needs – autonomy, competence and relatedness – are being met during an activity, learning or otherwise, are more likely to experience higher quality motivation (Reeve, 2012) and remain engaged with said activity.

SDT and BPNT posit that all human beings have three fundamental psychological needs which need to be fulfilled in order to experience good psychological health (Deci & Ryan, 2012) – and that we are therefore motivated to engage in behaviour which helps satisfy these needs. The basic psychological needs incorporate autonomy, competence and relatedness and there is substantial empirical support that such needs exist across cultures (Chirkov et al., 2003), economic classes (Williams et al., 2006) ages (Kasser & Ryan, 1999) and gender (Guérin et al., 2012).

Autonomy pertains to the need to experience a sense of volition with regards to one's behaviour – that is, to what extent behaviour is self-endorsed (Deci & Ryan, 1985; Ryan & Deci, 2009) or self-determined. More simply, it is the need to feel in control.

Competence refers to the need to feel effective regarding one's interactions with their external and internal environments (Deci & Ryan, 2012). It is the need to feel good at something; the need to experience success and progression.

Relatedness denotes the need to experience a sense of relatedness to other people (Deci & Ryan, 2012). It includes emotional connectivity and relationships (Deci & Ryan, 1991) and authentic and reciprocal interactions (Ryan, 1993). Needs for relatedness are satiated when one feels meaningful and important to others.

When considering literature regarding the concept of motivation, perhaps the most basic distinction to make is that between intrinsic and extrinsic motivation (Wigfield et al., 2012).

Intrinsic motivation involves doing something out of an inherent interest and/or enjoyment of the activity in itself (Deci & Ryan, 2012). Therefore, the activity is its own reward. When viewed through an SDT framework, this occurs when an activity incorporates the necessary internal conditions to satisfy our basic psychological needs. Such activities are experienced as inherently satisfying, and thus by their nature sustain an individual's engagement in them. For many, playing video games is an optimal example of an intrinsically motivating activity.

Extrinsic motivation on the other hand involves completing an activity for a separable consequence from the activity itself (Deci & Ryan, 2012), e.g. to receive rewards/praise or to avoid punishment/sanctions. As such, behaviour becomes contingent on the presence of such extrinsic motivations and is unlikely to occur in

their absence. In this regard, a need for autonomy may not be fulfilled as the motivation is external to the individual, it is *controlled* by someone/something else. However, Deci and Ryan (1985) maintain that positioning motivation as existing within an intrinsic-extrinsic dichotomy, where intrinsic motivation is desirable, is a reductionist stance. A further distinction needs to be made between *autonomous* and *controlled* motivation. Autonomous motivation incorporates an individual's intrinsic motivation, as well as *internalised* extrinsic motivation (Deci & Ryan, 1985), whereby external values have been integrated into one's personal value system (Gettinger & Walter, 2012). Controlled motivation on the other hand encompasses three distinct types of extrinsic motivation, whereby the motivation, or motivator, is external to the individual. From an educational perspective, autonomous motivation to engage in an activity might occur when pupils are deeply interested in a topic, or appreciate its value; whereas controlled motivation might occur when pupils complete an activity in anticipation of getting a good grade, or to avoid a sanction such as detention. Together, the concepts of autonomous and controlled motivation and internalisation are known as Organismic Integration Theory (Deci & Ryan, 1985) – a theory which compliments BPNT under a wider SDT framework.

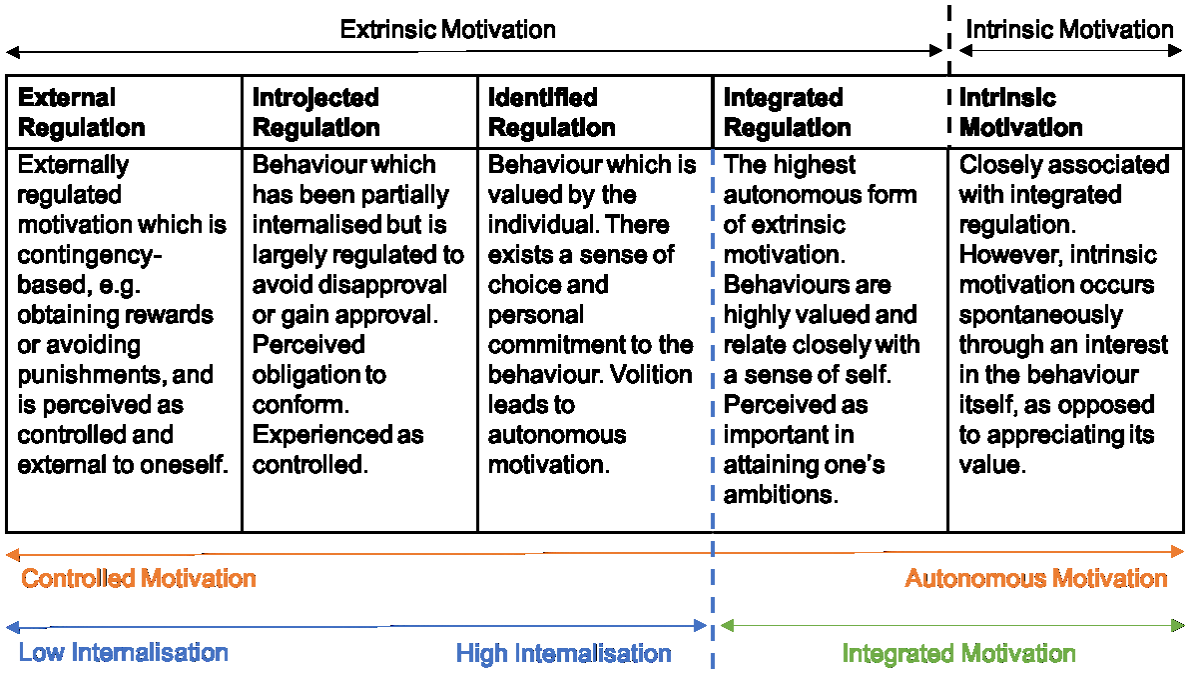
2.3.1 Organismic Integration Theory

It would not be contentious to say that for many pupils, most academic activities are not inherently satisfying in an explicit sense (Niemiec & Ryan, 2009), i.e. they are not, for the most part, intrinsically motivating. However, as alluded to, autonomous motivation incorporates not only intrinsic motivation, but also well-internalised extrinsic motivation (Deci & Ryan, 2012). Organismic Integration Theory (OIT) proposes that individuals have a natural integrative tendency (Ryan & Deci, 2003) to internalise

behaviour that is valued by those closest to them and that demonstrated in wider society (Ryan et al., 1985). Indeed, such internalisation of societal norms is proactively sought (Reeve, 2012) as it helps to satisfy one's basic psychological needs as referenced in BPNT. Internalised values and behaviours promote competence in navigating the social world; relatedness through shared values and goals with others; and autonomy through the perception that behaviour occurs due to one's own volition, as opposed to external demands.

Within OIT, there are four types of extrinsic motivation which vary in the degree to which they have been internalised (Ryan & Deci, 2009). These four types of regulation, namely external, introjected, identified and integrated regulation, can be conceptualised along a continuum of autonomous motivation (Reeve, 2012; Ryan & Deci, 2009; Deci & Ryan, 2012), which denotes the self-determined nature of behaviour. See *Figure 1* for an overview of this continuum.

Figure 1 – Organismic Integration Theory (Deci & Ryan, 1985) – An Overview



As a wider framework, SDT maintains that attention should focus on whether an individual's motivation is autonomous or controlled as the best predictor of performance on an activity (Deci & Ryan, 2012). Within the literature base, a large corpus of empirical and theoretical research shows that autonomous motivation promotes engagement and supports optimal learning in educational contexts (Niemiec & Ryan, 2009). Autonomous motivation is associated with better long-term learning outcomes (Gettinger & Walter, 2012; Wang, 2008); deeper learning and recall immediately and overtime (Ryan et al., 1990); better performance regarding physical education (Boiché et al., 2008); and better psychological well-being (Lévesque et al., 2004).

2.4 Motivation and Engagement in Education

This project adopts the tenet that motivation is both a cause and a consequence of engagement; i.e. changes in engagement contribute to changes in motivation and vice versa. The notion that motivation mediates levels of engagement is a relatively straightforward concept. The notion that engagement affects motivation is premised on the idea that individuals must take action and engage in 'environmental transactions' (Reeve, 2012) in order to produce the necessary experiences that satisfy our basic psychological needs of autonomy, competence and relatedness. Engagement is the active behaviour which satisfies our inherent motivations. Activities which more readily make available such positive, need satisfying experiences are more likely to sustain an individual's engagement. This idea, in my view, is perhaps the seminal reason why people play video games.

Pupil engagement is thus determined, in part, by the extent to which they are

motivated to participate in a given learning activity (Gettinger & Walter, 2012) and therefore sustained engagement (engagement over time) is contingent upon the extent to which pupils are willing (motivated) to invest time in a learning activity. This is an important distinction to make. A powerful predictor of academic attainment is the amount of time pupils are actively engaged in learning activities (Gettinger & Walter, 2012). The positive relationship between increased academic engaged time (AET) and educational achievement is a consistent finding within the wider corpus of literature (Gettinger & Ball, 2007). However, research indicates that AET can be as low as 50% in some instances (Corso et al., 2013; Gettinger & Walter, 2012; Yazzie-Mintz, 2010) and this can have a marked impact upon pupil's academic attainment.

Accepting the tenet held throughout this report that motivation is inherent to individuals, the idea that pupil's 'lack motivation' is not a useful one, nor entirely accurate. The extent to which teaching helps to sustain a pupil's engagement in a learning activity is one of the primary ways in which teaching directly influences academic achievement. *How* teaching occurs is thus an important mechanism of focus when aiming to improve academic performance. Learning environments and teaching approaches which explicitly provide numerous (basic) need satisfying experiences will actively promote sustained engagement and AET, and should improve academic performance accordingly.

Through a knowledge of self-determination theory, teachers can identify the basic psychological needs of their pupils using basic psychological needs theory and consider how to best provide and nurture opportunities for these needs to be met through an awareness of autonomous and controlled motivation using organismic integration theory. Engagement and AET is promoted when pupils value what is being

taught (identified and/or integrated regulation – see Figure 1), are interested and understand the purpose of a learning activity (autonomy), experience high levels of success (competence) and receive praise or some other reinforcing environmental factor (relatedness) for doing so (Gettinger & Walter, 2012; Niemiec & Ryan, 2009; Guthrie & Wigfield, 2000). An SDT framework explicates how a pupil's inherent psychological needs and motivations interact with the educational environment within which they find themselves. The extent to which the environment meets these needs, and through what means, will have variable results on the level of engagement and AET demonstrated by the pupil, in turn ultimately affecting their academic performance. To reiterate the point made a few paragraphs earlier, video games, by purposeful design, are very successful in nurturing such opportunities. Nevertheless, utilising an SDT framework, this report will examine the argument that teaching and educational environments can provide similar conditions to support such inherent basic psychological needs (Ryan & Deci, 2009) to those which are present in video games.

CHAPTER 3: VIDEO GAMES AND MOTIVATIONS TO PLAY

3.1 Video Game Background

The Association for UK Interactive Entertainment (UKIE) estimate that the global audience of people who play video games is between 2.2 and 2.6 billion (UKIE, 2020). Whilst historically gender gaps in video game behaviour prevailed, with males playing more than females, they have diminished over the years (Bean, 2018). Males and females now share a more equal ratio of the global player base (Entertainment Software Association (ESA), 2020). By 2021, the global video game software market, i.e. physical and digital copies of video games, is estimated to be worth $180.1 billion (UKIE, 2020). In terms of revenue, the UK is the 6th largest video game market in the world, with an estimated 37.3 million people playing video games (UKIE, 2020). The prevalence of video game behaviour is almost inconceivable considering its entirely volitional nature in the distinct absence of any tangible reward (small caveats exist regarding monetized YouTube videos and tournament prize money). Therein lies a real opportunity therefore to learn from this impressively successful media and apply the elements of video games which contribute to this success in non-game contexts such as education. Such is the rationale for this research project.

Professor Bernard Suits, perhaps the most influential philosopher of games and gaming (Kobiela et al., 2019), stated that “playing a game is the voluntary attempt to overcome unnecessary obstacles” (Suits, 1978, p.41). In an expanded definition, he wrote:

> *“To play a game is to attempt to achieve a specific state of affairs (prelusory*

goal), using only means permitted by rules (lusory means), where the rules prohibit use of more efficient in favour of less efficient means (constitutive rules), and where the rules are accepted just because they make possible such an activity (lusory attitude)" (ibid., p.41).

Whilst it is beyond the remit of this research report to breakdown and consider this definition in detail, Suits' definition is offered as it focuses more so on the thinking and motivation of the player, as opposed to a focus on what constitutes a game. Through adopting a lusory attitude (Suits, 1978) the player accepts those arbitrary rules that make possible the experience of play. For example, to stand 400 yards away and attempt to hit a golf ball into a small hole in the ground using a golf club is by no way the most efficient means of getting said ball into said hole; one might instead simply walk over to the hole and drop the ball in. However, in adopting a lusory attitude we accept the parameters of the game so as to experience play. Similarly, people play video games upon their own volition and actively seek such 'unnecessary obstacles'.

It is such action, or interaction, on behalf of the player which is the principle difference between video games and more passive media such as books, TV programmes and film. For other such forms of media, content is the cornerstone (Rigby & Ryan, 2011). No matter how creatively elements such as narrative, sound and visual production are combined, the finished media will remain unchanged forevermore. Between such media and consumer lies no further interaction beyond said content. Nonetheless, the above point has not been made to place video games on a pedestal over other forms of media, which are irrevocably powerful in their own right, but to elucidate a reason as to why society perpetually focuses on the *content* of video games: because this is what has been the focus in the past and for most other forms of media (Rigby & Ryan,

2011). Such a focus on the content of video games neglects the very essence of that particular form of media with regards to its interactivity between media and consumer, i.e. video game and player.

This research project maintains that the focus should shift from the content of video games to the interactive experience between the player and video game. I.e. what is it that is happening during this experience that sustains engagement and leads to the prevalence of video game behaviour as outlined earlier. A pitfall to avoid in this regard is to assume that people play video games 'because they are fun' (Rigby & Ryan, 2011). Fun, much like the concept of motivation, is not a term that can be operationalised in any useful sense. It can be said however that fun is an outcome that is context-dependent and can be experienced in a variety of markedly different situations. That is, there are a number of different reasons and experiences which correspond to the feeling of 'having fun'. Thus, the underlying motivations as to why people play video games, of which fun indeed may be an outcome, and how video games satisfy these motivations is what this research project proposes can be of use in promoting engagement in non-game contexts, such as education.

3.2 Motivations to Play Video Games

As a result of such a focus on video game content, and in particular whether 'violent' video games have an impact on our real-word aggression and behaviour, there is a relative scarcity of empirical literature concerning why people choose to play video-games (Etchells, 2019). Nevertheless, the following section presents a brief overview of the seminal research which has been conducted regarding motivations to play video games and concludes by explicating current understanding and context. The section

ends in providing the rationale for this research project's use of a self-determination theory (SDT) framework in conceptualising motivations to play video games.

3.2.1 Bartle (1996)

Richard Bartle co-created one of the earliest 'massively multiplayer online' (MMOs) – which is a hugely popular genre of video gaming even today. Bartle's pioneering virtual world was a text-based game entitled MUD, an acronym for 'Multi-User Dungeon'. In his seminal 1996 paper 'Hearts, Clubs, Diamonds, Spades: Players Who Suit MUDs', Bartle promoted the idea that individuals can play the same game for a variety of different reasons. At the time, this was an innovative perspective to adopt as it was one of the first instances where games were viewed from the player's perspective as opposed to the observable content within the game (Bean, 2018, Ryan et al., 2006).

Bartle proposed a player taxonomy based upon the tenet that an individual's behaviour in the virtual world of MUDs could be categorised based upon their preferences and in game actions and decisions (Bartle, 1996; Bartle 2004). Based upon qualitative data from MUD players, Bartle claimed that there were four types of players who played MUDs: Achievers, Killers, Socializers and Explorers.

Achievers – strive to gain points, experience and items. Enjoy levelling up their character and relish in the prestige of achievement for achievement's sake.

Killers – also known as ‘griefers’, Bartle (1996) proposed that the “more massive the distress caused”, e.g. through killing another players character, or upsetting another’s strategy for example, the greater the joy the player will experience having caused it.

Socializers – are primarily interested in other players and play to communicate and interact with people who share a common interest. Genuine interactions underpinned by empathy, humour, interest etc. are important to these players.

Explorers – are interested in finding out about the virtual world within which they reside. They enjoy discovering and finding out new things, at their own pace and in their own time. These players will imitate the other styles of play at times, as a means to try all aspects of the game.

However, Bartle (1996)’s taxonomy is not without its detractors. Criticism centred on the taxonomy excluding motivations such as cooperation and competition and being overly broad in its player type categorisations (Bean, 2018). Further typologies were proposed (see Radoff, 2011; Fullerton, 2008) but Bartle (2012) rebuffed such criticism claiming that the proposed taxonomy was not intended to be used outside of its original context concerning MUDs – a familiar limitation of qualitative research design (Cresswell, 2008). Dr Nick Yee expanded on Bartle’s taxonomy in his paper “Motivations for play in online games” (Yee, 2006).

3.2.2 Yee (2006)

Similarly to Bartle (1996), Yee (2006) surveyed players of MMOs, but importantly on a much wider scale and using data from a number of different MMO games, as

opposed to Bartle's singular MUD. Yee (2006) sampled over 3000 individuals using a survey consisting of 40 questions which were based on Bartle's 1996 taxonomy. Yee utilised a factor analysis method to see how questions aggregated into distinct concepts and how answers on one question tended to coincide with answers on another. This was one of the first notable instances of a statistical methodology being used to theorise a taxonomy of different motivations to play video games (Madigan, 2016; Ryan et al., 2006). Yee found evidence for three categories regarding motivations to play video games: Achievement, Immersion and Socialisation, each which had its own subcomponents – See Table 1.

Table 1 – Overarching categories and subcomponents of player motivations derived from a factor analysis of over 3000 MMO players (Based on Yee, 2006)

Achievement	Immersion	Socialisation
Advancement: progress, power, accumulation, status	**Discovery**: exploration, lore, finding hidden things	**Socialising**: casual chat, helping others, making friends
Mechanics: numbers, optimisation, templating, analysis	**Role-Playing**: story-line, character history, roles, fantasy	**Relationship**: personal, self-disclosure, find and give support
Competition: challenging others, provocation, domination	**Customisation**: appearances, accessories, style, colour schemes	**Teamwork**: collaboration, groups, group achievements
	Escapism: relax, escape from real life, avoid real-life problems	

Not only did Yee provide a much more detailed categorisation of player motivations than Bartle, he did so using much more rigorous research methods. Also, Bartle's 1996 taxonomy indicated that player types were almost mutually exclusive, i.e. you either played as an achiever or a killer for example. However, the three overarching categories identified by Yee (2006) were non-exclusive and did not suppress one another as Bartle suggested.

3.2.3 Critique

However, although highly regarded, Yee's research has also been criticised. Criticism resides upon the basis that Yee's data were derived from a survey based on Bartle's original taxonomy. Thus, the closed nature of a question such as "How important is it for you to acquire rare items that most players will never have?" (Yee, 2006) can only confirm the existence of a player motivation/type thought to already exist (Etchells, 2019). The seminal nature of Bartle (1996)'s original paper, notwithstanding its distinct flaws, looms over the corpus of literature to this day. Indeed, Hamari & Tuunanen (2014) conducted a meta-synthesis on research pertaining to player taxonomies and typologies and found that almost all research is "very much based on Bartle's (1996) original work" (p.46). This is an important critique to illuminate as such an approach limits the ability of research to posit and/or discover previously unknown motivations to play video games. Herein lies one of a number of rationales for this current research project to conduct bottom-up qualitative research as a means to gather data regarding motivations to play video games.

3.2.4 PENS Model

A number of researchers (Rigby & Ryan, 2011, 2007; Przybylski et al., 2010; Ryan et al., 2006) adopted an alternative approach to researching motivations to play video games. They criticised existing typologies as reflecting the content of games and being focused on outcomes of fun and enjoyment, as opposed to considering what are the underlying motivations that lead to such experiences. Rooted in a SDT framework, Rigby & Ryan (2007) proposed the PENS model (Player Experience of Need

Satisfaction) and claimed that successful games are engaging and experienced as fun and enjoyable dependent upon how well they satisfy our basic psychological needs; namely autonomy, competence and relatedness. Rigby & Ryan (2011) claim that it is because “games and virtual worlds are so good at satisfying these needs that they evoke such deep engagement in those who play them” (p.10).

The PENS model proposes that the way in which video games so efficiently satisfy such needs is through their *immediacy, consistency* and *density. Immediacy* refers to the perennially available nature of video games. *Consistency* denotes the reliability of video games in meeting our expectations of them. For the most part, video games do not incorporate the ‘ambiguity of real-life’ (Rigby & Ryan, 2011) – the connection between action and consequence within the virtual world is well established and dependable. Lastly, *density* signifies the ability of video games to provide frequent opportunities for basic need satisfaction, thus sustaining our engagement in the activity.

3.3 Self-Determination Theory and Video Games

To reiterate, this research project adopts the axiom that the success of video games transpires as a result of the efficient means in which they provide a high degree of basic need satisfying experiences. Utilising an SDT perspective, the following sections lend discourse to what such ‘experiences’ may be, and how in turn they satisfy the basic psychological needs of autonomy, competence and relatedness.

3.3.1 Competence

“I stabbed that orc real good”

(Madigan, 2016, p.91)

As outlined earlier, competence refers to the need for individuals to feel effective regarding interactions with their external and internal (relating to thoughts and beliefs) environments (Deci & Ryan, 2012). It is the need to feel good at something; the need to experience success and progression. Feelings of competence are enhanced when individuals acquire new skills or abilities, master already acquired skills and receive positive feedback. Video games present many different opportunities for such experiences, for example through completing quests, levelling up, killing enemies, solving puzzles, winning races and scoring goals.

The experience of optimal challenge is also a big contributing factor to competence need satisfaction (Ryan et a., 2006). By design, video games achieve this through appropriately pitching the level of difficulty of the game and thus the skill required on behalf of the player to experience success. For the most part, video games begin at a basic level whereby the player learns the essential controls and is given the opportunity to experience success and achievement in doing so (Madigan, 2016). Critical to the success of video games is the ongoing balance which is needed between the player's skill level and the game's difficulty (Przybylski et al., 2010). Perhaps counterintuitively on first glance, video games which do not appropriately challenge players serve to thwart rather than satisfy our basic psychological need for competence (Rigby & Ryan, 2011). Competence reflects a player's need to feel like they are making progress and 'getting better'. Thus, to continue to experience such need satisfying experiences, players need to feel as if their success in a game is directly tied to, and contingent upon, the progress they have made and skills they have

developed. For example, a player will intuitively realise that an enemy present later in a game is much stronger and harder to defeat when compared to enemies present earlier on. However, the player will also know they are now better equipped and skilled so as to defeat them.

3.3.2 Autonomy

"I stabbed that orc and not that other one"

(Madigan, 2016, p.96)

As referenced earlier, autonomy pertains to the need to experience a sense of volition with regards to one's behaviour – that is, to what extent behaviour is self-endorsed (Deci & Ryan, 1985; Ryan & Deci, 2009). It is the need to feel in control. Basic needs for autonomy are satiated through autonomous motivation e.g. from completing an activity that is inherently interesting or one which holds personal value. Video game behaviour is predominantly voluntary in nature and thus will meet a need for autonomy through simply being an activity of choice. However, as briefly discussed earlier, the agency within other forms of media belongs to the content and characters of that particular media (Rigby & Ryan, 2011). The experience is fixed and determined and will never change. Within video games, the agency shifts to the player in controlling their avatar (character) in affording the opportunity to take action in the virtual world. Importantly, such actions have virtual world consequences. Individual video games differ from one another with regards to the level of autonomy which is offered to players *within* the game (Ryan et al., 2006).

Whereas earlier video game titles such as *Pong* and *Space Invaders* offered players

very little in the way of autonomy, over time and coinciding with technological advancements, video game developers have developed increasingly complex games which satisfy this basic need in a variety of ways, for example: choice in utilised strategy; flexibility of goals and tasks; opportunities for customisation; freedom to explore etc. Przybylski et al. (2010) propose that it through a sense of 'equifinality' – the concept that there are "various alternatives available to realise the goal" (Bertalanffy, 1968, p.335) – that video games nurture a sense of autonomy. The provision of meaningful choices (Madigan, 2016; Przybylski et al., 2010) within video games fosters our sense of acting with volition and satisfies our basic need for autonomy.

3.3.3 Relatedness

"The peasants were super happy when I stabbed that orc"

(Madigan, 2016, p.99)

Relatedness denotes the need to experience a sense of relatedness to other people (Deci & Ryan, 2012). It includes emotional connectivity and relationships (Deci & Ryan, 1991) and authentic and reciprocal interactions (Ryan, 1993). Needs for relatedness are satiated when one feels meaningful and important to others. Relatedness needs were perhaps the last of the three basic psychological needs to be realised within video games. Again, this was largely made possible through coinciding technological advancements, primarily the internet and the possibility for online play. The invention of the internet and the ability to play online brings with it numerous opportunities to satisfy our basic psychological need for relatedness, for

example: online matchmaking; playing with and against other players; co-operative quests and campaigns; opportunities to talk and interact within games; opportunities to spend time with other people within virtual worlds; through joining online clans, guilds or factions, and; the availability to join online communities where individuals can communicate and interact with people who share a common interest etc.

Relatedness reflects a need to feel important to other people and have a meaningful connection with them. However, such a feeling can also be experienced from interactions with characters within the game itself, i.e. non-player characters (NPCs) (Przybylski et al., 2010). Through developing a deep, rich storyline and narrative, video games are able to encourage players to become invested in their NPC counterparts. Thus, completing a quest for an NPC successfully contributes to satisfying the basic psychological need for relatedness (Madigan, 2016). A recent game released in November 2019, entitled 'Death Stranding', placed an emphasis on social connectedness like no video game had ever done before. Death Stranding's new 'social strand system' (Kojima, 2019) meant that the actions of one player in *their* game could impact the virtual world of another Death Stranding player. For example, building a road in your game would then make available the same road for a number of other players around the world. However, to build structures such as roads in Death Stranding required a lot of time and effort on behalf of the player to complete. Notably, the benefit of building said road for the individual player themselves was questionable when considering a cost/benefit analysis of doing so, i.e. when considering the time taken to build the road versus the efficiency of travel it provided. However, the motivation to complete such structures arose from the social affirmation one received (captured through a 'like' system) for doing so (Cooper, 2019). The basic psychological

need this behaviour was satisfying therefore could be argued to be a need for relatedness, through a need to feel important and connected to others.

3.4 Game Design

Game design refers to the process whereby video games "actually get made" (Salen & Zimmerman, 2006, p.21). Game design is important to this research project insofar as it incorporates the *mechanics* and *elements* of video games which make possible the need satisfying experiences described in the section above. Within the corpus of literature on game design, authors vary with regards to their use of game 'mechanics' or 'elements' when largely discussing the same concept. In the interest of clarity, this research report solely uses the term 'elements' hereon.

Game design elements are the core of what a game truly is (Schell, 2008) – "a set of building blocks" (Deterding et al., 2011, p.12) which interact with one another to form the finished video game. However, it is through the interactions between game design elements that gives rise to the experience of a game. Therefore, to reduce a game down to a set of core elements would not represent the actuality of the game, much like how a finite number of musical notes can produce an infinite amount of different songs. The complex nature of these interacting elements means that an agreed upon taxonomy is unlikely.

A strict interpretation of game design elements, one that is "philosophically watertight" (Schell, 2008, p.130) and only inclusive of elements which are unique and/or specific to video games would lead to a rather small taxonomy. On the contrary, a more liberal interpretation inclusive of almost any element that may be found in a video game would

lead to a taxonomy which is 'boundless' (Deterding et al., 2011). This research report adopts Deterding et al. (2011)'s conceptualisation of game design elements as "*characteristic* to games – elements that are found in most (but not necessarily all) games, readily associated with games, and found to play a significant role in gameplay" (p.12). Indeed, some authors have made worthy attempts to consolidate game design elements (see Nacke, 2014; Trefry, 2010; Schell, 2008; Salen & Zimmerman, 2003, 2006) and it is from these authors which the current research project's *collection* of video game design elements is based (See Table 2). The decision not to position the collection of game design elements listed below as a taxonomy was based upon the premise of the pragmatic approach behind its inception. The boundaries of this research report did not allow for a systematic literature review on the topic of game design and therefore the collection below lacks the necessary rigour to be positioned as a taxonomy. Similarly, to explain each element in turn is a task far beyond the parameters of this research project (yet the list is largely self-explanatory for the most part). The detailed collection of elements listed below suffices in its role in realising the overall research aim of this project, to propose a framework of ideas for gamification in education.

Table 2 - A collection of game design *elements*

Accountability	Failure	Relationships
Acquisition	Feedback	Rescue
Actions	Goals	Resources
Avatars	Graphics	Rewards
Badges	Health	Rules
Boundaries	Interaction	Sequencing
Building	Interface	Setting
Capture	Inventory	Solutions
Chance	Items	Spatial
Characters	Leaderboards	Story
Chasing	Levels	Status
Choice	Lives	Strategy
Co-operation	Missions	Structure
Collecting	Narrative	Success
Competition	Objectives	Survival
Conflict	Objects	Systems
Consequences	Obstacles	Tactics
Currency	Opponents	Territory
Damage	Outcomes	Theme
Decisions	Players	Time
Destruction	Prediction	Trading
Dilemmas	Problems	Trophies
Environment	Progression	Unit
Evading	Quests	Victory
Experience Points	Racing	
Exploration	Reasoning	

CHAPTER 4: GAMIFICATION

4.1 Defining Gamification

A defining aspect of playing video games is the volitional nature of the activity. By design, video games are motivating and engaging to play. As referenced earlier in the report, the two intertwined concepts of motivation and engagement are significant predictors of academic achievement (Gettinger & Walter, 2012). The notion that engagement mediates motivation is premised on the idea that individuals must take action and engage in 'environmental transactions' (Reeve, 2012) in order to produce the necessary experiences that satisfy our basic psychological needs of autonomy, competence and relatedness. Gamification as a concept posits that game design elements can be used in such a way to make non-game contexts more enjoyable and engaging (Flatla et al., 2011; Zicherman & Cunningham, 2011). Prior to Deterding et al. (2011)'s seminal article, the concept of gamification was poorly defined and thus research on the topic was disjointed and haphazard. 'From Game Design Elements to Gamefulness: Defining "Gamification"' (Deterding et al., 2011) is a highly influential article within the corpora of gamification literature; and defines gamification as: *"the use of game design elements in non-game contexts"* (p.10).

The rationale behind gamification is such that adding game design elements to non-game contexts such as education will help to replicate the experiences of motivation and engagement afforded when playing video games (Codish & Ravid, 2015). A 'gamified' lesson may incorporate a number of game design elements so as to make learning content and/or academic tasks more engaging. However, gamification does

not refer to a "full 'game proper'" (Deterding et al., 2011, p.12). Perhaps the most renowned example of gamification is the fast-food chain McDonald's' Monopoly promotion. Using game design elements such as chance, collecting, rewards and graphics (from the popular Monopoly brand), McDonald's Monopoly is one of the most successful marketing campaigns of all time (Verheul, 2017). Whilst the product, i.e. foodstuffs, remains unchanged, the use of gamification in applying game design elements serves to promote engagement and drives sales accordingly.

The gamification of education involves incorporating game design elements into the overarching delivery of teaching and learning so as to change behaviour in a desirable way (Dichev & Dicheva, 2017; Holman, 2013). This research report frames such 'desirable behaviour change' as increased academic engaged time (AET) (Gettinger & Walter, 2012) following well-founded claims regarding its importance in predicting academic achievement (Gettinger & Ball, 2007).

Whilst the allure of gamification is appealing, research to date indicates largely disappointing results with regards to positive effect sizes (Dicheva et al., 2018; Koivisto & Hamari, 2019; Majuri et al., 2018; Dichev & Dicheva, 2017; Dicheva et al., 2015; Hamari et al., 2014). However, I would argue that any such disillusionment with the concept of gamification at this stage is premature and call instead for a closer examination of its *implementation*. The following section (4.2) examines such a critique of gamification research.

4.2 Critique of Gamification Research

The practice of gamification in applying effective game design elements in non-game contexts faces a number of challenges. The following section provides a critical overview and critique of current gamification research, namely: a lack of theoretical underpinning and reference to motivational theory; a narrow use of game design elements without justification for their selection; and, an altogether misguided overuse of points, badges and leaderboard game design elements.

Gamification has become perhaps the most noteworthy development regarding human engagement in recent years (Majuri et al., 2018). Whilst the majority of studies present at least minor positive effects regarding the implementation of gamification (Koivisto & Hamari, 2019), the implications for learning and academic achievement remain somewhat unfounded due to limitations of empirical research regarding poor theoretical grounding, study design and analysis (Dicheva et al., 2018; Dichev & Dicheva, 2017).

4.2.1 Insufficient Theoretical Underpinnings

Typically, the majority of studies concerning gamification in education are not grounded in a theoretical understanding of motivation (Dicheva et al., 2018; Seaborn & Fels, 2015). More specifically, studies do not utilise gamification frameworks in their design and implementation of the data collection phase. As such, theoretical considerations are not, for the most part, explored in the discussion of empirical findings (Seaborn & Fels, 2015), of which the “amount of mixed results is remarkable” (Koivisto & Hamari, 2019, p.191). One reason for this is because such gamification frameworks simply do not exist, hence one rationale for this current research project. The conceptualisation of how game design elements affect motivation and

engagement has been paid little attention and thus not sufficiently understood as yet (Dicheva et al., 2018).

4.2.2 Limited use of Game Design Elements

Without such guidance and theoretical grounding, the majority of studies provide no justification for the game design elements which have been utilised in their research. Dichev & Dicheva (2017) reviewed 63 papers in total, of which 51 were empirical gamification studies, and found that: the link between the specific game design elements implemented in each study, their hypothesised impact and the theoretical foundations behind their choosing were not systematic in nature. Moreover, 35 of the 51 empirical studies utilised 3 or fewer game design elements when applying gamification in an educational context. Video games on the other hand utilise a vast array of game design elements to achieve the levels of engagement gamification aims to replicate.

Similarly, beyond a lack of justification for the game design elements applied within studies, there seems a limited knowledge of the vast array of game design elements which might be utilised. As will be discussed in the following section, the majority of studies use the closely related game design elements of points, badges and leaderboards. In their survey of gamification research at the time, Seaborn & Fels (2015) provide a ‘legend’ of game design element terminology which is referenced throughout their article (See Table 3).

Table 3 – An overview of Seaborn & Fels (2015)' 'Legend of game element terminology'

Term	Definition	Alternatives
Points	Numerical units indicating progress	Experience points, score
Badges	Visual icons signifying achievements	Trophies
Leaderboards	Display of ranks for comparison	Rankings, scoreboard
Progression	Milestones indicating progress	Levelling, level up
Status	Textual monikers indicating progress	Title, ranks
Levels	Increasingly difficult environments	Stage, area, world
Rewards	Tangible, desirable items	Incentives, prizes, gifts
Roles	Role-playing elements of character	Class, character

Despite the article itself being a somewhat damning indictment on the current implementation of gamification in education, the 'legend' of game design elements espoused is reductionist in nature in its own right. The legend is slim when compared to the 'Collection of game design elements' outlined earlier (see page 31). Moreover, Seaborn and Fels' game design elements are heavily skewed towards satisfying the basic psychological need for competence through extrinsic motivation, as indicated by the use of language such as *progress, achievements, status* and *rank.* However, using an SDT framework, it could be argued that the success of video games transpires as a result of the efficient means in which they provide a high degree of basic need satisfying experiences for each of competence, autonomy and relatedness. It is through such a lack of theoretical foundations and regard for motivational theory that current gamification research places an undue overemphasis on the use of points, badges and leaderboard (PBL) mechanisms.

4.2.3 Points, Badges & Leaderboard (PBL) Overuse

Margaret Robertson, a renowned director of game design and video game journalist positioned an approach of principally utilising PBL mechanisms as “taking the thing that is least essential to games and representing it as the core of the experience” (2010, paragraph 6.). Without regard for the multitude of game design elements available, gamification in its current form has been positioned as mere ‘pointsification’ by some authors (Deterding, 2015; Robertson, 2010). More damningly, Bogost (2011) prefers the moniker ‘exploitationware’, arguing that the adoption of the more attractive term ‘gamification’ was used to advance the position of the concept as a marketing and educational tool, as opposed to more accurately reflecting the substance of the idea.

Within the corpus of literature concerning gamification in education, a number of systematic reviews have found that the majority of studies exclusively utilise the triad of PBL mechanisms (Dicheva et al., 2018; Koivisto & Hamari, 2019; Majuri et al., 2018; Dichev & Dicheva, 2017; Dicheva et al., 2015; Nicholson, 2015; Hamari et al., 2014). PBL mechanisms are associated with achievement and progression oriented game design elements. The idea that the success of games in motivating and engaging individuals to play them results from such achievement and progress orientations alone is misguided, and yet pervasive within the empirical literature. Moreover, historical research on motivation has shown that such reward contingencies thwart autonomy needs through promoting controlled motivation (Deci et al., 1999) (See Figure 1 on page 13). That is not to say that PBL mechanisms should not be used at all when applying gamification in education, but such an explicit focus is too narrow to replicate the efficient means in which video games provide a high degree of basic

need satisfying experiences for each of competence, autonomy and relatedness. Current gamification practice leaves the basic psychological needs of autonomy and relatedness unfulfilled.

A convincing hypothesis as to why this might be the case manifests through the notion that PBL mechanisms are perhaps the easiest game design elements to utilise as gamification mechanisms (Koivisto & Hamari, 2019; Dicheva et al., 2018; Mekler et al., 2015). A closer appraisal of this phenomenon elucidates PBL mechanisms as analogous to traditional forms of educational assessment. For example, rather than a simple 'B' grade, a pupil might receive a 'badge' to signify this achievement, and an associated amount of 'points' which are then tracked using a 'leaderboard'. To implement such a narrow conceptualisation of gamification would require little effort on behalf of the teacher/researcher. Whilst the allure of gamification is appealing, the as yet insufficient theoretical grounding regarding the practice of gamification results in inadequate implementation and contributes to an unnecessary disillusionment with the technology.

4.3 Gamification in Education

Education and learning is the most popular context in which empirical research concerning gamification is conducted, accounting for just under half of all published gamification studies to date (Koivisto & Hamari, 2019). This makes intuitive sense when considering the importance of engagement for academic achievement. However, empirical literature concerning gamification and education is undermined by 'conceptual unclarity' (ibid., 2019) and a wide variation of mixed results and effect sizes. Positive effects in this regard typically refer to course/exam grades and overall

achievement. In some studies, positive effects also refer to desirable behaviour such as student involvement and the amount of contributions made in class.

Over 66 controlled experimental gamification studies, Koivisto & Hamari (2019) found:

- 19 had 'Positive effects' (28.7%)
- 31 had 'Mixed with positive effects' (47%)
- 12 had 'Null or equal positive and negative effects' (18.2%)
- 2 had 'Mixed with negative effects' (3%)
- 2 had 'Negative effects' (3%)

As outlined, the amount of mixed results is stark. However, to the reader such data is largely meaningless as it provides no clarity on what game-design elements were used and which gamification mechanisms were implemented. Whilst the definition of gamification as "the use of game design elements in non-game contexts" (Deterding et al., 2011, p.10) is largely accepted within the corpus of gamification literature, its broad nature likely contributes to the current context of 'conceptual unclarity' when applied to education. Gamification in education can occur in a number of different ways, utilising a variety of game-design elements. Thus from an empirical research perspective (particularly regarding controlled experiments), it becomes unsuitable to study gamification as a generic construct (Sailer et al., 2017). Instead, the focus of enquiry should concern which particular game-design elements had positive effects (or not).

Within the 66 controlled experimental gamification studies referenced above, 239 game-design elements were used in total, from 47 different elements. 97 of the 239 game-design elements used (40.6%) focused exclusively on the aforementioned

points, badges and leaderboard (PBL) mechanisms (or closely related competence-oriented derivatives such as ‘score’ and ‘medals’). Using a self-determination theory framework, this research reports adopts the hypothesis that one reason why there is such a high amount of mixed-results within the empirical literature regarding gamification in education concerns the narrow focus of the game-design elements used in typically aiming to satisfy competency-based basic psychological needs.

SDT has previously been successfully applied to video games and video game behaviour (Ryan et al., 2006; Rigby & Ryan, 2007; Przybylski et al., 2010; Rigby & Ryan, 2011) and outlines how the engaging nature of video games can be attributed to the way in which they provide frequent opportunities for basic need satisfaction for *each* of competence, autonomy and relatedness. As such, it thus makes intuitive sense for researchers and educators using gamification in education to aim to implement gamification mechanisms accordingly, i.e. using a variety of game-design elements beyond those which may only satiate competency-based needs. Alas, this is not indicative of current practice.

The ultimate destination of empirical gamification research should be the point at which it is made clear which individual game-design elements work best and in what contexts (see Future Research, page 125). However, before such a time is possible, gamification research needs to move beyond its preoccupation with the PBL triad – away from “taking the thing that is least essential to games and representing it as the core of the experience” (Robertson, 2010, paragraph 6.). Thus the most pressing area of concern for the gamification literature base at present is the failure to account for autonomy and relatedness basic psychological needs when implementing gamification in education, research and practice.

It is not the purpose of this research project to conclude which game-design elements and subsequent gamification mechanisms are most useful when applied in education. Rather it is to make the argument that teaching and educational environments should aim to utilise game design-elements beyond the triad of PBL mechanisms. As referenced, the way in which I aim to do this is through situating the overarching research report within a self-determination framework – thus providing a theoretical foundation for gamification which has been hitherto largely unacknowledged – and through collecting and analysing bottom-up data regarding children and young people's motivations to play video games.

4.4 Summary

The current practice of gamification in education over-employs the triad of points, badges and leaderboard (PBL) mechanisms. As such, achievement and progression oriented game design elements are preferred, despite the large diversity of game design elements from which one could choose (see Table 2). Video games on the other hand utilise a vast array of game design elements to achieve the levels of engagement gamification aims to replicate. Viewed through an overarching self-determination theory (SDT) framework (Deci & Ryan, 1985), utilising basic psychological needs theory (BPNT) and organismic needs theory (OIT), this research project adopts the axiom that the success of video games in motivating individuals to play and in maintaining player engagement transpires as a result of the efficient means in which they provide a high degree of basic need satisfying experiences for *each* competence, autonomy and relatedness. As outlined in the literature review regarding motivations to play video games, whilst many individuals will play video games so as to satiate their need for competence through achievement and progress oriented

experiences, the literature posits that this is but one of a number of different motivations to engage in this media. As such, a consolidated theoretical grounding and understanding of motivation and engagement is essential to the success of gamification in education, in ensuring its application more suitably satisfies pupil motivation, promoting engagement and ultimately improving academic achievement.

4.5 Conclusion

Gamification as a concept is still in its infancy but developing at a rate whereby practice has outpaced theory. Therefore, what is known of the phenomenon stems from a fragmented and spurious corpus of literature from a variety of perspectives.

The 'practice' of gamification at present is not broad enough to satiate the wide variety of motivational factors individuals experience in playing video games. There is an over-emphasis on PBL mechanisms, most likely because they map more readily onto traditional assessment methods and are perhaps the easiest mechanisms to implement.

There is a need to provide a sound theoretical framework of ideas regarding the use of gamification in education so as to ensure that educators looking to implement such a strategy understand *how* to apply it in context and *why* it might lead to increased student engagement (and in turn better academic outcomes). Such a framework of ideas will also serve as a firm foundation from which to base future empirical research.

CHAPTER 5: METHODOLOGY

This chapter begins by outlining the ontological and epistemological positions adopted for this research project, before a statement on positionality is offered. Following this, discussion is lent to the case-study design utilised as the overarching research design to structure the research project. Information concerning participants is given regarding sampling, access and response bias. The procedure followed in completing the research project is summarised in detail. Then, the data collection methods used, namely questionnaire and semi-structured interview, are discussed. Penultimately, discourse is offered upon thematic analysis, including the rationale for its use, the context within which it was completed, and how it was implemented. Finally, ethical considerations are discussed.

5.1 Research Philosophy

Central to all research are ontological assumptions. Ontology, concerns the nature of what exists (Thomas, 2017) and of being (Crotty, 1989), and ontological assumptions are present in all aspects of research. Whether one is aware of such assumptions holds no bearing on the reality that they are being made. Once we have come to define what we are looking at ontologically, we must then make a further assumption which is how might we come to know or find out about what it is we are looking at. Epistemology concerns the study of our knowledge of the world (Thomas, 2017); how or whether knowledge is created or discovered; and how knowledge is communicated (Burrell & Morgan, 2017; Cohen et al., 2011). Guba & Lincon (1994) posit that one's

epistemological assumptions concern the researcher's perception of their relationship between themselves and what might be known.

The overarching paradigm within which my ontological and epistemological assumptions are situated is one of interpretivism. The core tenet of interpretivism holds that reality is individually constructed and therefore that there are as many realities as there are individuals (Scotland, 2012). As such, for a number of reasons, value-free knowledge does not exist (Edge & Richards, 1998), not least because what can be known is individually, culturally, contextually and historically situated.

Following interpretivism, my ontological position is one of relativism, which posits that reality, and what can be known, is ultimately subjective (Baghramian, 2004). My corresponding epistemological position is one of subjectivism, which posits that reality does not exist independent of our knowledge of it (Grix, 2004). From a practical point of view, I agree with the tenet that there is an "inherent diversity of motivations that people have for engaging in gaming behaviour" (Van Rooij et al., 2017). As such, motivations to play video-games will vary within the context of the ever-changing landscape of technology and technological progression, as well as through individual differences regarding motivational affordances. I therefore reject the notion that all such motivations could have already been discovered objectively, transcending time and social context – as well as the notion that this could ever come to be.

5.1.1 Positionality

Operating within an interpretivist paradigm, the researcher inevitably adopts a position which has wide-reaching implications for how data is collected, analysed and synthesised. Therefore, the researcher is not a passive agent (Thomas, 2017), but is altogether active in the research process. As such, England (1994) argues that greater reflection is needed on the part of the researcher so as to harbour more philosophically informed methodologies. Thomas (2017) maintains that this will encompass "accepting the centrality of subjectivity" (p.112), rather than seeking unattainable objectivity. The reader is thus referenced once more to my account of positionality and personal rationale (see page 1), considering its centrality to the research. However, despite my efforts to be open and transparent through acknowledging such positionality with regards to this piece of research, I am not absolved of the requirement to both answer the outlined RQs and develop the proposed framework of ideas in a fair and theoretically defensible way.

5.2 Research Design

Research design constitutes the overall plan and structure of a piece of research. Therefore, it is not separate from the overarching research purpose (Thomas, 2017), nor its theoretical propositions (Yin, 2018). Through representing core issues from relevant corpora of literature, a well consolidated theoretical foundation provides an accurate indication of what is an appropriate research design and what data needs to be collected (Yin, 2018). Yin (2018) notes that reviewing relevant literature and theory prior to collecting data offers "surprisingly explicit ideas for determining the data to collect and the strategies for analysing the data" (p.70). Thomas (2017) describes this approach as *emergent design*, and this was the approach adopted by the present

research.

Through such reading, as outlined in the literature review chapters, a case-study design was chosen as the design frame for the present research project.

5.2.1 Case-Study Design

Case study is not a method used to gather nor analyse data, but a design frame which utilises a wide variety of data collection methods, e.g. interviews, observation and questionnaires etc., and methods of analysis, e.g. discourse analysis, thematic analysis, inferential statistics etc. Thus, case study is defined through such analytical eclecticism (Thomas, 2011) and methodological pluralism (Hyett et al., 2014).

Stake (1995) proposes that a case study is used to investigate and analyse a case, single or collective, in order to comprehend the complexity of the *object*. Notably, an object cannot come to be known in the absence of a *subject*. Likewise, a case study design frame which is used to study a subject in the absence of an object would be pointless – it has to be of something. The object constitutes the 'analytical frame' (Thomas, 2017) from which the case study is viewed. Therefore, the subject of this present research concerns the participant sample, whilst the object would be their motivations to play video games. It is the object (i.e. RQ1: What motivates adolescent gamers (ages 12-14) to engage in, and maintain, playing video-games?) which is the focus of the research; the subject (the sample used) is but the vehicle from which the case is explicated (Thomas, 2011).

The subject of this case study could have been pupils registered in Years 8 and 9 from almost any secondary school within the United Kingdom. As such, the present research project can be classified as a local knowledge case study (Thomas, 2011), as the subject was identified through my familiarity with it (i.e. 'it' being a school within which I worked). The case is classed as a 'disciplined configurative' case study insofar as the tenets of established theories (in this case self-determination theory) are used to explain the case (George & Bennett, 2005). Furthermore, the case study is a single, retrospective case study. Although the term 'single' is perhaps a misleading moniker, a single case study may involve multiple units of analysis (Yin, 2018). 'Single', denotes the singular case (i.e. the one sample used), whereas the retrospective classification pertains to the case "involving the collection of data related to a past phenomenon of any kind" (Thomas, 2011, p.517).

5.2.2 Procedure

Reference is made once more to the "Research Aims" section which is outlined within the introductory chapter on page 4. The research project incorporated two distinct phases of data collection (see Figure 2). Explicit information regarding participants, sampling and access is outlined in the following section of this chapter.

Phase 1

A voluntary, opt-in questionnaire (appendix E) was sent to all pupils in Year's 8 and 9 of an urban mainstream secondary school, known to myself through my doctoral placement. The questionnaire sought to collect information regarding: demographic

information; the number of hours children spend playing video games on a weekly basis; what devices they primarily use to play video games; and what types of video games they play.

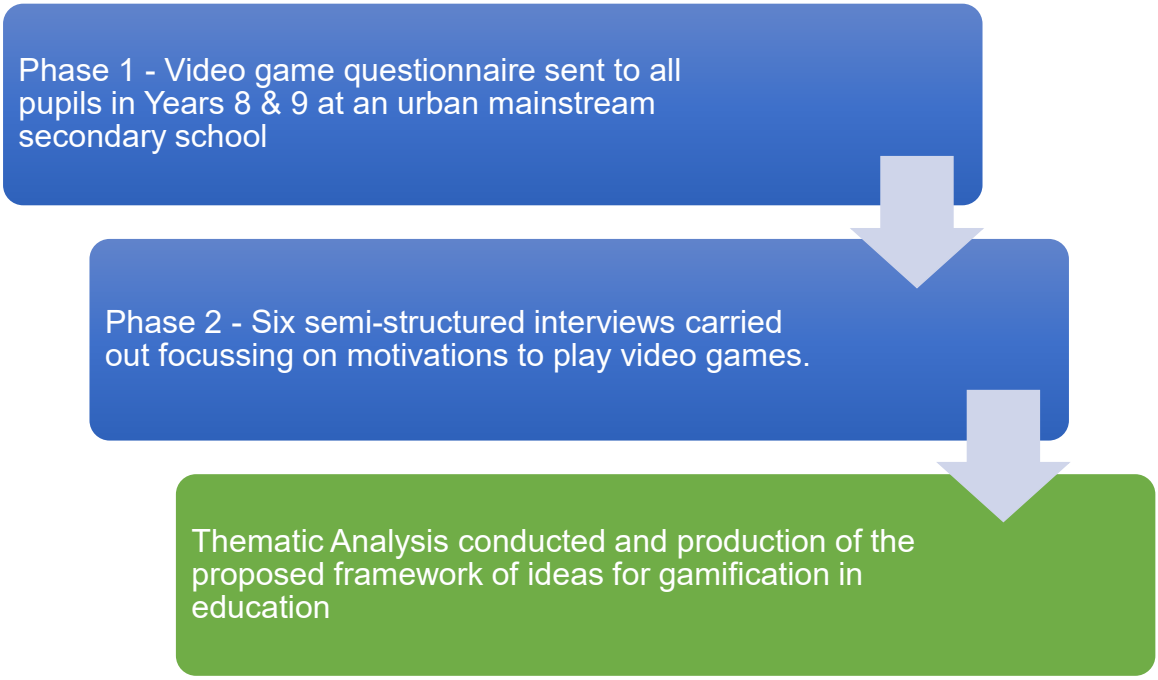
The overarching rationale behind Phase 1 of the research project was to provide an appropriate sample for Phase 2 of the research.

Phase2

The planned stratified sampling method was not able to be conducted following a lower than anticipated response rate for Phase 1 of the research project. As such, a purposive sample was conducted and 8 pupils were invited to take part in a semi-structured interview. 2 pupils declined this offer and 6 agreed to take part in Phase 2 of the research project.

The semi-structured interview (see appendix J for the interview schedule used) was conducted so as to gather information regarding pupil's individual motivations to play video games. Interviews were audio recorded so that they could be transcribed. These transcriptions were later analysed qualitatively using thematic analysis in order to generate themes regarding motivations to play video games. Such themes served to satisfy feature 2 of the proposed gamification framework, i.e. bottom-up data regarding motivations to play video games.

Figure 2 – An overview of the procedure used for the research project



5.3 Participants

5.3.1 Sampling

Whilst the particular sample of this research project was not the most salient aspect of the data collection process (see discourse on *subject* and *object* under the 'Case-Study Design' section, p.46), a rationale is presented below as to why pupils in Years 8 and 9 were selected as the chosen population.

As outlined in the literature review in Chapter 2, the importance of motivation and engagement regarding academic achievement is an enduring finding within the corpus of literature (Stevenson et al., 2019; Ali & Hassan, 2018; Gettinger & Ball, 2007; Reeve et al., 2004; Fredericks et al., 2004). However, research has shown that academic motivation generally declines throughout a pupil's school career, typically beginning

around ages 11-13 (Wigfield et al., 2012; Wigfield et al., 2006). As pupils progress through school, they receive more information about their performance and thus tend to focus more on performance goals (Maehr & Zusho, 2009), e.g. grades in exams. As ascertained through literature regarding organismic integration theory (OIT) within a wider self-determination theory (SDT) framework (Deci & Ryan, 1985), such a focus is likely to be experienced as *controlled* motivation, and thus engagement in academic tasks is likely to be reduced.

All pupils in Years 8 and 9 registered on roll at an urban mainstream secondary school, known to me through my placement, were invited to take part in Phase 1 of the research project.

5.3.2 Access

For Phase 1 of the research project, permission was sought, and subsequently granted, from a mainstream secondary school SENCO to send all pupils in Years 8 and 9 an initial video game questionnaire (appendix E); a pupil information sheet (appendix C) and accompanying consent form (appendix D); and a parental information sheet (appendix A) and accompanying consent form (appendix B). As per explicit direction from the University of Birmingham 'Humanities and Social Sciences Ethical Review Committee', completion of the initial video game questionnaire was deemed to warrant both pupil *and* parental opt-in consent. Pupils were asked to return their completed questionnaires and accompanying consent forms to their form tutors or the school reception.

In total, 280 questionnaires were sent out to all pupils in Years 8 and 9; only 12 were returned with the appropriate consent forms (a response rate of 4.3%).

As such, the planned stratified sample for Phase 2 of the research project was not tenable. Thus, a purposive sampling method was utilised. 8 of the 12 respondents who met the minimum inclusion criteria of at least 7 hours spent playing video games each week as indicated via the video game questionnaire, were invited to take part in Phase 2 of the research project. A letter was sent to the home address of each pupil, containing a pupil information sheet for Phase 2 of the research (appendix H) and accompanying consent form (appendix I); and a parental information sheet (appendix F) and accompanying consent form (appendix G). All 8 pupils returned these forms to the school reception. Two pupils declined the offer to take part in the interview, and 6 consented to do so (See Appendix M for a short pen-portrait for each pupil).

5.3.3 Response Bias

Clearly, there exists an obvious limitation as per the low response rate (4.3%) received following Phase 1 of the research project. As such, there is likely to be an explicit selection bias which may have led to distortions in data collection (Thomas, 2017). Informed consent procedures invariably had a negative effect upon response rates. The process of gathering parental informed consent as well as pupil informed consent is likely to result in a decrease of up to 70% in response rate when compared to the requirement to gather pupil-informed consent alone (Lueptow et al., 1977). As well, significant extenuating circumstances at the school, from which I will refrain from

elaborating on in deference to those affected, likely had an impact upon the response rate to the questionnaire.

The outcome of such a low response rate led to a selection bias with an explicit endogenous cause (Pickett et al., 2018). There existed a clear relation between the propensity to respond to the questionnaire (R) and an interest in the questionnaire topic (I), whereby (I) can be assumed to have caused (R) to an extent. As such, a higher than expected proportion of respondents (67%, n=8) met the specified inclusion criteria, i.e. at least 7 hours spent playing video games each week, to take part in Phase 2 of the research.

5.4 Research Methods

5.4.1 Questionnaire

Questionnaires are a relatively broad research method, incorporating unstructured arrangements utilising open questions, to more highly structured questionnaires which make use of closed questions (Cohen et al., 2011). For Phase 1 of this research, a short questionnaire was administered (see appendix E) using closed questions only. These closed questions, i.e. pertaining to demographic information; the number of hours spent playing video games on a weekly basis; what devices are primarily used to play video games; and what types of video games played; are quick to complete and easy to analyse (Cohen et al., 2011; Wilson & McClean, 1994) as they contain a finite number of answers

Although the data ascertained from the questionnaire offered little more than crude

inferential statistics (further limited by the poor response rate), as outlined under the 'Procedure' section, the overarching rationale behind administering the questionnaire in Phase 1 of the research project was to provide an appropriate sample for Phase 2.

It is anticipated that the use of numerical indicators (i.e. hours spent playing video games each week) instead of lexical descriptors (e.g. rarely, sometimes, often etc.) led to much more reliable data and a more appropriate sample for Phase 2.

5.4.2 Semi-Structured Interviews

Semi-structured interviews are one of the most widely used research methods within the social sciences (Bradford & Cullen, 2012), especially regarding small scale research (Thomas, 2017). A semi-structured interview was the data collection method used as a means to collect information regarding pupils' motivations to play video games. This method was preferred over a focus group due to my view regarding the "inherent diversity of motivations that people have for engaging in gaming behaviour" (Van Rooij et al., 2017). Whilst a focus group would have been more suitable to generate information on collective views (Gill et al., 2008), semi-structured interviews were positioned as more useful in eliciting information regarding *individual* motivations to play video games.

As far as possible, I aimed to use the semi-structured interview in such a way as to reflect a flowing conversation (Choak, 2012) (see appendix L for an example transcript). An interview schedule was used to provide an overarching structure to guide the interview. This allowed for natural discourse to develop freely, whilst ensuring all pertinent topics were covered (Evans, 2018). The interview schedule is

documented in appendix J. Every effort was made to ensure that the interviews were conversational in nature. The four main questions used to structure the interview and elicit conversation were:

- What is your favourite video game?
- What kinds of video games do you play?
- Why do you play video games?
- What do you like about video games?

5.5 Data Analysis

5.5.1 Thematic Analysis (TA)

5.5.1.1 Theoretical Background and Rationale for TA

Thematic analysis (TA) is an analytical method which aims to identify, organise, and analyse patterns within a data set (Braun & Clarke, 2006). Such patterns are known as themes. A theme comprises a particular level of meaning in relation to the research question (ibid.); patterns of shared meaning (Braun & Clarke, 2019); and are organised around a central organising concept (Braun et al., 2014). A sub-theme may exist underneath or within an identified theme if there is a particular element which is salient, so long as it shares the same overarching central organising concept (Braun & Clarke, 2020).

In application, TA involves active engagement in a data set, e.g. that which is ascertained through interview, to find repeated patterns of meaning (Braun & Clarke, 2006). Themes are not present in the data to be discovered. They do not ‘emerge’

from the data. This notion is rejected as it positions the researcher as having sought the previously discussed 'unattainable objectivity', rather than "accepting the centrality of subjectivity" (Thomas, 2017, p.112). TA is an interactive and situated method which encompasses the data set, the positionality of the researcher and the context of the research purpose simultaneously (Braun & Clarke, 2020). With reference to such claims, the following section aims to situate the context within which TA was conducted for this present research project.

5.5.1.2 Situating the Context of the Present TA

Typically, TA can either be conducted through an inductive, or 'bottom-up' approach, or a deductive, or 'top-down' approach (Braun & Clarke, 2006; Boyatzis, 1998). An inductive approach incorporates themes which are data-driven, as opposed to fitting a researcher's analytical preconceptions. A deductive approach is more researcher-driven (Braun & Clarke, 2006), with identified themes explicitly relating to the researcher's theoretical interest, guiding research questions and/or purposes. Braun & Clarke (2019) maintain that 'reflexive' TA should be carried out with "theoretical knowingness and transparency" (p.594). As such, there exists a requirement to actively and knowingly engage in important decisions regarding the analysis (ibid.).

For this present research project, such a decision needed to be made regarding the extent of academic reading prior to conducting the TA. Early engagement in the relevant academic literature may serve to narrow one's "analytical field of vision" (Braun & Clarke, 2006, p.86), whereby salient aspects of the data which relate to the consumed literature are prioritised over other important aspects. Conversely, engagement with relevant literature may induce sensitivity to more subtle and

pertinent aspects of the data (Tuckett, 2005).

For this present research project, relevant reading was conducted insofar as to identify a broad research question that could form the focus of the substantive empirical study which comprises Volume 1 of the thesis requirement as per the Applied Educational and Child Psychology Doctorate qualification. Furthermore, closer engagement with relevant literature was necessary in preceding a securely grounded research proposal, which was subject to ratification by placement and university supervisors. Considering this level of engagement with relevant literature warrants reflection as to whether the identified themes may have been different were it not for the level of knowledge ascertained through such reading, particularly regarding self-determination theory (SDT) (Deci & Ryan, 1985). Although this ultimately cannot be known, a concerted effort was made not to engage in literature which specifically incorporated discourse on motivations to play video games prior to conducting the TA – so as not to impact the analysis and influence the identification and generation of particular themes. Braun & Clarke (2019) maintain:

"Quality reflexive TA is not about following procedures 'correctly'… but about the researcher's reflective and thoughtful engagement with their data and their reflexive and thoughtful engagement with the analytic process" (p.594)

Despite my preconceptions – I.e. that themes identified regarding motivations to play video games might ultimately fall under the central organising concepts of autonomy, competence, relatedness, as per SDT and basic psychological needs theory – an effort was made to ensure initial codes were as 'data driven' as possible. For example, no code manual (see Crabtree & Miller, 1999) was used for fear of constraining the data set. Much harder to account for however was knowledge of my own motivations

to play video games, which was likely a contributing factor in the identification and generation of themes.

5.5.1.3 Implementation of TA

The present research project utilised the six phases of TA outlined by Braun & Clark (2006) as the guiding framework for analysis. Each phase is outlined in turn below.

Phase 1

Phase 1 concerned familiarisation with the data set to a point whereby the depth and breadth of its content was understood. Before initial coding began, such familiarisation occurred through: conducting the semi-structured interview in person; transcribing the recorded audio file; and 'tidying' transcripts, e.g. spelling mistakes, mistyped words; and re-reading the transcript in full.

Phase 2

Phase 2 involved generating initial codes which identified notable features of the data in relation to the RQ, i.e. motivations to play video games. Initial coding ensured that the data could be handled in a more meaningful way. The process was not strictly linear. It involved frequent reflections upon the assumptions being made. For example, an early initial code 'Play with others' was later changed following discourse concerning 'co-operative' play with others when contrasted with 'competitive' play *against* others. All transcripts within the data set were fully coded, and all extracts signifying each code were collated.

Phase 3

Phase 3 involved sorting initial codes into candidate themes, including sub-themes and overarching themes. The collated extracts and initial codes were manipulated so as to generate candidate themes. Whilst Braun & Clarke (2006) titled this phase "Searching for themes", this seems to imply the exact opposite of their philosophical stance. Themes are not identified, but that they are "actively created by the researcher at the intersection of data, analytical process and subjectivity" (Braun & Clarke, 2019, p.594). Some initial codes formed candidate themes in their own right, whereas others were discarded. Candidate themes and corresponding sub-themes were handwritten. A rudimentary thematic map was drawn to visualise how such candidate themes related to one another.

Phase 4

Phase 4 incorporated the refinement of candidate themes into themes 'proper' utilising Patton (1990)'s notion of internal and external homogeneity. Internal homogeneity refers to the coherence of data within themes, whilst external homogeneity denotes the distinctions that should be identifiable between themes. Internal homogeneity was checked through reviewing each candidate theme's coded extracts, and judging whether they related to one another in a coherent manner. At this stage, some candidate themes were discarded as there was not enough data to support them, e.g. playing video games for 'emotional regulation' was mentioned by only one participant and only leant limited discussion. The decision to disregard this theme was not taken lightly, nor was it based on the fact only one participant made reference to it. For instance, the theme 'exploration', which will be outlined later, is made up from data from a singular interview. However, the topic was lent substantive discourse and thus there were enough data to sustain the theme. On the other hand, the reference to

'emotional regulation' was fleeting and minimal. Thus, based on data from my participants, I deemed it would be considerable conjecture on my behalf to identify such a theme as a motivation to play video games.

Some candidate themes were combined to form a newly consolidated theme, whilst others became sub-themes. Following this phase, a more established thematic map was drawn which clearly demonstrated distinct themes and the relations amongst them.

Phase 5

Phase 5 involved defining and naming themes more definitively. Themes were named so as to give the reader an immediate idea of what the theme entailed. In addition, themes were briefly defined to support the next phase of analysis which incorporates the formal 'write-up' for the research report. In the interest of transparency, it was between Phase 5 and Phase 6 in which a more detailed engagement with the relevant corpora of literature occurred.

Phase 6

Phase 6 comprised the write-up of the conducted TA to tell the 'story' of the data set, in relation to the specific research question, "What motivates adolescent gamers (ages 12-14) to engage in, and maintain, playing video-games?". This write-up is outlined in the following chapter of the present research report (see page 73). Braun & Clarke (2006) provide the following guidance regarding the write-up of a well conducted TA, all of which the present research project sought to exemplify:

"The task of the write-up of a thematic analysis…"

"…is to tell the complicated story of your data in a way which convinces the reader of the merit and validity of your analysis"

"[provide] a concise, coherent, logical, non-repetitive and interesting account of the story the data tell within and across themes"

"…provide sufficient evidence of the themes within the data, i.e. enough data extracts to demonstrate the prevalence of the theme."

[include extracts that are] "…embedded within an analytic narrative that compellingly illustrates the story you are telling about your data, and your analytic narrative needs to go beyond description of the data, and make an argument in relation to your research question."

(p.93)

5.6 Ethical Considerations

Full ethical approach for this research project was granted by the University of Birmingham 'Humanities and Social Sciences Ethical Review Committee' on 23rd May 2019 (see appendix K for a copy of the 'Application for Ethical Review ERN_19-0307). Prior to this date, no data collection took place.

The research project adhered to the British Psychological Society (BPS) Code of Ethics and Conduct (2018) in following guidance regarding the four ethical principles

of respect, competence, responsibility and integrity. Furthermore, guidance was sought from the BPS Code of Human Research Ethics (2014). Ethical considerations in light of this guidance are outlined below.

5.6.1 Valid Consent (Section 4)

As detailed throughout the methodology chapter, informed consent was gathered for all participants taking part in each of the three research phases. This consent was freely given within a context of adequate information. For reference the relevant consent forms and information sheets are outlined below:

Phase 1

- Pupil Information Sheet – Appendix C
- Pupil Consent Form – Appendix D
- Parent Information Sheet – Appendix A
- Parent Consent Form – Appendix B

Phase 2

- Pupil Information Sheet – Appendix H
- Pupil Consent Form – Appendix I
- Parent Information Sheet – Appendix F
- Parent Consent Form – Appendix G

Each participant was also given the right to withdraw either themselves or their data from the research project.

For Phase 1 of the research project, individual ID codes were used to identify participant data. All participants were assigned a code using the following format; Initials, age and the date the questionnaire was returned (e.g. AB-12-0505). Data were stored in this manner on an encrypted memory stick. No participants asked for their data to be withdrawn following Phase 1 of the research project.

Participants were offered the right to withdraw their data following Phase 2 of the research for up to one month after the date of the interview. This was outlined on the relevant consent forms and reiterated to each participant at the beginning of each interview. Parents/guardians of children who had taken part in an interview were also given the right to withdraw their child's data within one month of the interview taking place. No participants or parents/guardians exercised this right.

5.6.2 Debriefing (Section 8)

Following the conclusion of the research project, each participant who took part in Phase 2 of the research project will be sent an appropriately pitched information sheet, summarising the findings from the thematic analysis regarding motivations to play video games. A short summary of the proposed gamification framework will also be offered.

5.6.3 Confidentiality (Section 5)

As participants were known to me, complete anonymity was not possible. However,

concerted efforts were made to ensure participant data was kept private and confidential. Through assigning individual ID codes to data (as outlined above), the data stored were not identifiable by others.

Pseudonyms were used during the write-up process. Quotes were in no way attributable to particular individuals.

Data (i.e. audio recordings, transcriptions of interviews, ID codes etc.) were stored securely using an encrypted memory stick which only I had access to. Interviews were recorded using a dictaphone and were deleted off of the device immediately after the interview, following transfer to the encrypted memory stick.

Paper-based data (i.e. questionnaires) were kept in a locked cabinet until such data had been electronically recorded, whereby paper-forms were then destroyed.

In line with The University of Birmingham guidelines, my own records will be deleted/destroyed following the completion of the study and graduation from the course.

5.6.4 Risk (Section 3)

At no point during this research project was it thought that any participants would be at risk of physical or psychological harm, discomfort or stress. This was recognised by the University of Birmingham 'Humanities and Social Sciences Ethical Review Committee'. There did exist a risk however that participants may disclose what might

be thought to encompass ‘deviant behaviour’ by some in society through discussion pertaining to video games with an age rating of 16 or 18. From the outset of the research project, there was a **high probability** that at least some of the participants interviewed would discuss games with age ratings of 16 or 18. Therein existed an ethical concern, considering the proposed sample being young people between the ages of 12 and 14. Relevant law and statute were consulted in this regard.

The Video Standards Council (VSC) was established in 1989 and fulfils two basic roles:

Firstly, it is a standard body for the video and video games industries and has a Code of Practice (2014) designed to ensure that both industries show a duty of care in their dealings with customers and the public generally.

Secondly, it acts as an administrator of the Pan European Game Information (PEGI) system of age rating. As of 2012, the Video Standards Council was designated by the government under the Video Recordings Act (1984) as the statutory UK regulator responsible for the age rating of video games supplied on physical media. The VSC is now known as the VSC Ratings Board so as to clarify its role.

Under the terms of the Video Recordings Act (1984), the VSC Rating Board is required to consider the likelihood of any game causing harm to the user and, subsequently, to wider society. PEGI descriptors highlight eight types of content: Discrimination, Drugs, Fear, Bad Language, Sex, Violence, Gambling and Online (relating to the capability of online play).

PEGI Ratings are classified under five different age ratings: 3, 7, 12, 16 & 18. Games are classified in order to restrict their sale to only those over that age. Whilst PEGI classifications of 3 and 7 are advisory in nature, it is a legally enforceable criminal offence to sell a game with a PEGI rating of 12, 16 or 18 to someone under that age. However, it is not a criminal offence for someone under these ages to play such games – on the contrary this is a widespread phenomenon. It is also not illegal for a parent or a third party to purchase a game for a child/young person who is under the stated age. PEGI ratings are designed thus to allow parents/carers to make informed decisions on whether or not they believe that particular games are appropriate for their children to play.

In considering the information above, it was not deemed appropriate to question the judgement and/or decisions by parents/carers in allowing their children to play particular games. Thus, the decision was made not to restrict discourse on games with PEGI ratings of 16 or 18 (over the age of the intended sample). Nevertheless, the parental consent form for Phase 2 of the research project (see appendix G) explicitly acknowledged this decision; outlining that as primary parents/carers of the young person in question, they have explicitly consented to them being allowed to play such games.

The rationale to not restrict discourse on higher PEGI rated games concerned the very real potential for such a restriction to inextricably skew data if young people were not allowed to talk about the games which they played the most.

CHAPTER 6: FINDINGS

6.1 Introduction

This chapter begins by outlining the findings from the thematic analysis in relation to the specific research question, "What motivates adolescent gamers (ages 12-14) to engage in, and maintain, playing video-games?". A thematic map is outlined (see Figure 3) before the write-up endeavours to "tell the complicated story" (Braun & Clarke, 2006, p.93) of the data ascertained from the semi-structured interviews.

Next, the proposed framework of ideas for gamification in education is outlined in full, but not before discourse is lent to how this was developed, specifically with regards to the ideation of gamification mechanisms.

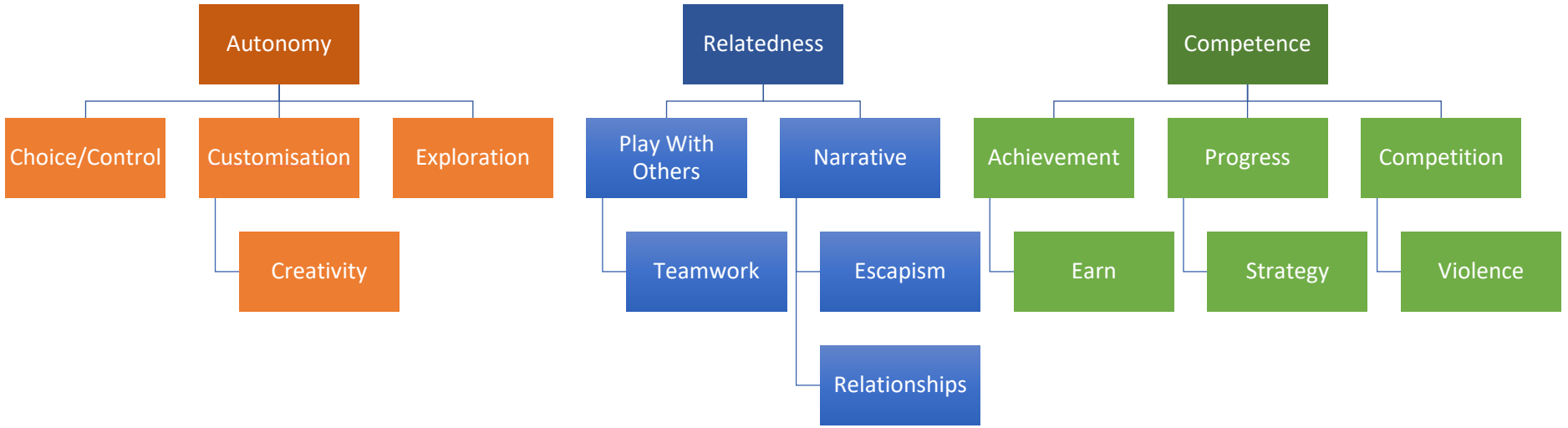
6.2 Participants' Motivations to Play Video Games

As outlined in section 5.5.1.2 (page 56), "a concerted effort was made not to engage in literature which specifically incorporated discourse on motivations to play video games prior to conducting the TA [thematic analysis] – so as not to impact the analysis and influence the identification and generation of particular themes." As such, the superordinate themes, of which there are eight in total, and subordinate themes, of which there are seven, were generated at an altogether different stage from the central-organising concepts (autonomy, competence and relatedness) they were later mapped on to. Only after deeper consultation with relevant literature did I map the generated themes onto the basic psychological needs of autonomy, competence and

relatedness. The rationale behind this decision was to provide consistency and theoretical coherence through continuing to situate the overarching research project within an SDT framework. For ease of readership, the themes generated are presented from the outset as residing within their respective groupings. In line with a self-determination theory framework, the three central organising concepts are 'Autonomy', 'Relatedness' and 'Competence'.

Following on from the overview provided by the thematic map, each subsequent superordinate theme and subordinate theme are discussed in turn, evidenced with verbatim quotes ascertained through interview so as to explicate the concepts within.

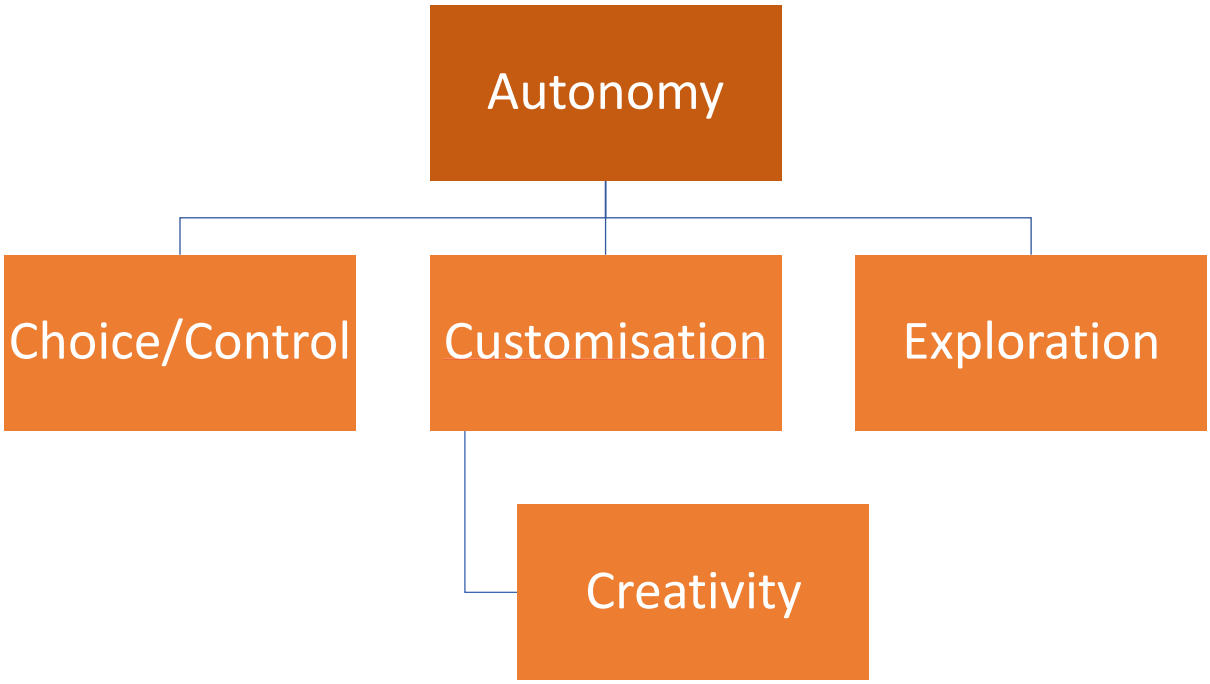
Figure 3 - Thematic Map outlining participant's motivations to play video games



6.2.1 Autonomy

The central-organising concept of the themes described below is that of autonomy. Themes within this section incorporate actions within video games completed through one's own volition. Distinct feelings of control and choice are made explicit to the player, meaning that they are able to consume video games as they so desire. As discussed in the literature review in Chapter 3, video game players experience a distinct sense of agency when controlling their character. This ability to take action within the virtual world is what sets video games aside from more passive media such as books, TV and film. Importantly, actions and choices within games lead to directly observable consequences. As such, the provision of meaningful choices in this regard satisfies our basic need for autonomy.

Figure 4 – Autonomy Thematic Map



6.2.1.1 Choice/Control

This theme incorporates feelings of being in control, as well as the opportunity to choose certain aspects of a game. Discussion occurred regarding the perception of being 'in charge', e.g. through managing a football team:

"That it lets me manage a team… That you can customise your own manager and you can do press conferences, post-match press conferences and you get to play the game like you're a real-life manager"

"So you can decide who to buy… It's when you're building your own team"
(Daniel)

Participants also discussed enjoying the responsibility of such control. Reference was made to how actions within games have clear consequences:

"It's that, again like Fifa you get to be an actual manger… you either get sacked or you can stay at the club and win major trophies"
(Daniel)

"It was the fact that like, I was moving around in it and I felt like my actions had consequences. So like, I'd shoot someone and then the law would be on ya."
(Pedro)

An important aspect for many participants concerned the availability of choice within video games. In particular, having such a choice before gameplay begins in earnest (i.e. purposeful play within a game) allows participants to tailor their gameplay experience to decide how they consume the game. Discourse on such choices primarily concerned different characters and game modes:

"What I like about it most is that you can play as like different characters… so you can play with many different characters and keep selecting ones that you haven't tried before"

(George)

"…there's a big roster of characters you can play as."

"The multiple game modes you can play. You're not restricted as much and you have a freedom… you just go online, choose your game mode, because there is a wide variety, ranked, casual, arcade games, and weird funky game modes and you go in and just have fun."

(Fred)

Researcher: And what is it about the Zombies mode that you like?

"That you can have like different ones, like the titanic one, the roman era, like Gladiators"

(Emily)

6.2.1.2 Customisation

All but one participant made reference to enjoying aspects of customisation within the video games which they play. Such customisation varied from aesthetic changes such as character/avatar appearance, to more purposeful customisation which might affect particular skills a player can use within a video game.

Regarding primarily aesthetic customisation, participants spoke about how they enjoyed changing the appearance of their characters, as well as how they acted (emotes) and what they said (voice lines):

"So, like skins you can get certain types, you can get voice lines which is like a bit of a taunt but also a way to celebrate"

"You can buy new characters, you can buy upgrades, you can buy skins which a lot of people find interesting, you can buy emotes."
(Fred)

'Emotes' portray emotion in a theatrical manner, usually through gesticulation, whereas 'voice lines' are auditory cosmetics which make characters say certain quotes in particular situations, e.g. "I would have thought you had learned your lesson" after defeating the same enemy for a second time.

The ability to customise visual appearance was also important to some participants in controlling more abstract characters such as vehicles:

"And then the other thing that I like is that you can customise and get new things. Because you know how like I just talked about how in the game there is a Battlepass like in Fortnite?"

Researcher: "Yeah."

"Basically, it's the same kind of thing for Rocket League but before there was a Battlepass there were crates that you could open to get like certain items that people can use to customise their car and make it look nice."

Researcher: What kind of ways can you customise your car?

"You can give it like stripes, flames, you could give it like a sparking kind of colour. You could also turn it into a metallic kind of colour so it's really shiny and looks cool". (George)

More purposeful customisation on the other hand affects the actual gameplay experience of the player:

"*It kind of boils down to like role playing games like Dungeons and Dragons and stuff like that, that's where it comes from, you are going somewhere, killing something and getting rewards from it and items, a character sheet with attributes and points that you put into certain things"*

(Pedro)

However, the accessibility of such customisation is also important. Explicit cause and effect was favoured over more in-depth and intricately detailed customisation:

"So there are games like Skyrim which narrow it all down into like really even categories. Like 'this is a thing', here are the skills for this thing. Whereas there are games where like 'this gives you 0.5% in so and so stat' and you are like, 'it's going to take me forever to get into this and I probably won't'."

***"**The like accessibility of it is really complicated…if it is not accessible then I don't think the game will catch me at least in that aspect."*

(Pedro)

6.2.1.2.1 Creativity

A sub-theme existing within the overarching theme of customisation pertained to the freedom to be creative within the game itself. Discourse on this motivation tended to coincide with that of imagination.

"So you get to create your own things that you have in your head with your imagination, like building blocks and any kind of brick that you want... I like building stuff…Houses, hotels, mansions…"

(Daniel)

"In Minecraft you can build, and it gets your imagination from you into the game"

"So yeah, my imagination grew from that point and I started building loads of things with my brothers and sister… we try and use our imagination and make 'builds'. Like my brother made a treehouse on our old PS3. He made a treehouse, and on the Xbox that we have now we used loads of concrete and bricks more to make houses"

(Emily)

6.2.1.3 Exploration

Although only one participant, Pedro, spoke about 'exploration' in detail, it was deemed that there were enough data from that particular interview to sustain the theme. Consistent with my philosophical assumptions, the tenet was accepted that there are an "inherent diversity of motivations" when it comes to playing video games. As such, to dismiss this theme upon the notion that the data it comprises is from but one participant would be antithetical to the overarching assumptions of the research.

This theme incorporates exploration within the game, and involves collecting items and finding things out. Importantly, such 'finding things out' was through the player's own volition and purposeful action to do so, beyond that which might be necessary to advance the main story line for example.

"I like exploring, like even if it is a linear game I quite like looking into it and finding like things that, well that not aren't supposed to be there, but things that are meant to be found and stuff"

***"**…an experience that lets me explore and go off on my own for a bit…"*

"I like games that encourage you to go off the beaten track."

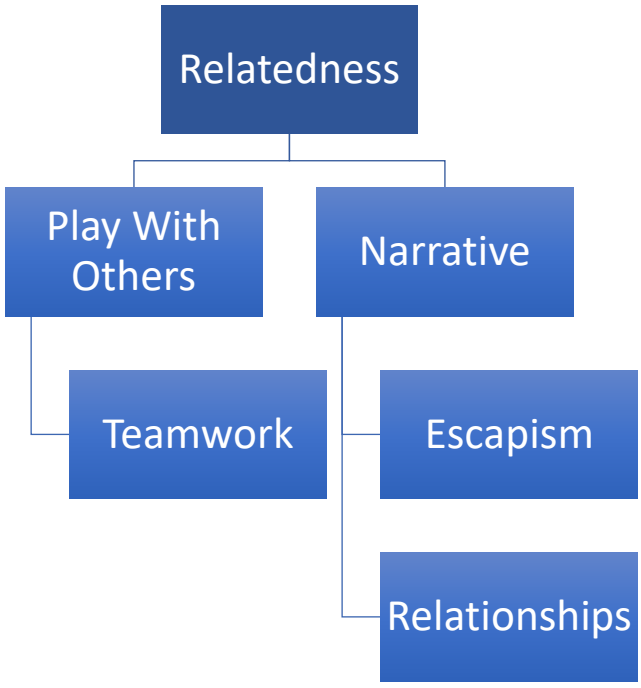
[Regarding the game Horizon Zero Dawn] "I liked exploring, I liked collecting, I liked the fact that I was like collecting stuff, finding the new monsters to fight and stuff, it was interesting…I liked finding the things in the open-world"

(Pedro)

6.2.2 Relatedness

The central-organising concept of the themes described below is that of relatedness. Themes within this section incorporate motivations to play video games underpinned by the need to experience a sense of relatedness to other people. This occurs primarily through play with others, whilst a need to feel important is satisfied through co-operation and teamwork. Opportunities to connect with and experience relationships is met through rich narrative and the story telling capabilities of video games.

Figure 5 – Relatedness Thematic Map



6.2.2.1 Play With Others

All 6 participants made reference to playing video games with other people in some capacity. Such interaction included play with family, friends or relative strangers. Social play in this sense occurred locally (i.e. in the same house using the same console) or online, both nationally and internationally.

Participants referenced enjoying playing video games with members of their family:

"…playing against my dad and my brother, which they say I cheat – but I don't!"

"Yeah so I've got my friend from the caravan who I know very well, and my brother, and I play most of the times if my cousins come around"
Daniel

"*Well that would be, like playing with my brother, 'Fifa' or 'Minecraft'."*

"*Me and my brother play that [Rocket League] all the time against like online people… we play against each other like 2-on-2, 1-on-1, local team, or 4 of us against another local team…"*

"Yeah… she [Cousin] ain't that good at it, but like we like playing against each other, and she learns, I teach her."
Emily

"I always used to play it [Fifa] with my brother"

"I like playing with my brother on it. I like… winning against my brother"
Edward

Participants also spoke about enjoying the experience of playing online with their friends. Whereas autonomy needs for example might have required more inference on behalf of myself with regards to attributing the underlying motivations driving certain video game behaviour, connection with other players was quite an explicit motivation offered by a number of participants:

Researcher: So, what would you say is the best thing about video games then?
"The social aspect, you're just playing games that interest you, you're just playing with your friends and you're just learning. You're talking, getting a better friendship. I think a lot of people's friendships do increase"

"…its just the social aspect as well, you're always making friends, always talking to people and getting along…"
(Fred)

"Because one thing I liked with games is the connection that it gives to others."

"But if I have got a game that I can share with friends or I can ask 'should we buy this game as a group'? I find that quite engaging because I'm like we've got this game as a group, we are all going to dive into this…"

"An experience I can share with my mates, so I'm doing it with my friends as a group"
(Pedro)

Participants also mentioned enjoying playing online with players from around the world, whom they did not know in real life:

"Probably playing with other people around the world – you get to make new friends who you would like to know more."
(Daniel)

"Yeah and I think that [enjoying a particular game] was in part because of the connection online I had with people"
Pedro

"There's a lot of development, they will always be fun and there is a lot of socialisation – like some friends will be from America or summet, and you can only talk to them through like PlayStation, so it's the socialising I like."
(Fred)

6.2.2.1.1 Teamwork

A sub-theme within 'Play With Others' was 'Teamwork', which shared the social aspect of the overarching theme, yet remained distinct through the internal homogeneity of data incorporating purposeful co-operation:

"Yeah, when you earn them [emotes] it's like really nice and it's a really good feeling. You get to express yourself and you get to help other people doing that and I really like to help others."

Researcher: "Within the game?"

"Because I feel like, if I go into game chat and people are like 'Oh thanks!' – it's just simple emotes that can help others a long way."

Researcher: "And do you know these people or?"

"If you go on random games then no. Some people will just be on game chat and you can make new friends. Which I see as really fun. You just talk and get a conversation and it's a bit easier in the game because you help each other in the game. So, like 'Could you help me on this side?' or summet."

(Fred)

***Researcher**: "You know Clash of Clans? What do you like about that game?"*

"Teamwork – more likely to be and the helpfulness in it. Like you trade items and weapons and all that."

(Emily)

"Because like if someone is on them you need to tell them, otherwise they might die… Yeah, because you're helping each other, and then if you're not speaking you're not helping each other."

(Edward)

6.2.2.2 Narrative

'Narrative' incorporates the storytelling aspect of video games. It involves the underpinning lore of specific games, the details within them and the dynamic between characters. It is through such narrative that video games share similarities with more passive media such as books, TV and film. It is such narrative which situates the player in a context, an alternate reality, where they can interact with others, real people or otherwise.

"I like games that present themselves cinematically as well and action games tend to do that, there is a storyline to everything and when you are fighting dudes it is weighted in that story and I quite like that expansion of the narrative and the expansion of like the conflict"

[Uncharted is] more of a linear, story-based action game. But I quite liked that because it kind of replicated things that I like that weren't video games, like I liked Indiana Jones… So the story is really really engaging, it takes you across like all of Nepal… And Uncharted is quite like an Indiana Jones inspiration. Like it's just an adventure, it's good storytelling, good characters and I think that's a good aspect of video games – the story."

"Sometimes you just wanna see a good narrative…"
(Pedro)

"…*the social aspect, so like the relationship between Joel and Ellie the main characters and how it tells a massive story of him being like a Father figure."*

"Erm, the story of course, the dynamic between the characters, not being just like a random person you're playing as, just killing. I like the story mode, and the involvement of like zombies and evilish characters, not a defined bad character" (Fred)

6.2.2.2.1 Escapism

'Escapism' is positioned as a sub-theme within the 'Narrative' theme, as it is through such narrative which enabled the feeling of escapism to occur. Escapism in this regard does not refer to the more medicalised definition of wanting to distract oneself from feelings of sadness and depression, but to the wilful participation in another world; the want to take on different roles and persona:

"The best thing about video games is probably for people around the world to enjoy and make them feel like they are actually there"

"I get to be a World War 2 General, and you have to conquer near enough the world to complete the actual game"

"…you get to be a football manager and see what the real feeling to be like a manager is…"
(Daniel)

"You have like a hotel and it's like having a business, you have bills, you have to keep the power on and clean it up."

Researcher: “Okay, and you like trying to manage all that?”

“Yeah, I’m basically like the manager and running it.”

(Emily)

“It takes me a while to put one on [a video game] and sit down and play it, but like, when I do it does feel engaging, it takes you away and in a sense it is just escapism more or less.”

“I think that's the best way to put it, it is escapism. It takes you out of everything else and it puts you in a different place. It gives you an objective and you are either sharing it with mates or doing it on your own, and it takes you away from everything else in a sense.”

(Pedro)

6.2.2.2.2 Relationships

‘Relationships’ was another sub-theme positioned as existing within the overarching ‘Narrative’ theme. Relationships in this sense denoted those between the player and the characters within the game. Through a deep, rich storyline and narrative, video games are able to encourage players to become invested in these non-player characters (NPCs). Participants spoke about the relationship they developed with such characters, as well as those between the NPC’s themselves:

“… you’ve got the world and like all the NPC’s and all the interactions are quite believable.”

"There was a segment when you are in like the ice with like an Eskimo who doesn't speak your language and you still like form a connection with him because he shows you how to do things in the game and I really like that.

Researcher: "Do you mean your avatar forms a connection?"

"In the story, you still get that connection with him"

Researcher: "Do you personally feel like you have a connection with him?"

"Yeah like you like the character, even though you like don't know what he is saying, but like his actions are really well implemented into the game"

(Pedro)

"...the social aspect, so like the relationship between Joel and Ellie the main characters and how it tells a massive story of him being like a Father figure."

"… the dynamic between the characters, not being just like a random person you're playing as and just killing. I like the story mode…

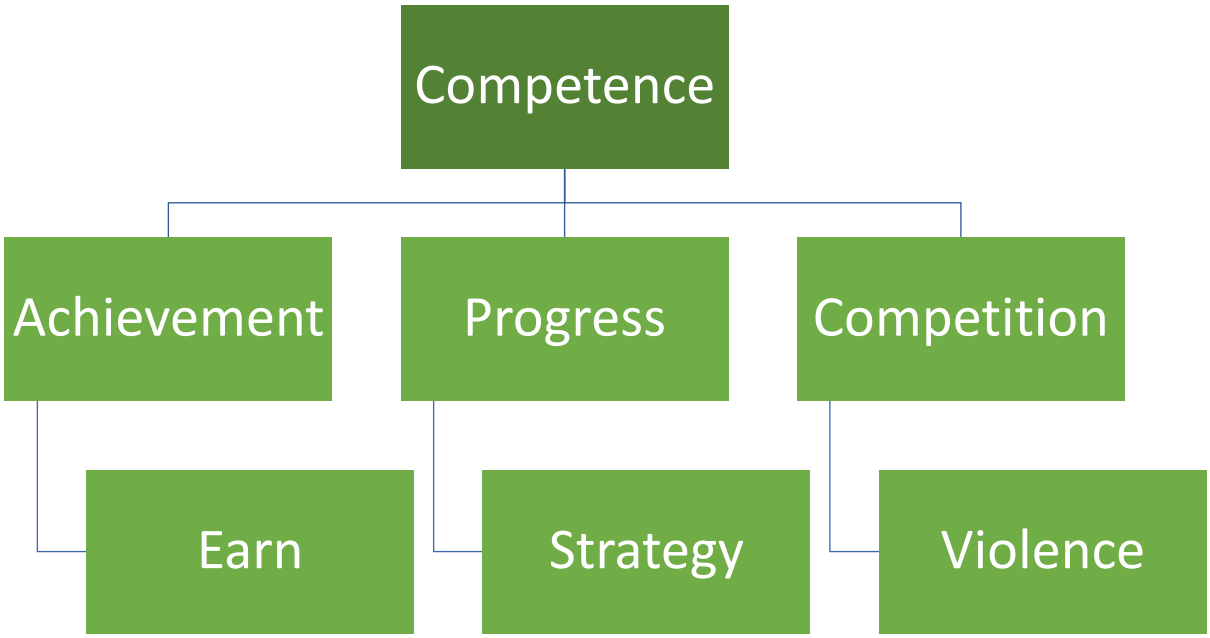
(Fred)

6.2.3 Competence

The central-organising concept of the themes described below is that of competence. Themes within this section incorporate motivations to play video games which promote a player's experience of feeling successful within video games. This is experienced through achievement and earning rewards; making progress, getting better at the game and utilising strategy; through competitive play against others and defeating opponents. Optimal challenge is a key aspect of video games which contributes to

competency need satisfaction. As discussed in the previous literature review in Chapter 3, by design, video games achieve this through appropriately pitching the level of difficulty of the game and thus the skill required on behalf of the player to experience success.

Figure 6 – Competence Thematic Map



6.2.3.1 Achievement

The ‘Achievement’ theme incorporates feelings of achievement and recognition. This may occur through receiving accolades within games, or successfully carrying out particular actions which are perceived as difficult. Some discourse centred on more tangible (in a virtual sense) rewards as a result of particular actions. This data constitutes the sub-theme ‘Earn’ within the overarching theme of ‘Achievement’.

Discourse from participants indicated that a sense of achievement was largely an intrinsic experience:

"I feel happiness, that I've achieved something. You feel like you've actually accomplished something and that you have done something really good in the game. So, like that kind of inspires you to do more things in the game."

Researcher: "Sounds really good, can you give me an example of that?"

"For example, Fortnite if you play that, erm… if you win a game, you get the season umbrella, so if you keep winning all of the seasons you get like an umbrella collection – so I've got most of them so far, but pretty much if you win a game you just feel like happiness, like you've done something."

(George)

The quotes above indicates that the video game George was playing 'inspired' him to sustain his engagement in playing it through successfully providing a competence-related need satisfying experience. Fred noted a similar experience whilst also drawing parallels with education:

"Yeah a lot, and just feeling accomplishment when you complete a game or you complete a level – a lot of people get a lot of confidence from completing summet. So, say I complete my school work, I feel confident in doing more work. So, in games, I feel more confident in the game and in fighting more people."

(Fred)

Actions within games which are particularly difficult lead to more intense feelings of achievement, and by proxy satiate more fully that desire for competency:

"And I don't think that I've ever felt more gratified in that game [Metal Gear Solid 5] then when I stole someone's nuke, because a nuke takes 24 hours in real time in that game to develop… But they [opposition players] sit out on their base, and if you invade their base and get passed all of their security, which is really hard, and you steal their nuke it is just a brilliant feeling."

(Pedro)

6.2.3.1.1 Earn

The 'Earn' sub-theme sits within the overarching theme of achievement, but involves more extrinsic rewards as a result of certain within-game actions, as opposed to an internal sense of achievement. Discourse within this sub-theme incorporates gaining new items, earning experience points, levelling up, receiving in-game currency, unlocking new emotes and character skins etc. In this way, similarities can be drawn with the 'Customisation' theme under the overarching central-organising concept of 'Autonomy' – however, the 'Earn' sub-theme incorporates the satisfaction felt following the successful actions within a video game that *lead* to the reward. The rewards can then be subsequently used by the player for customisation in some way.

"It's that, again like Fifa you get to be an actual manger… you either get sacked or you can stay at the club and win major trophies."

"You can do challenges on there to earn coins and packs."

(Daniel)

"So then, if you keep playing the games then basically you get games, like in-game currency that you don't have to buy, so you use that in game currency to purchase 'Brawlers' or the people you want to play as and usually people would just save up."

"The best thing I think about video games? Hmm… I think the best thing is that you can earn in-game currency, and not always that you just have to keep on buying it…"
(George)

"You can also get certain collectibles, so its fun when you're rewarded with summet you really like…you can earn credits from completing missions"

"Also, just levelling up and beating people, you get a certain amount of coins."
(Fred)

"Within sport you have like challenges and its competitive within the sport so you sometimes you can win some stuff, like medals, you can get a new player… Every time you win a game you get some money from that"
(Emily)

6.2.3.2 'Progress'

Whilst 'Progress' is a similar moniker to 'Achievement', this theme is exemplified by the satisfaction participants felt in knowing that they were getting better at playing a

particular game. Whilst 'Achievement' might then be the end state, "Progress" incorporates the player's journey in reaching such goals. The experience of learning was perceived to be important in this regard:

"…like I think progress in games is really good for a lot of young people, and also other people – like any age. I think even elderly people might enjoy it… like over time you probably get better and better at the game. So, for example at first I wasn't the best, but then gradually now overtime, I'm getting better and better and I'm still learning."

"Because like, it's really fun [playing video games], progressive, also its kind of like a challenge, it's kind of like a lesson we have at school. Like if you want to learn a new word or something like that – it's kind of the same, that's what I think."
(George)

Researcher: "Why do you play video games in general?"
"…I feel like it helps me to accomplish things, like to understand. And it's rewarding when you finish a game – and I can take that in to real life essentially, I don't just get it, I work for it. You never just get summet, you have to work and I learned that from video games – it's never that easy, you always have to do summet, like if it's a fighting game you always have to defeat a certain boss – you don't get it, you've gotta work hard for it."
Researcher: "And do you like that? Or would you prefer that it just went straight to the end?"

"I feel like it's better that way because it's more fun. You get a lot of challenge out of it and people like to have a challenge. There are games that are a bit more chilled, and some people prefer that, but me specifically I prefer like challenging games."
(Fred)

Similarly, the concept of challenge was discussed by a number of participants. This relates back to the importance of optimal challenge, and the need for video games to ensure a balance between player skill and difficulty level:

Researcher: "So, what is the best thing about video games?"
"That you can play them at any time and… the good thing about video games is that they get more harder, and that there are levels to do. So basically, it helps you get better at gaming."
Researcher: "So, you wouldn't like if it was just really easy all the time?"
"If it was really easy, it would just make it boring. If it is a bit easier, then it gets a bit harder, a bit harder, a bit harder, then I like it like that because it makes it progress – the progressive part of it."
(Emily)

"Erm, just the dynamic where you never always have the same fight, it's always different, it's always varied. It also gives you challenges, some fights they are quite easy, some are hard. You get to learn certain moves, like combos or summet. I feel like that's really important, to learn – you never just wanna stay the same."
(Fred)

"…you need to do the side stuff to level up and get the experience to do the main stuff, you can't just go from A to B in Borderlands because you will just die, you won't be able to progress because everything is a higher level than you so it is making it harder for you"

"I like the difficulty, I like the challenging nature of the game, you have to progress to be able to fight the bosses and it is really punishing, you lose all of your stuff if you die"

(Pedro)

6.2.3.2.1 Strategy

"Strategy" was identified as a sub-theme existing within the overarching 'Progress' theme. It was deemed discrete in its own right through a focus on strategy, problem solving and the use of tactics:

"I like to do things strategically. If I can't do it the one day, I'll think through it that day that I can't do it and go through it again on another day and I'll do it"

(Daniel)

"And being like tactical, so more realistic. I think people really like more tactical and realistic games."

"And I like games like Portal, where you have got to think thoroughly."

(Fred)

"And I really like the gameplay, I like the weak points of enemies, finding out the weak points, shooting the weak points and finding out what enemies are weak to. Just because it rewards me as a player for thinking outside of the box."

(Pedro)

"Because, I like playing video games because when like it's tactical, you get better at tactics, when there's like problem solving, I get better at problem solving – like riddles and all that"

(Emily)

6.2.3.3 Competition

The final theme underneath the central-organising concept of competence concerns 'Competition', which incorporates competitive play against others:

"*I like the game mainly just because it is like competitive"*

(George)

Researcher: "So what's the aim of Ultimate Team then?"

"You get to Division 1, and if you keep playing well you get points to get to FUT (Fifa Ultimate Team) Champs, and you can be ranked in the world"

(Daniel)

"…it's a lot of competitive play which I prefer"

(Fred)

Researcher: *"…what do you like about Fifa?"*

"How you can like… competitions. Competitive. It's more competitive than other games I play."

(Emily)

6.2.3.3.1 Violence

A closely related sub-theme to the overarching 'Competitive' theme was that of 'Violence'. This largely involved killing things/people, defeating enemies and satiating competency needs through feelings of power. Whilst ultimately difficult to incorporate into a gamification framework of ideas, the theme needed elucidating as it arose within the discourse for a number of participants.

"…and sometimes I enjoy some of the gore on it."

"That I get to go around shooting people"

"You get to kill creatures like Zombies, skeletons, creepers, ender-men"

(Daniel)

"…you're not harming anyone, you're just having fun. A lot of people, especially teenagers like having a dark theme or aspect, not always being bright and colourful – they like different varieties"

(Fred)

"…when enemies shoot at you, you have to build and try and kill them back"

(Edward)

"…boil Doom down and all it is is you're in a corridor and you're shooting demons and that core gameplay experience is what made it fun… it's just like fast paced and like shooting demons to a linear story, there's not really a story there until you finish the game and people love that because it is just a gameplay experience. You sit down, you play it and you are just shooting demons and there is nothing more to it than that."

"It is literally violence, but it's just done in a kind of like, it's really over the top so you don't really take it seriously and you are just running around shooting demons and it's just at its core a shooter."

(Pedro)

6.3 Developing the Framework of Ideas

Gamification mechanisms are not overly straightforward to design. This claim holds true when considering that such mechanisms are fashioned primarily upon video games, which have been shown to be deeply complex and promote engagement and motivation to play in a wide-variety of different ways. As such, the application of video game design to non-game contexts, i.e. gamification, is not a simple process (Huotari & Hamari, 2017; Deterding, 2015). Indeed, the apparent complexity at this 'ideation' phase may be yet another reason as to why there is an over-emphasis on points,

badges and leaderboard (PBL) mechanisms within the current literature base, as they are perhaps the easiest gamification mechanisms to implement.

Morschheuser et al. (2018) propose that the selection of game-design elements and development of gamification mechanisms is a distinctly creative and 'brainstorming-based' activity. They further state that such an ideation phase should allow for individual designer creativity and not be constrained by strict procedure; in doing so they provide a number of strategies for prospective gamification designers to utilise. In developing the framework of ideas proposed below, I: discussed game mechanics when playing video games with friends to stimulate ideation; noted frequently used game-design elements and how these usually fit together within video games; and reminisced upon my favourite lessons from when I attended secondary school.

The proposed framework of ideas is constrained somewhat by the parameters of the report and in particular the word limit. In reality however, potential gamification mechanisms are boundless and constrained only by human creativity. As such, the purpose of this project was not to provide an exhaustive framework of all possible gamification mechanisms, but to situate proposed mechanisms in the context of motivational theory; bottom-up data from children regarding motivations to play video games; and game-design elements. This will help to provide educators with a structure for implementing gamification, beyond PBL mechanisms which only serve to satisfy a small number of motivations to play video games.

The first half of the gamification mechanisms proposed are more meta in nature, transcending both time, e.g. perhaps throughout an entire taught topic, as well as other

gamification mechanisms. As such, some of the proposed gamification mechanisms are inextricably linked, for their presence in isolation would be largely meaningless. For example, awarding ‘experience points’ is made meaningful by the presence of any gamification mechanism which signals the benefit of accruing said experience points, e.g. levels, access to new items, character upgrades etc. As a further example, the first two gamification mechanisms listed, ‘Theme’ and ‘Setting’, are not overly useful without further mechanisms which situate them in context, e.g. having pupils complete ‘Quests’ within such settings.

The framework of ideas is made up of 3 columns. The first column, entitled “Proposed Gamification Mechanisms for use in Education” outlines a number of ideas as to how educators might implement gamification in practice. The second column, entitled “Theoretical and Empirical Grounding” offers the reader a rationale for the associated gamification mechanism proposed. Within this column, reference is made to both theory, i.e. self-determination theory, and the empirical aspect of the research project, i.e. outlining young people’s motivations to play video games. The third column, entitled “Related Game-Design Elements” illuminates the wide variety of game-design elements which are used in video games that might be associated with the gamification mechanisms proposed. My reasoning for including such a column concerns the over-use of points, badges and leaderboard game-design elements and associated mechanisms which is indicative of current practice, when the framework of ideas below explicates the vast array from which to choose.

Table 4 – A Proposed Framework of Ideas for Gamification in Education

Proposed Gamification Mechanisms for use in Education	Theoretical & Empirical Grounding	Related Game-Design Elements
Theme Adopting a theme helps to frame further gamification mechanisms such as narrative, characters, quests etc. The theme adopted helps to provide the background for gamified learning activities. Themes might be general, e.g. Pirates, Medieval, The Wild West, Explorers etc., or explicitly tied to learning content, e.g. Romans, Victorian London, and novels/plays, e.g. Hamlet, Of Mice and Men. For younger pupils, ideas may be borrowed from popular TV programmes.	Using the gamification mechanism 'theme' in the classroom will help to satisfy motivations of *narrative* and *escapism*, which relate to the basic psychological need for **relatedness.** Satisfying such motivations will likely occur through the use of other gamification mechanisms such as quests, of which 'theme' provides the backdrop. Providing a theme can help to frame an overarching story or narrative which could be used for individual lessons, particular subjects or entire topics. As such, a well implemented theme can act as the foundation for a number of other gamification mechanisms such as setting, quests, items and characters.	Characters, Environment, Graphics, Narrative, Setting, Story
Setting A setting is the more tangible environment which may sit within an overarching theme. For example, using a Roman theme, the setting might be the Colosseum or the Roman Forum. Learning activities can be experienced as being completed within this setting, through interacting with it in some way. Beyond oral description, settings may be accentuated through the use of music/melodies indicative of the theme; and pictures/backgrounds loaded on to an	Using the gamification mechanism 'setting' in the classroom will help to satisfy motivations of *narrative* and *escapism*, which relate to the basic psychological need for **relatedness.** Once again, satisfying such motivations will likely occur through more overt and explicit gamification mechanisms such as quests. However, a well implemented theme and setting can provide the foundation for which a number of other gamification mechanisms can be based around.	Environment, Graphics, Story, Theme

interactive whiteboard depicting a visual image of the setting, e.g. a desolate castle, a western saloon bar, a forest etc.		
Characters Characters denote fictional persons within the world created by the teacher. They may play a part in contributing to the narrative of the plot, e.g. a princess to be rescued, or support a pupil's progress in some way, e.g. through giving 'clues' (scaffolded learning) to help answer questions.	Using the gamification mechanism 'characters' in the classroom will help to satisfy motivations of *narrative, escapism*, and *relationships* which relate to the basic psychological need for **relatedness.** Characters provide opportunities for the satiation of relatedness needs through allowing pupils to feel meaningful and important to them in some way. In this way characters are best used to add richness to an overarching narrative.	Avatars, Players, Interaction, Relationships, Story, Narrative,
Narrative A narrative is the culmination of the gamification mechanisms described above. A narrative provides a context as to what 'quest' pupils are on, what problem they may need to overcome. For example, a long multiplication lesson may be enhanced with a narrative; e.g. pupils must navigate an imposing castle fortress so as to rescue a princess in its uppermost tower. However, there exist a number of traps on the route (represented by long multiplication sums) which pupils must solve in order to progress through the fortress.	Using the gamification mechanism 'narrative' in the classroom will help to satisfy motivations of *narrative, escapism*, and *relationships* which relate to the basic psychological need for **relatedness.** However, the creative use of narrative gamification mechanisms in the classroom can provide many opportunities for further gamification mechanisms to satisfy **autonomy** and **competence** needs. A rich narrative can lead to a situation whereby learning is the outcome, but perhaps not the focus for pupils. Instead, the focus might become advancing the story or reaching the end goal, where in order to do so learning and task completion must take place along the way.	Characters, Environment, Graphics, Goals, Objectives, Setting, Story, Theme

Volitional Narrative Adding an extra layer to the gamification mechanism above, teachers might weave an element of "Choose your own adventure" into such narrative. Simple, yet meaningful, choices can be incorporated into a narrative, e.g. do you go up the ladder, or the staircase to the right?, to promote a sense of volition for the pupil, as well as contributing to the experience of escapism. Although the learning tasks completed will ultimately be the same, the narrative of the 'adventure/quest' should subtly change in line with different choices.	Using the gamification mechanism 'volitional narrative' in the classroom will help to satisfy motivations of *narrative, escapism*, *exploration* and *choice/control* which relate to the basic psychological needs for **relatedness** and **autonomy.** Subtly changing the narrative gamification mechanisms through the provision of meaningful choices will help to foster a sense of acting volitionally and satisfy autonomy related needs. Video games provide such opportunities through the concept of equifinality, the idea that there are numerous alternatives to reach a goal.	Accountability, Actions, Characters, Choice, Consequences, Decisions, Dilemmas, Environment, Feedback, Graphics, Narrative, Objectives, Rescue, Setting, Story, Theme
Quests Utilising the gamification mechanisms above, lessons can easily become 'quests'. Similarly, lessons and/or learning tasks may be known as: trials, investigations, expeditions, missions, adventures, experiments, journeys, battles etc., anything which fits within the overall theme of the gamified content. To complement this gamification mechanism, pupils may earn experience points, badges, gold or items (gamification mechanisms which will be outlined in turn) as rewards for completing such 'quests', i.e. learning tasks.	Using the gamification mechanism 'quests' in the classroom will help to satisfy motivations of *narrative, escapism*, *relationships*, *achievement* and *earn* which relate to the basic psychological needs for **relatedness** and **competence.** Quests are common within video games, as well as other media such as books, TV and film. As such pupils will be familiar with such a gamification mechanism. Similar to above, framing a lesson or learning tasks as a quest can shift the focus so as to promote engagement, but ensure that learning remains the outcome. Competence based needs will be satisfied through progression and the successful completion of quests.	Actions, Characters, Choice, Consequences, Decisions, Dilemmas, Environment, Feedback, Graphics, Narrative, Objectives, Rescue, Rules, Setting, Story, Theme

Guilds Much like how lessons/learning tasks can easily be reframed as quests, pupil groups can be reframed as 'guilds'. Within the classroom, pupils are often sorted into groups often in line with their academic ability, usually because they are working on the same differentiated task. Reframing such a group as a 'guild' and tying this together with the use of another gamification mechanism such as the reward of experiences points upon completion of a learning task, or quest, will help nurture more meaningful collaboration and shared group identity. Pupil groups may also be known as: tribes, nations, houses, civilisations, clans, districts, families, brotherhoods, factions, regiments etc, again, anything which fits within the overall theme of the gamified content.	Using the gamification mechanism 'guilds' in the classroom will help to satisfy motivations of *teamwork, competition* and *play with others* which relate to the basic psychological need for **relatedness.** The framing of pupil groups as guilds may help to satisfy relatedness needs through nurturing a meaningful group identity. The basic psychological need for relatedness is satisfied when individuals experience meaningful relationships, reciprocal interactions and through feeling important to others. All such experiences can be nurtured through a guild gamification mechanism, e.g. through shared goals or earning 'items', 'currency', and 'experience points' (other gamification mechanisms which will be discussed in turn) for their guild members. Guilds might also be pitched against one another to satisfy motivations for *competition* and **competence** related needs.	Avatars, Characters, Co-operation, Interaction, Objectives, Relationships
Avatars An avatar is the graphical representation of the pupil's character. Within video games, it is a central game element around which many other elements are based. For educators willing to implement gamification over a sustained period of time, i.e. beyond single lessons/learning tasks, avatars may 'level-up' to show progression. In doing so they may gain access to higher level 'items' which change the aesthetic appearance of the avatar. The avatar gamification mechanism will be	Using the gamification mechanism 'avatars' in the classroom will help to satisfy motivations of *choice/control, customisation*, *progress* and *earn* which relate to the basic psychological needs for **autonomy** and **competence.** An avatar gamification mechanism can act as a central mechanism around which many others are based. Avatars can provide numerous opportunities for customisation through control over their aesthetic appearance, as well as opportunities to	Characters, Choice, Experience Points, Graphics, Inventory, Items, Levels, Progression, Rewards

further refined through the associated mechanisms outlined below.	signify progress through wielding better equipment made available by virtue of being a higher level.	
Experience Points Experience points are used as a game-design element in a wide variety of games and will be instantly recognisable to the vast majority of pupils. Experience points are used as a unit of measurement and quantify a player's progression within a game. Pupils may receive experience points, or 'XP', for the completion of learning tasks. For example, 7/10 on a set of maths questions might lead to 70XP; a B+ might signify 80XP etc. Similarly, experience points may be awarded for desirable classroom behaviour, e.g. 25XP for filling in the water bottles; 150XP for completing homework etc. Experience points will have limited impact in the absence of associated gamification mechanisms. In its most basic form, this mechanism should be used in conjunction with the gamification mechanisms 'Avatars' (outlined above) and 'Levels' (outlined below).	Using the gamification mechanism 'experience points' in the classroom will help to satisfy motivations of *progress, achievement* and *earn* which relate to the basic psychological need for **competence.** Though perhaps not the language used by children and young people, within video games experience points act as units of measurement which signify a players progression. If educators are to utilise such a strategy, it should be implemented alongside the gamification mechanisms 'levels' as outlined below. Experience points can be used to reinforce desirable actions, such as academic task completion and positive classroom behaviour, whilst the focus for the pupil might be to gain said experience points as a means to 'level-up' their avatar; and through doing so satiate competency-related needs. This mechanism is perhaps the easiest to adopt as it readily maps on to traditional assessment methods.	Acquisition, Feedback, Progression, Rewards, Victory
Levels Levels can be used to indicate the current 'rank' of a pupil's avatar. As such, the best way to use levels are in conjunction with the gamification mechanism	Using the gamification mechanism 'levels' in the classroom will help to satisfy motivations of *achievement*, *earn, progress* and *customisation* which relate to the basic psychological needs for **competence** and **autonomy.**	Competition, Experience Points, Feedback, Goals, Leaderboards, Progression, Rewards,

experience points. As pupils collect XP, for completing any number of classroom tasks/activities, they should 'level-up' at pre-selected intervals. E.g. Level 1 = Total XP of 0; Level 2 = Total XP of 100; Level 3 = Total XP of 500. The amount of XP needed to gain levels should increase at a variable rate the higher a pupil progresses. This is a typical scenario within video games. Naming Levels (rather than Level 1, Level 2 etc) may add an additional amount of motivation for the pupils to strive for. Such monikers can also be tied back to an overarching theme, e.g. using army ranks. Levels 1-10 might instead be known as: Novice, Apprentice, Craftsman, Skilled, Experienced, Advanced, Veteran, Leader, Master, Grandmaster. With each level should come associated benefits and/or opportunities. The easiest way to provide this experience is through the use of items, i.e. advancing to Level 3 grants access to a wide variety of new items which can be used for customisation.	A basic psychological need for competence refers to the need to feel effective within our environments and to feel good at something. Utilising the gamification mechanisms levels will help make explicit such success and progression in a more overt and tangible way. Pupils might be motivated by an individual desire to reach the highest level possible; to be the same level as their friends; or to level-up to gain access to more desirable items (outlined below), in turn satisfying autonomy-related needs through the opportunity to customise their avatar.	Status, Success, Victory
Items An item is primarily something that an avatar wears/wields. Pupils may choose what armour they wear, what hat they don or what weapon they wield for example. Adding 'lore' to an item will help deepen the gamification experience. For example, a Level 1 avatar may only have access to basic weapon items such as a 'Rusty Dagger" or "Broken Axe", whereas a more	Using the gamification mechanism 'items' in the classroom will help to satisfy motivations of *customisation,* and *choice/control* which relate to the basic psychological need for **autonomy.** Items will act as an aesthetic mechanism which can satisfy needs for autonomy through the provision of explicit opportunities for customisation. When used in conjunction with other gamification mechanisms such as experience points, avatars and levels,	Acquisition, Collecting, Graphics, Inventory, Resources, Status, Trading

advanced avatar might have access to 'Lancelot's Sword' or the 'Bow of Destiny'. There are a number of free clipart type images on the internet which can be used if implementing this mechanism physically. Alternatively, free digital software, e.g. classcraft.com, exists which make this mechanism more manageable.	certain items might also satisfy competency-related needs through only being accessible by virtue of being a high enough level. Having a wide array of items will promote a sense of autonomy through having a variety of items from which to choose when customising one's avatar. This will ensure that differences exist between individual pupil's avatars in their appearance, promoting a sense of self-identity.	
Currency Currency as a gamification mechanism incorporates something that can be collected and accumulated as a means to buy an item. 'Gold' is perhaps the most common currency used within video games and will be widely recognisable. Other currencies can be used however if they fit an overall theme better, e.g. uranium ore for a science topic, doubloons for a pirate theme etc. Gold may be awarded as a reward for completing certain 'quests' (learning tasks). As discussed, 'levelling-up' through collecting experience points may grant access to higher level items, but such items may need to be purchased with gold. Considerations need to be lent to how the 'economy' is managed. For example: Will the currency be physical or digital? How will each pupil know how much gold they have? How will each pupil exchange the gold for items?	Using the gamification mechanism 'currency' in the classroom will help to satisfy motivations of *choice/control, customisation, narrative* and *escapism* which relate to the basic psychological needs for **autonomy** and **relatedness.** Incorporating a currency gamification mechanism into the classroom may help sustain engagement in academic tasks (or 'quests') through a desire to accrue said currency. Accumulating 'gold' might be a motivation for some pupils through saving up enough to buy desired items.	Acquisition, Collecting, Decisions, Items, Resources, Status, Trading

Achievements An 'achievement' usually takes on the form of a 'Badge' or a 'Trophy' and can be awarded for the completion of particular learning activities or for demonstrating a behaviour/skill that is desirable, e.g. an achievement might be awarded for 'Helping a Guild Member in Need', i.e. for appropriately helping a peer complete a learning task. Badges and Trophies are perhaps the best-known type of achievements. Pupils who play video games will be familiar with these game-design elements.	Using the gamification mechanism 'achievements' in the classroom will help to satisfy motivations of *achievement* and *earn* which relate to the basic psychological need for **competence.** An achievements gamification mechanism, perhaps through the use of badges or trophies, works well as a credentialing system, through providing the opportunity for pupils to display their achievements, be it through the badge/trophy itself, or a shiny piece of new armour as a reward signifying the achievement. This will help to promote a sense of competence as well as reinforce appropriate classroom behaviour.	Badges, Feedback, Goals, Progression, Rewards, Status, Success, Trophies
Player versus Player (PvP) PvP gamification mechanisms involve any kind of scenario that puts players in direct conflict or competition with one another. This may vary from 1vs1 'battles', to guild vs guild, or full-class tournaments. Typically, victory within a PvP battle will earn some kind of reward, e.g. experience points, gold, items. PvP battles perhaps most readily apply to plenary activities whereby teachers are reviewing the aims of the lesson and checking that content has been consolidated. For example, a PvP battle might occur in the form of a 'first-to-answer' showdown, or the first to 5 correct answers etc. Such battles can be situated in the context of an overarching theme, e.g. gladiator combat,	Using the gamification mechanism 'player versus player' in the classroom will help to satisfy motivations of *competition, violence, achievement, earn, play with others* and *teamwork* which relate to the basic psychological needs for **competence** and **relatedness.** Defeating rival players through the use of a player versus player gamification mechanism will help to satiate the basic psychological need for competence through the opportunity to defeat a rival pupil. Associated relatedness needs might also be satisfied by team or 'guild' battles where pupils must work together to experience success. Pupils who rarely achieve victory however might conversely have their basic psychological need for	Competition, Conflict, Consequences, Experience Points, Health, Leaderboards, Lives, Opponents, Outcomes, Players, Rewards, Rules, Status, Tactics, Victory

explorers competing to be the first to discover a forgotten treasure etc. With access to tablets or computers, such PvP battles may be orchestrated using 'Kahoot!', a free online game-based educational tool which pits players against one another in a multiple-choice quiz.	competence thwarted. Careful consideration must be lent then to which pupil's face off against one another, to both provide a suitable level of challenge as well as numerous opportunities for success.	
'Break-in' Real-life escape games, i.e. escape rooms, are an example of a communal discovery mechanic. The idea behind escape rooms is that a team is locked in a room and must escape in allotted amount of time, through solving various puzzles. Within the classroom, this narrative can be flipped so that within an allotted amount of time, pupils have to work together, or individually, to work out a code to *break-in* to a locked box. This gamification mechanism may be set up using a small box and a number-coded padlock. Some ideas how to use this mechanism in practice are outlined below: • Animal cards that need to be sorted into classification groups. Pupils will receive 9 animal cards and find that there are 4 mammals, 3 reptiles and 2 birds. If it is indicated to the group that the order is "Reptile, Bird, Mammal", the code to discover becomes "324". • Similarly, words may be sorted into categories, e.g. nouns, adjectives, adverbs, verbs, again with	Using the gamification mechanism 'break-in' in the classroom will help to satisfy motivations of *progress, strategy, achievement, earn, play with others* and *teamwork* which relate to the basic psychological needs for **competence** and **relatedness.** A break-in gamification mechanism could be used within a classroom to engage pupils in variety of different ways. Whilst the core task at hand will remain the same, pupils will approach the task with a variety of different motivations. Some pupils might enjoy the novel aspect of the academic task; others might enjoy the problem solving aspect to the task and the feelings of success and accomplishment which follow; some might be motivated by the award of other gamification mechanisms such as experience points, items and gold upon the completion of the task; and others might enjoy the teamwork and opportunity to work together with their classmates.	Co-operation, Currency, Dilemmas, Experience Points, Failure, Feedback, Items, Objectives, Obstacles, Rewards, Rules, Sequencing, Setting, Solutions, Strategy, Success, Theme

the corresponding amount of words in each category being a number within the code. To add an additional layer of complexity to the puzzle, the order of the code needed may be alphabetical order, rather than given to the students directly. • This mechanism can be adapted to suit a wide variety of topics, e.g. what state given elements are at room temperature, i.e. gas, liquid, solid; classification of animal diets, i.e. herbivore, omnivore and carnivores etc. • Most simply, codes can be figured out as a result of solving mathematical calculations. Use of directional locks: • A directional padlock uses the directions up, down, left and right as codes to open the padlock. The code can be made up of any number of directions. Through giving students key bits of information with an associated direction (e.g. a directional arrow underneath an excerpt from a story), directional padlocks could be used in this way to: sequence parts of a story; order fractions from smallest to largest; place key historical events in chronological order; outline the life cycle of an animal etc. Upon unlocking the box through successfully figuring out the needed code – which was in turn ascertained through completion of the learning task – pupils may be rewarded with any number of other gamification mechanisms such as experience points, gold or items.		

'Role-Play Using the technique of role-play, pupils are encouraged to explore a variety of situations through interacting with others within their class, whilst adopting a pre-defined character or role. This might be of historical figures, e.g. a roman gladiator, Florence Nightingale, prominent scientists, e.g. Alexander Fleming, Albert Einstein or either one another. This technique helps pupils to develop an understanding of a situation from another's point of view, whilst assimilating knowledge of a topic through having to hold in mind 'what is known' by the character/role they are adopting.	Using the gamification mechanism 'role-play' in the classroom will help to satisfy motivations of *narrative, play with others, escapism* and *relationships* which relate to the basic psychological need for **relatedness.** A well implemented role-play gamification mechanism could contribute to feelings of escapism and narrative. This might be contingent upon the use of other gamification mechanisms such as 'theme' and 'setting' to help situate the pupil in an appropriate context, e.g. through the use of music and a relevant backdrop which could be projected onto the whiteboard.	Characters, Decisions, Dilemmas, Interaction, Narrative, Outcomes, Problems, Reasoning, Relationships,
'Paper Football' 'Paper Football' is perhaps best used as a plenary activity whereby teachers are reviewing the aims of the lesson and checking that content has been consolidated. Pupils answer questions, and if correct get the opportunity to score a goal in a penalty shootout, through flicking a ball of scrunched up paper through some goalposts. If the answer is incorrect, the penalty is recorded as a miss. This activity will work well with groups of pupils, who may wish to identify as a particular football team.	Using the gamification mechanism 'paper football' in the classroom will help to satisfy motivations of *competition, play with others* and *teamwork* which relate to the basic psychological needs for **competence** and **relatedness.** Paper football is a stand-alone gamification mechanism which can be used in the classroom. It presents as an example of a 'player versus player' mechanic where the focus for the pupils might be on winning the penalty shootout, thus satiating competence-related needs, whilst in order to do so they will have needed to have learned and consolidated an appropriate level of knowledge from whatever the focus of the lesson may have been beforehand.	Competition, Goals, Interaction, Opponents, Players, Rewards, Success, Victory

'Vocabulary Showdown' A spinoff from the popular word game 'Taboo'. Pupils play a part in both creating this game and playing it against one another. Pupils must create a number of taboo-style cards using content from the current learning topic. One key word is selected, and then five associated words are listed below. Pupils must work in teams to guess the key word, whilst not using any of the 5 associated words in their description. Pupils may play this game as part of a wider 'Player vs Player" gamification mechanism.	Using the gamification mechanism 'vocabulary showdown' in the classroom will help to satisfy motivations of *competition* and *play with others* which relate to the basic psychological needs for **competence** and **relatedness.** Similar to the 'paper-football' gamification mechanism outlined above, whilst the focus for pupils in taking part in a vocabulary showdown might be to win against their opponents and satisfy competency-related needs, this will be contingent upon an appropriate level of learning and consolidation from the lesson that has gone before.	Co-operation, Competition, Interaction, Opponents, Players, Problems, Rewards, Rules, Strategy, Tactics, Success, Victory
'Explorer's Expedition' Educators create a map (it could be a world map or any variation) which is split into individual hexagonal sections (e.g. a rectangular map with 16, 25, 36, or 48 hexagonal pieces). Each hexagonal section can be lifted via a 'life the flap' style construction, whereby on the underside of the map piece is a question which must be answered, or a task to be completed. Upon successful completion of the indicated learning task, pupils are then able to move on the next map section. This may be positioned as an 'A to B' activity whereby pupils must navigate from one area of the map to another. This fits well with a 'Quest' gamification mechanism as narrative can be weaved into this activity. Importantly, the route is not linear in nature and pupils are encouraged to travel whichever way they desire. Some pupils may wish to explore as much of the map as possible, perhaps in the	Using the gamification mechanism 'explorer's expedition' in the classroom will help to satisfy motivations of *narrative, escapism*, *choice/control, exploration* and *progress* which relate to the basic psychological needs for **relatedness, competence** and **autonomy** respectively. The mechanism explorer's expedition is an example of an in depth 'quest' gamification mechanism. Much like the 'break-in' mechanism, whilst the task might ultimately be the same, e.g. navigate from point A to point B, pupils will likely approach the task with a variety of different motivations. Some pupils may enjoy any narrative which has been weaved into the task and wish to complete it to advance such a narrative and find out what happens next; others might enjoy the level of freedom they are afforded in travelling any route they want; similarly some pupils	Actions, Boundaries, Choice, Collecting, Decisions, Environment, Exploration, Narrative, Quests, Setting, Spatial, Structure, Territory, Theme,

hope of discovering additional 'treasure'. A reward upon reaching the final destination might include other gamification mechanisms such as items, gold or experience points, as well as the conclusion of any overarching narrative which has been applied. Such maps could be used over and over again, so long as questions are changed to match current learning content.	might enjoy exploring as much of the map as possible and discovering everything it has to offer, e.g. rare items which they could use to customise their avatar; whilst others may wish to reach their destination as quickly as possible and receive whatever rewards might lie in wait for doing so.	
'Battleships' Utilise the classic battleship board game (it can easily be played using paper). On its own this game helps teach pupils about coordinates, X and Y axis, chance, probability and how to name and locate points on a grid. All the time the focus for the player is a strategic game against an opponent. Beyond the mathematical concepts taught above, battleships could be utilised in conjunction with other popular games so as to include additional learning content. For example, a 'blockbuster' style approach could be used where for each missile fired, pupils must answer a corresponding question correctly before finding out whether the missile hit or missed an opposition battleship. This would necessitate two different answer and questions sets, one for each pupil. Again, this fits within an overarching 'Player vs Player' gamification mechanism.	Using the gamification mechanism 'battleships' in the classroom will help to satisfy motivations of *competition, progress, strategy* and *play with others* which relate to the basic psychological needs for **competence** and **relatedness.** Whether battleships is used as intended originally, or using the more in-depth variation described to the left, the focus for the pupil will likely be defeating their opponent and winning the game. In doing so this will help satisfy competency-related needs as well as allowing the opportunity for extended play with others.	Competition, Conflict, Consequences, Experience Points, Health, Lives, Opponents, Outcomes, Players, Rewards, Rules, Status, Strategy, Tactics, Victory

‘Frankenstein’s Beast Pupils are asked to create an imaginary animal of their choosing, but they must use their knowledge of animals appropriately. For example, beyond aesthetic customisation such as what it looks like and what it is called, pupils must outline what classification the animal is, its natural habitat, what it eats and how it has evolved over time for example. This is a creative way to consolidate learning from lots of different areas within a topic. Similarly, the same idea could be used in other areas of the curriculum, such as in designing a castle; outlining a new fictional character, creating a new element on the periodic table etc.	Using the gamification mechanism ‘Frankenstein’s Beast’ in the classroom will help to satisfy motivations of *customisation* and *creativity* which relate to the basic psychological need for **autonomy**. ‘Frankenstein’s Beast’ is an example of one of the ways in which teachers can creatively utilise gamification as a concept in their classroom. Whilst in this example the learning objective and outcome will be the consolidated knowledge of animal habitats, diet and evolutionary adaptations, the pupils might experience this as a fun and engaging activity where they are allowed the freedom to be as creative as they would like to be, satisfying autonomy-related needs in the process.	Choice, Decisions, Rules,

**To clarify, whilst game design elements denote the “set of building blocks” (Deterding et al., 2011) which are used to make video games, when they are applied to non-game contexts through an active attempt to use gamification, they become known as gamification mechanisms. More simply, gamification mechanisms are applied game-design elements. Hence the degree of overlap at times between “Game-Design Elements” and the titles given to proposed “Gamification Mechanisms”.*

CHAPTER 7: DISCUSSION

This section begins by outlining a number of reflections as to how the findings of this research project relate back to the literature espoused in chapter 2-4. Next, pedagogical implications are discussed, with reference to organismic integration theory (Deci & Ryan, 1985). A critique of the research is offered, incorporating reflection on internal validity, external validity, reliability and limitations of the proposed framework of ideas. Implications for practice are shared and reference made to the experience of the author in this regard. Penultimately, future research directions are noted, with discourse focussing on empirical research through quasi-experimental designs and a potential role for practice-based evidence. The section closes with concluding comments.

7.1 Beyond Points, Badges and Leaderboards

A central focus regarding the rationale of this project concerned the over-emphasis of PBL mechanisms within the corpus of literature on gamification in education. Ultimately, I adopted the view that such PBL mechanisms, limited in scope as they are, cannot alone satisfy the wide variety of motivations children and young people have for playing video games. I believe that the themes generated and outlined in Chapter 6.2 wholly justify this hypothesis. Interestingly, over the course of six interviews, no participants made reference to badges or leaderboards.

Undoubtedly, ‘points’ (encompassing experience points or XP), play a central role in many video games and are a widely recognisable game-design element. Indeed, discourse regarding experience points was common amongst the participants.

Such discourse was used to generate the themes ‘Progress’ & ‘Achievement’, and the sub-theme ‘Earn’. However, I maintain that experience points alone will have little to no discernible impact with regards to academic engaged time (AET; Gettinger & Walter, 2012) in the absence of associated gamification mechanisms such as ‘Levels’ and ‘Avatars’. It is the centrality of experience points to other such game-design elements which keep them relevant within the minds of players.

Such findings from the empirical data and theory regarding self-determination theory calls for a wider variety of gamification mechanisms, beyond PBL mechanisms, which can more readily replicate the basic need satisfying opportunities pupils experience when playing video games. The proposed framework of ideas for gamification in education provides such a variety of ideas as to how this might be implemented within the classroom. In doing so, the framework more appropriately caters for autonomy and relatedness basic psychological need satisfaction.

7.2 Theoretical Coherence

As referenced at the beginning of Chapter 6.2, the themes regarding motivations to play video games were generated at an altogether different stage from the central-organising concepts (autonomy, competence and relatedness) they were later mapped on to. It was only after deeper consultation with relevant literature that the identified themes were mapped onto the basic psychological needs of autonomy, competence and relatedness. However, I maintain that to organise the themes around such basic psychological needs made intuitive sense. Importantly, such

organisation did not occur because of any a priori intentions to organise that data in this way; which, incidentally, I hope is clarified by the fact that I conducted the thematic analysis prior to a deeper consultation of the literature concerning self-determination theory and motivations to play video games.

I believe that the themes generated – namely: Choice/Control; Customisation; Exploration; Play With Others; Narrative; Achievement; Progress; and Competition – and associated sub-themes, organised naturally around the central organising concepts of autonomy, competence and relatedness. Although this is explicitly a theoretical assertion of my own subjective interpretation of the data and how I believe it should be organised, I believe that such an assertion is theoretically coherent and consistent within the wider research report. Indeed, when I reflect upon my own motivations to play video games, I cannot think of any actions within video games that I partake in which cannot be attributed towards satiating at least one of such basic psychological needs. Likewise, I would invite any reader to also engage in such a thought exercise.

7.3 Similarities With Previous Taxonomies

Whilst Bartle's 1996 paper will always remain a seminal piece of work as it was one of the first instances where games were viewed from the player's perspective as opposed to the observable content within the game (Bean, 2018, Ryan et al., 2006), there exists little overlap between the themes generated in this report and Bartle's 1996 taxonomy. However, Bartle himself claimed that his taxonomy of 'Achievers, Killers, Socializers and Explorers' was never intended to be used outside of its

original context concerning text-based MUDs (Multi-User Dungeons) (Bartle, 2012). On the other hand, Yee's 2006 paper entitled "Motivations for play in online games" holds a great deal more likeness.

Yee found evidence for three categories of motivations to play video games: Achievement, Immersion and Socialisation, each which had its own subcomponents (for reference, see Table 1 on page 22). Notable similarities exist between this report's central organising concepts of 'Competence' with Yee's 'Achievement', and 'Relatedness' with Yee's 'Socialisation'. To an extent, Yee's 'Immersion' also shares similarities with this report's 'Autonomy', through overlapping themes such as customisation and discovery (exploration). Whilst highly regarded, Yee's work was criticised through its close alignment with Bartle's 1996 taxonomy. As referenced in Chapter 3.2.3, the closed nature of a question such as "How important is it for you to acquire rare items that most players will never have?" could only ever confirm the existence of a player motivation/type thought to have already existed. Herein lay one of a number of rationales as to why the current research project sought to gather bottom-up data regarding motivations to play video games. However, notwithstanding its criticisms, Yee's (2006) paper innovatively utilised rigorous statistical methodology in theorising a taxonomy of motivations to play video games. Thus, the high degree of overlap between this project's themes and Yee's "motivations for play" adds further credence to both pieces of work considering these similarities in light of such different research orientations.

7.4 Organismic Integration Theory and Pedagogy

As outlined in the research report's first exposition of organismic integration theory (OIT) (Deci & Ryan, 1985), a large corpus of empirical and theoretical research posits that autonomous motivation (as opposed to controlled motivation) promotes engagement and supports optimal learning in educational contexts (Niemiec & Ryan, 2009). Notwithstanding, it would not be contentious to say that for many pupils, most academic activities are not inherently satisfying in an explicit sense (Niemiec & Ryan, 2009), i.e. they are not, for the most part, intrinsically motivating. However, OIT claims that individuals have a natural integrative tendency to internalise values and behaviours which promote competence in navigating the social world; relatedness through shared values and goals with others; and autonomy through the perception that behaviour occurs due to one's own volition, as opposed to external demands (Ryan & Deci, 2003). Using the latter point as an example, behaviour which is externally regulated, i.e. contingency-based, is experienced as controlled motivation and has low levels of internalisation. Poorly implemented gamification, despite best intentions, may fall within this domain (for reference, see Figure 1, page 13 for an overview of OIT).

Consider a maths lesson, whereby a simple narrative has been adopted so that to ascertain the treasure (which in this instance has no discernible benefit beyond the closed narrative of this lesson), pupils must answer a long-multiplication sum. Although a degree of novelty might produce higher levels of engagement in the first instance, pupils will quickly come to realise that the contrived nature of the task is externally regulated and this will be experienced as controlled motivation. Whereas if solving the multiplication sum granted access to an item which was integral to an overarching narrative of a wider quest, e.g. a treasure map, a key

etc., this would be experienced as more autonomously motivating through higher levels of internalisation. Namely, this would likely fall under the OIT (Deci & Ryan, 1985) category of 'Identified Regulation', whereby behaviour is valued by the pupil as there exists a sense of choice and personal commitment to the behaviour. Volition leads to autonomous motivation. One would hope that pupils would want to complete the multiplication sum for a reason they had internalised and identify with, e.g. to advance the narrative, to seek items or gold etc.

An additional reason as to why the latter example might increase engagement is because it more closely relates to an outcome of *fun*. Rigby & Ryan (2011) caution that 'learning games' often fall victim to adopting the tenet that because "learning is the goal, it needs to be the *focus*" (p.144). When considering the inherently engaging nature of video games, gameplay is at the core (Kiili, 2005). Killi (2005) maintains that educational games often fail because the focus on educational aspects displaces the actual gameplay. Whereas what I believe sets video games aside from other forms of media is the active nature of the activity. The volitional nature of video games and gameplay satiates our needs for autonomy, whilst also providing us with the opportunity to satisfy our other basic psychological needs (competence and relatedness) from the actions we choose to implement within the game. Moreover, gameplay in itself is not mutually exclusive with the concept of learning, for video games (and games more generally) involve continual cycles of problems to be solved and strategies to be implemented. To reiterate Suit's (1978) definition: "playing a game is the voluntary attempt to overcome unnecessary obstacles" (p. 41). Gamification provides pedagogical opportunities for learning to be both the goal and the outcome, but not the *focus*.

Rigby & Ryan (2011) use the idea of learning about Newton's laws of motion to outline this example. Typically, unless a pupil is intrinsically motivated by Newtonian physics, the motivation to learn and complete academic tasks concerning such laws is limited to the introjected regulation of avoiding disapproval for not doing so, as well as the potential extrinsic reward of passing an exam. However, using gamification, the exact same questions could be posed to the pupils but in order to necessitate the successful siege of an enemy castle via trebuchet. Without successfully learning Newton's laws of motion, any projectiles would miss their target. Although the desired learning has thus taken place, the *focus* concerned the successful siege of the enemy castle. Utilising OIT (Deci & Ryan, 1985) the activity of learning such laws of motion will have been internalised and experienced as autonomous choice, in order to achieve the goal of the game. Such was the aim of the proposed framework of ideas above, i.e. in proposing gamification mechanisms which more appropriately satiate basic psychological needs through moving beyond what might be perceived as controlling and tokenistic PBL mechanisms.

The above example regarding siege via trebuchet aligns well with a pedagogical orientation towards experiential learning, more colloquially known as 'learning by doing'. Experiential Learning Theory (ELT) (Kolb, 1984) emphasises the central role that experience plays within the learning process. Briefly, ELT maintains that learning is a continuous process underpinned by appropriate feedback, which keeps people working towards goal-directed action. Thus, ELT posits that learning should be conceived of as a process and not in terms of its outcomes, i.e.

knowledge acquisition. Bruner ascertains that the purpose of education should be to refine the skill of 'knowledge getting', writing: "Knowing is a process, not a product" (1966, p.72). The premise of experiential learning aligns well with a pedagogical orientation towards gamification.

7.5 Implications for Practice

The primary way in which gamification will be applied in education is through the practice being adopted by educators as an approach, perhaps one of many, through which to deliver the taught curriculum. However, considering the complex theoretical foundations underpinning the concept of gamification, as emphasised throughout this research report, educational psychologists are well placed to assist educators in its implementation. The proposed framework of ideas for gamification in education provides a sound theoretical and practical basis in this regard.

Additionally, gamification mechanisms may also be recommended in relative isolation should there arise a specific issue with regards to learner engagement. Indeed, whilst on my doctoral placement, I was involved in such a scenario.

The young person in question was 8-years-old and largely disengaged, showing little to no interest in any academic subjects. Extrinsic motivators were positioned as "the only way" to get this pupil to complete his work, but this had gotten out of hand to the point where the young person was demanding a £40 video game as a reward for completing a 10-minute learning task. There was a need therefore to shift the pupil's motivation with regards to completing academic activities.

Considering contextual information regarding the young person's interest video games, the following recommendation was made:

"A strategy that could be employed to set boundaries linked to rewards whilst remaining highly motivating is gamification. Gamification is the use of game-design elements in non-game contexts as a means to promote engagement. This will be particularly motivating for XXXX considering his interests in video games. A simple game-design element that can be incorporated into the classroom are experience points. Experience points are units of measurements within many video games that quantify a player's progression throughout the game. They are usually awarded following the completion of game-related tasks such as solving problems or defeating opponents. Due to their commonality within video games, XXXX will be familiar with this mechanism. XXXX could then use the experience points he accrues to level up an avatar (i.e. an icon or character which represents a person in a game) through various skill levels, such as: Apprentice, Skilled, Experienced, Advanced, Champion, Master and Grandmaster. Further advice and support can be given on gamification mechanisms if needed."

This recommendation was implemented by the teacher to great success. The pupil was intrigued by the novelty of the mechanism at first and thus was happy to 'give it a go'. The teacher then began using an established piece of software called 'Times Tables Rockstars' which utilises similar gamification mechanisms in 'avatars', 'experience points' and 'levelling up' as a means to promote engagement in, and motivation to complete, times-table-based learning activities. So much was the pupil motivated to take part in this activity, particularly to earn coins to customise

his avatar, that he requested to 'play the game' (as it was perceived by the young person) as a reward for completing other learning tasks – a marked improvement when compared to demanding a £40 video game as a motivator.

Furthermore, the recently launched 'Hungry Little Minds' campaign by the UK Government (HM Government, 2020) outlines a number of ideas, activities and applications which can be used by parents/guardians to support their child's learning (0-5). 'Teach Your Monster To Read' is one such application and it utilises many different gamification mechanisms (e.g. narrative, problem-solving, avatars, rewards, customisation) to promote engagement in early phonics and reading skills. The application was designed by leading academics working with the Usbourne Foundation and covers a range of essential reading skills, including matching letters to sounds, blending, segmenting, 'tricky' words and reading full sentences (Usbourne Foundation, 2020), all whilst positioned as a game. Such official endorsement from government office indicates that gamification as a nascent technology has a promising future.

7.6 Critique

7.6.1 Internal Validity

Utilising case-study as a design frame, in particular using qualitative research methods and data analysis, positions the research project as open to criticism in terms of internal validity. More specifically, such criticism arises through a broader criticism regarding the unavoidable use of inferences which is pervasive within

qualitative research (Yin, 2018). As this research project utilised secondary, self-report data from participants regarding their motivations to play video games, subsequent findings and analysis are solely inferential in nature. Criticism can thus be levelled towards whether or not my inferences were accurate and whether all alternative explanations were considered (Yin, 2018).

Moreover, the enigma of analysis is further complicated when considering that individuals may themselves not truly and accurately understand their own motivations to play video games. Accepting that self-report data is susceptible to inaccuracies due to a potential misinterpretation of one's own motives (Hoffman, 2015), the analysis becomes further complicated by the hermeneutic orientation of the researcher in further interpreting the participant's own interpretation, which in itself may have been flawed. Thus, at each level of research and analysis, the overtly available data becomes increasingly withdrawn from its initial meaning.

Considering the point made above, participants and their data are vulnerable to the imposition of the researcher's subjective interpretations (Scotland, 2012). Whilst not in regard to qualitative research per se but writing about how we report of children, Professor of Education and Child Psychology Tom Billington (2006) states "… it is the author's voice that is heard and the fragments of the young person that survive do so only with my consent." (p.6). This seems to be a somewhat unavoidable indictment upon interpretivist research. Nevertheless, steps were taken within this research project so as to minimise this risk; namely, to use a high number of quotes within the analysis section to explicate the proposed themes regarding motivations to play video games. How much these findings can be applied to contexts beyond this research project is a question of external validity.

7.6.2 External Validity

External validity pertains to the degree to which the findings from one piece of research can be generalised beyond its parameters to wider spheres and contexts (Thomas, 2017). As this research adopts the ontological position of relativism, it fundamentally rejects a foundational base for knowledge. Limitations are present therefore with regards to such research conducted within an interpretivist paradigm. However, such research does not position itself as working with representative samples, nor does it seek to generalise across populations (Pawson & Tilley, 1997). Thus, the critique of external validity has little legitimacy in interpretative research (Thomas, 2017). Such criticism will persist however because as humans we possess the cognitive ability to generalise from one context to another; as such, the want to do so is inevitable.

The proposed framework of ideas for gamification in education does not position itself as an exhaustive framework of all knowable gamification mechanisms. Indeed, on the contrary it is hoped that the wider research report will help educators to realise that the success of gamification is contingent upon a suitable understanding of motivational theory and appreciation of the wide variety of motivations as to why individuals play video games. Indeed, critique regarding the proposed framework only providing a relatively brief exploration of potential gamification mechanisms is actively encouraged, for the potential number of gamification mechanisms which may serve to promote engagement in learning tasks is boundless.

However, if educators are to use the proposed gamification framework to guide their thinking and practice, they will have to accept in at least some capacity that the

findings from this piece of research are meaningful to their context. Herein lies the notion of analytical generalisation (Yin, 2018), where case studies can be generalisable to theoretical propositions, but not to entire populations. Indeed, the expansion of theory was a principle remit of this piece of research.

7.6.3 Reliability

Whilst the notion of reliability concerns the replicability of a piece of research, i.e. so that another researcher could follow the same method and procedure to, hopefully, arrive at the same findings (Yin, 2018), the ability to replicate a case study may not be a possibility. Nevertheless, although not with a view to ensuring the possibility of replication, the procedure and methods of this research project were suitably demarcated so as to ensure that the rationale for reliability, in minimising error and reducing bias (Thomas, 2017), were lent due consideration.

Throughout the research project, methods, procedure and data gathering have all been reported with the utmost transparency. For example, the desperately low response rate following Phase 1 of the research (questionnaire) was not a welcome occurrence, and presented an obvious limitation. Consequently, the planned stratified sampling method for Phase 2 of the research project could not be implemented. However, through persistent reflexivity, this situation was documented in full and implications were lent due consideration.

Although such limitations are present in the research project, it is hoped that the transparency and reflexivity shown will go some way in mitigating against the impact of these.

7.6.4 Limitations of the Framework of Ideas

Through ongoing reflection since the inception of this research project, consideration was lent to the fact that I had never held a teaching post in my professional career. This is an important reflection insofar as a substantial section of the proposed framework of ideas for gamification in education incorporates gamification mechanisms to utilise in the classroom. As such, no matter how well the framework of ideas successfully provides a theoretical foundation for gamification in education, if the proposed gamification mechanisms are unrealistic with regards to their implementation, the entire framework is somewhat moot.

As such, a third phase to the research project was initially planned. This involved the inclusion of a focus group with 6 mainstream secondary school teachers as a means to gather a level of social validation (Wolf, 1978; Fawcett, 1991) for the proposed framework of ideas. However, developments regarding the COVID-19 pandemic resulted in the cancellation of the planned focus group following school closures. Thus no such social validation was gathered.

Although informed by relevant psychological theory and empirical data, a cynical take on the proposed framework of ideas might view it as a mere thought exercise. However, I maintain that it is a necessary thought exercise which can positively

contribute to a corpus of literature which has become preoccupied with but a few gamification mechanisms (points, badges and leaderboards) despite the vast array available. The framework of ideas offers a variety of ways in which educations might wish to implement gamification in their classrooms.

However, whilst the research aims of this report have been met through the ideation of such a framework of ideas, much remains to be done if the concept of gamification is to sustain itself as a viable means to increase engagement in education.

7.7 Future Research

The initial rationale for this research project was the relative disconnection between the practice of gamification and any theoretical underpinnings, particularly regarding motivational theory. As this research report has sought to address this issue in part, through situating gamification in motivational theory, using an overarching self-determination theory framework, the next port of call for gamification research should be to utilise such theory in applied and empirical research. Such empirical research should afford the theoretical underpinnings of gamification due regard throughout the entirety of the research process, i.e. in the design and implementation of gamification mechanisms, rather than simply in passing within introductory sections of articles. This will help to ensure that a more suitable array of gamification mechanisms are implemented in empirical research, beyond points, badges and leaderboards, which in turn would serve to satisfy the

wide variety of motivations children and young people have for engaging in playing video games.

7.7.1 Empirical Research

Naturally, as the research base for gamification in education matures, there will be a move towards more experimental research through controlled- and quasi-experimental designs. Although perhaps not my preferred research orientation, such research will help to establish which gamification mechanisms have the greatest impact and positive effect with regards to desired outcomes, e.g. in improving academic performance and attainment. The provision of gamification frameworks underpinned by relevant motivational theory, as provided by this research report, will afford a useful structure in the implementation of gamification mechanisms. Such frameworks will also encourage educators/researchers to utilise suitably different mechanisms so as to satiate the basic psychological needs of autonomy, competence and relatedness through a variety of different means (as is experienced in video games).

An example of how this might be done is by using a non-equivalent group design whereby pupils in one class would experience a selected gamification mechanism (or set of mechanisms) from the framework of ideas, whereas a parallel class would not. The impact and positive effect of the utilised gamification mechanism could then be assessed and measured through comparison on a post-intervention measure of sorts. See Figure 7 below for a graphical representation of this design.

NR *X* O

- - - - - - - -

NR O

Figure 7

In *Figure 7* the dashed line represents that different groups of pupils are being compared; NR stands for 'Not Random' and pertains to the non-random allocation to groups. O denotes the outcome measure, whilst *X* represents the intervention (i.e. selected gamification mechanism). Primarily through the impracticality of random allocation, quasi-experimental designs are subject to critique with regards to questionable internal validity as data might be confounded by prior differences between the participant (pupil) groups. One way in which to limit the confounding effects of such potential selection differences between groups could be to administer an identical pre- and post- intervention measure to both groups (classes) so that a 'change score' could be calculated. This change score would then more accurately indicate any impact that a selected gamification mechanism had on the outcome measure.

7.7.2 Practice-based evidence

The complexity of applying successful gamification in education has been perhaps until now somewhat underappreciated. Subsequently, the research report sought to elucidate such complexity through explicating the theoretical underpinnings which provide the foundation for gamification, and situating this within the context of education. As such, the invitation to empirically research this phenomenon is

fraught with experimental-design challenges, e.g. isolating individual gamification mechanisms, finding appropriate samples etc.

There lies an opportunity therefore for further qualitative research to capture the complex nature of gamification when implemented in practice (Koivisto & Hamari, 2019). Herein resides calls for an orientation towards practice-based evidence. Educators often utilise 'experientially-based' practices (Mazzotti et al., 2013) which are grounded in relevant theory, but may lack scientific rigour and be scarcely disseminated with relevant corpora of literature (Chorzempa et al., 2019). The focus for educators thus pertains to 'what works' in their classrooms. This gap between research and practice might be filled by encouraging educators to gather data as a means to promote practice-based evidence. Through such an approach, the site of inquiry with regards to gathering data and evidence becomes the classroom itself.

One approach educators may wish to utilise in illuminating such practice-based evidence is realistic evaluation (Pawson & Tilley, 1997). Born out of a philosophical position of critical realism (Bhaskar, 1978), realistic evaluation concerns 'what works, for whom, and in what circumstances' (Pawson & Tilley, 1997; Pawson, 2013; Nielson & Miraglia, 2017). The focus concerns *why* an intervention or particular approach may work, and not simply whether it does or not. This aligns well with the need to strengthen the theoretical underpinnings of gamification in an applied context, i.e. education. 'CMO' configurations provide the theoretical underpinning for realistic evaluation (MacArthur, 2018); where 'C' indicates the *context* in which 'M', the *mechanisms*, lead to particular *outcomes* ('O').

7.8 Concluding Comments

The overarching purpose of the research project was to propose a framework of ideas for gamification in education. The framework proposed is underpinned by relevant psychological theory, i.e. SDT, and provides educators and researchers with a variety of different ideas which consolidate motivations to play video games, game design elements and gamification mechanisms. The proposed gamification framework provides educators with a range of ideas as to how they might implement gamification, beyond PBL mechanisms, into educational contexts.

The over-emphasis of PBL mechanisms that is typical of current gamification practice arose through poorly demarcated theoretical underpinnings of the phenomenon. As such, at present, practice has outpaced theory and this contributes to poorly implemented gamification mechanisms, questionable research designs and an unnecessary disillusionment with an otherwise promising concept. This research report sought to provide the largely absent theoretical underpinnings with regards to gamification in education, and in doing so provide a suitable foundation from which to conduct further theoretical and empirical research.

Much work remains to be done so as to establish gamification research as a coherent corpus of literature – it promises to be an exciting area of research for many years to come.

Appendix A: Parent Information Sheet – Phase 1

What is the research project about?
This piece of research is being conducted to explore how video games can be used to help teachers increase student engagement in learning. The project will be split into three Phases. Phase 1 involves collecting basic data such as age and gender, the number of hours children spend playing video games, what devices they use and what types of game they like to play. This will help the researcher to understand basic information about video game use within Years 8 and 9 at XXXX Secondary School.

Phase 2 of this research will involve interviews with students to ascertain their motivations to play video-games. If your child is selected to take part in Phase 2 of this piece of research you will be contacted via letter once more to give consent, or not, to this. The letter will explain more thoroughly what this part of the research process entails.

Phase 3 involves carrying out a focus group with teachers to get their thoughts on proposed ideas regarding using 'gamification' to increase engagement in learning tasks. Gamification is the use of video-game elements in non-game contexts.

Does my child have to take part?
No. Participation in this research is completely voluntary. If your child wishes to withdraw from the project then they are perfectly entitled to do so. Written consent will be gathered to ensure no child takes part in the project if they do not wish to.

Are there any potential negative consequences to taking part in this research?
There is no perceived risk that may arise as a result of taking part in this piece of research. The research project has been approved by the Ethical Review Committee at the University of Birmingham.

What will happen if I agree for my child to take part in Phase 1 of this research?
On xx/xx/xxxx I will go into XXXX Secondary School and give each pupil in Years 8 and 9 a copy of the questionnaire described above. Once finished the child will return the completed questionnaire to their class teacher.

Following analysis of this information, your child may be selected to take part in Phase 2 of this project (see above).

Will the information collected be kept confidential?
Yes. All information collected will be stored in either a locked cabinet (for paper forms) or on an encrypted memory stick (for electronic data). The only person who will have access to this data is myself and my university tutor (Nicholas Bozic).

What happens next?
If you would like your child to take part in Phase 1 of the research project, please complete the consent form on the next page and return the slip to your child's form tutor by no later than **xx/xx/xxxx.** After both Phase 1 and Phase 2 are complete, the results will be written up into a research report. A summary will be given to staff at XXXX Secondary School. If your child takes part in Phase 2 of the study, they will also be sent a summary of the results.

Appendix B: Parental opt-in consent letter – Phase 1

Dear Parent/Guardian,

My name is Ben Clyde and I am a trainee educational psychologist at the University of Birmingham. I am studying an Applied Educational and Child Psychology Doctorate and am currently on placement in Wolverhampton Educational Psychology Service. As part of my doctoral studies I need to conduct a research project. My research project concerns how video games can be used to increase engagement in learning.

I am writing to you to seek your permission for your child to be involved in the first phase of this research. This involves answering a short questionnaire to collect basic data such as age and gender and how many hours they spend playing video games each week. All pupils and parents/guardians in Years 8 and 9 have been contacted with regards to taking part in this phase of the research. Please see the information sheet overleaf which outlines the research project in more detail.

If you decide that you <u>would like</u> your child to take part in phase 1 of this research project, please complete the slip below and return it to your child's form tutor by no later than xx/xx/xxxx. I will be coming into XXXX Secondary School on xx/xx/xxxx to carry out this questionnaire. Please note that participation in this research project is voluntary and there is no obligation to take part should you, or your child, not wish to.

If you have any questions about Phase 1 of this piece of research please feel free to contact me via email [redacted]

Thank you for taking your time to read this letter and the information sheet overleaf.
Kind Regards,
Ben Clyde

I have read the information sheet and contents of this letter and I **would like** my child to take part in Phase 1 of this piece of research.

Child's Name: _____

Parent's Signature: _____

Date: ___/___/_____

Appendix C: Pupil Information Sheet – Phase 1

What is the research project about?
I am carrying out this piece of research to explore how video games can be used to help teachers make their lessons more fun and exciting. The project will be split into two Parts. Part 1 will be a short questionnaire to collect your basic information (name, sex and age) and the number of hours you spend playing video-games each week.

Part 2 of this research project will involve interviews with randomly selected young people to talk about what they like about video games and why they like playing them. If you are selected for this part of the research project, I will write you another letter to explain Part 2 in more detail.

Do I have to take part in the research?
No. You do not need to take part in the research project if you do not want to. If you choose to take part in Part 1, you will be allowed to withdraw your data from the research project up to one week after you have completed the questionnaire.

What do I have to do?
On xx/xx/xxxx I will come into XXXX Secondary School and give each pupil in Years 8 and 9 a copy of the questionnaire described above. Once finished you will return the completed questionnaire to your class teacher.

A few weeks later, you may be selected to take part in Part 2 of this project (see above). I will send you a letter with more details if this is the case. Not all young people who complete the questionnaire will be able to take part in Part 2 of the research project.

Will anybody else see my answers?
No. All information collected will be stored in a locked cabinet or on a secure memory stick. The only people who will be able to see this information is me and my university tutor (Nicholas Bozic).

What happens next?
If you would like to take part in Part 1 of this research project then please complete the consent form on the other page.

Appendix D: Pupil Consent Form – Phase 1

Hi there,

My name is Ben Clyde and I am a training to be an educational psychologist at the University of Birmingham. As part of my course I need to carry out a piece of research. I am planning to research how video games can be used to help teachers make lessons more exciting and engaging.

There are three parts to this study. Part 1 involves a questionnaire to collect information about the number of hours young people (aged 12-14) spend playing video games each week, what devices they use and what types of game they enjoy most. Part 2 involves interviews with young people to talk about what they like about games and why they play them. Part 3 involves me talking to teachers to see if they think that they could use ideas from video-games to make their lessons more exciting and engaging.

If you would like to take part in Part 1 of this study then please read the information sheet on the next page. This will give you a bit more information about what the research is about.

I will be coming into XXXX Secondary School on xx/xx/xxxx to give this questionnaire to all young people in Years 8 and 9. If you would like to take part in Part 1 of this study, please complete the slip below and return it to your class teacher. Your parents/guardians will be asked if they would like you to take part in the research as well.

Please tick the boxes next to each statement to show that you agree with what it says:

I have read the information sheet on the next page ☐

I would like to take part in Part 1 of this research project ☐

I understand that I do not have to complete the questionnaire if I do not want to ☐

I understand that the information that I give will be kept confidential at all times ☐

Name: _____

Age: _____

Date: ___/___/_____

Signature: _____

Appendix E: Video Game Questionnaire – Phase 1

Video-Game Questionnaire
Name: _____
Age: _____
Sex: Male Female Prefer not to say
A video game is any game that is played using an electronic device (e.g. tablet, phone), a console (e.g. Xbox One, PlayStation 4, Nintendo Switch), a handheld console (e.g. a PSVita or Nintendo DS) or a PC.

1) How many hours do you spend playing video-games each week? Please **tick one box.**

0-1 hours per week	1-2 hours per week	2-4 hours per week	4-7 hours per week	7-12 hours per week	12-20 hours per week	Over 20 hours per week

2) What device do you use to play video-games the most? Please **tick one box.**

PlayStation 4	Xbox One	Nintendo Switch	Handheld Console	Any other gaming console	Desktop Computer or Laptop	Mobile Phone	Tablet

3) What type of video-game do you enjoy the most? Please **tick one box.**

Action/ Adventure	Shooter	Fighting	Role-playing-game (RPG)	Sports	Puzzle	Platformer	Simulator	Other

Appendix F: Parent Information Sheet – Phase 2

Dear Parent/Guardian,

My name is Ben Clyde and I am a trainee educational psychologist at the University of Birmingham. I am studying an Applied Educational and Child Psychology Doctorate and am currently on placement in Wolverhampton Educational Psychology Service. As part of my doctoral studies I need to conduct a research project. My research project concerns how video games can be used to increase engagement in learning.

A while ago I wrote you to seek your permission for your child to take part in Phase 1 of the research project. This involved answering a short questionnaire to collect basic data such as age and gender and how many hours they spend playing video games each week. Many pupils in Years 8 and 9 took part in this phase of the research project.

I am now writing to you to seek your permission for your child to be interviewed. This will help me to gather information for Phase 2 of the research project. The interview will involve me asking your child some questions about video games, e.g. what video games they play, why they like to play those games and what they like about video games generally. I plan to use this information to analyse how children's motivations to play video games can be utilised by educators in order to increase student engagement in learning. I am planning to interview 8 young people at XXXX Secondary School for this phase of the research.

In order for me to analyse the information I would like to record the interviews with an audio device so that I can transcribe what has been said. All information will be kept strictly confidential*. No names will be included when I write up the research project and it will not be possible for anyone to identify who said what. All information collected will be stored in either a locked cabinet (for paper forms) or on an encrypted memory stick (for electronic data). The only person who will have access to this data is myself and my university tutor (Nicholas Bozic).

*Please note, as per safeguarding protocol, confidentiality will be broken should any children be perceived to be at risk of harm.

As with the questionnaire in Phase 1 of this research project, participation is entirely voluntary. Should you or your child not wish for them to take part in an interview that is fine. Your child will also be able to stop the interview at any time. If you or your child would like to withdraw their data from the study then please may I ask that you contact me no later than 3 weeks after their participation. After this date, it will not be possible to withdraw your child's individual data as it will have been amalgamated with that from other interviews.

If you have any questions about Phase 2 of this piece of research please feel free to contact me via email ( ).
Thank you for taking your time to read this letter. **To give your consent for your child to take part in Phase 2 of this research project please complete the consent form overleaf.**
Kind Regards,
Ben Clyde

Appendix G: Parental Consent Form – Phase 2

Name: _____

Child's Name: _____

- I have read the information letter overleaf

  YES / NO

- I am happy for my child to take part in an interview with Ben Clyde

  YES / NO

- I understand that the interview will be audio recorded

  YES / NO

- I understand that I do not have to give consent

  YES / NO

- I acknowledge that should my child talk about games with a PEGI Rating of 16 or 18, I have consented to them being allowed to play such games

  YES / NO

- I understand that my child will be able to leave the interview at any time should they so wish

  YES / NO

- I understand that if I/my child want to withdraw their data (without reason) following the interview, I will have to let Ben know by xx/xx/xxxx.

  YES / NO

Date: ___/___/_____
Signature: _____

Ben Clyde
Trainee Educational Psychologist
[redacted]

Nicholas Bozic (Supervisor
Educational Psychologist and Doctoral Lecturer at the University of Birmingham
[redacted]

Appendix H: Pupil Information Sheet – Phase 2

Dear XXXX,

My name is Ben Clyde and I am a training to be an educational psychologist at the University of Birmingham. As part of my course I need to carry out a piece of research. I am planning to research how video games can be used to help teachers make lessons more exciting and engaging.

A while ago you completed a short questionnaire where you told me how many hours you spend playing video games each week. A lot of young people in Years 8 and 9 completed this questionnaire.

You have been randomly selected to take part in Part 2 of this research project. **I am now inviting you to take part in an interview with me.** The interview will involve me asking you some questions about video games, e.g. what video games you play, why you like to play those games and what you enjoy about playing video games generally. My plan is to use this information to help teachers to make their lessons more exciting and engaging for young people. I am planning to interview 8 people at XXXX Secondary School, and I would like you to be one of them.

I would like to record the interviews with a voice recorder so that I can listen back to what we spoke about during our time together. This will help me to remember all of the information and write the research project. All information will be kept confidential, so no one will know what you said, and be stored in a locked cabinet or on a secure memory stick. The only people who will be able to see this information is me and my university tutor (Nicholas Bozic).

You do not need to take part in this interview if you do not want to. If you do agree to take part but then change your mind, this is also fine. You can stop the interview at any point if you want to. If, after the interview has finished you change your mind about me using your answers, that is fine too. You just need to let me know within 3 weeks of the interview and I can delete the recording and throw away my notes.

I have also sent a letter to your parent(s)/guardian(s) to ask them if they mind you taking part in this interview with me.

If you would like to take part in this interview then please complete the consent form on the next page.

Thank you for reading this letter.
Kind Regards,
Ben Clyde

Appendix I: Pupil Consent Form – Phase 2

Name: _____

- I have read the information letter overleaf

  YES / NO

- I am happy to take part in an interview with Ben Clyde

  YES / NO

- I understand that Ben will record the interview using a voice recorder

  YES / NO

- I understand that I do not have to take part in this interview if I don't want to

  YES / NO

- I understand that I will be able to leave the interview at any time

  YES / NO

- I understand that if I/my parent/guardian want to withdraw my information (without reason) following the interview, I will have to let Ben know by xx/xx/xxxx.

  YES / NO

Date: ___/___/_____

Signature: _____

Ben Clyde
Trainee Educational Psychologist
[redacted]

Nicholas Bozic (Supervisor)
Educational Psychologist and Doctoral Lecturer at the University of Birmingham
[redacted]

Appendix J: Semi-Structured Interview Schedule – Phase 2

Possible question	Possible prompts	Probes
What is your favourite video game?	• (Closed question to start the interview) – easy to answer… • Why is it your favorite game? • What do you like about x?	Reflect language back to interviewee Tell me more Go on
What kind of video games do you play?	• List different genres of video games, e.g. racing, puzzles, adventure, fighting, FPS, sport • What do you play video games on? • What do you like about these games?	Reflect language back to interviewee In what way? Tell me more Why is that?
Why do you play video games?	• What motivates you to play video games? • What is the best thing about video games? • Tell me three things you like about X	Reflect language back to interviewee Because…? Why do you think that is?
What do you like about video games?	• Have you always played video games? • Do you think you will stop playing video games when you are older?	Reflect language back to interviewee Tell me more

The questions are deliberately circular in nature. It is anticipated that the interviews will become conversational in nature and there will be a good deal of back and forth as the interviewer explores what the interviewee enjoys about a number of different games they have mentioned.

Appendix K: Application for Ethical Review - ERN_19-0307

UNIVERSITY OF BIRMINGHAM
APPLICATION FOR ETHICAL REVIEW

Who should use this form:

This form is to be completed by PIs or supervisors (for PGR student research) who have completed the University of Birmingham's Ethical Review of Research Self Assessment Form (SAF) and have decided that further ethical review and approval is required before the commencement of a given Research Project.

Please be aware that all new research projects undertaken by postgraduate research (PGR) students first registered as from 1st September 2008 will be subject to the University's Ethical Review Process. PGR students first registered before 1st September 2008 should refer to their Department/School/College for further advice.

Researchers in the following categories are to use this form:

1. The project is to be conducted by:
   - staff of the University of Birmingham; or
   - postgraduate research (PGR) students enrolled at the University of Birmingham (to be completed by the student's supervisor);
2. The project is to be conducted at the University of Birmingham by visiting researchers.

Students undertaking undergraduate projects and taught postgraduate (PGT) students should refer to their Department/School for advice.

NOTES:

- An electronic version of the completed form should be submitted to the Research Ethics Officer, at the following email address: aer-ethics@contacts.bham.ac.uk. Please **do not** submit paper copies.
- If, in any section, you find that you have insufficient space, or you wish to supply additional material not specifically requested by the form, please it in a separate file, clearly marked and attached to the submission email.
- If you have any queries about the form, please address them to the Research Ethics Team.

☑ **Before submitting, please tick this box to confirm that you have consulted and understood the following information and guidance and that you have taken it into account when completing your application:**

- **The information and guidance provided on the University's ethics webpages (https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Ethical-Review-of-Research.aspx)**
- **The University's Code of Practice for Research (http://www.as.bham.ac.uk/legislation/docs/COP_Research.pdf)**

UNIVERSITY OF BIRMINGHAM APPLICATION FOR ETHICAL REVIEW	*OFFICE USE ONLY:* Application No: Date Received:

1. TITLE OF PROJECT

Preliminary Working Title: "Motivations to play Video-Games for the modern-day adolescent gamer: Implications for Gamification in education"

2. THIS PROJECT IS:

University of Birmingham Staff Research project ☐
University of Birmingham Postgraduate Research (PGR) Student project ☑
Other ☐ (Please specify):

3. INVESTIGATORS

a) PLEASE GIVE DETAILS OF THE PRINCIPAL INVESTIGATORS OR SUPERVISORS (FOR PGR STUDENT PROJECTS)

Name: Title / first name / family name	Nicholas Bozic
Highest qualification & position	MEd (Ed Psych)
School/Department	School of Education
Telephone:	
Email address:	[redacted]

b) PLEASE GIVE DETAILS OF ANY CO-INVESTIGATORS OR CO-SUPERVISORS (FOR PGR STUDENT PROJECTS)

Name: Title / first name / family name	
Highest qualification & position	
School/Department	
Telephone:	
Email address:	

c) In the case of PGR student projects, please give details of the student

Name of student:	Ben Clyde	Student No:	[redacted]
Course of study:	Ap. Ed. & Child Psy. D. FT	Email address:	[redacted]
Principal supervisor:	Nick Bozic		

4. ESTIMATED START OF PROJECT Date: May 2019

ESTIMATED END OF PROJECT Date: June 2020

5. FUNDING

List the funding sources (including internal sources) and give the status of each source.

Funding Body	*Approved/Pending /To be submitted*
N/A	

If you are requesting a quick turnaround on your application, please explain the reasons below (including funding-related deadlines). You should be aware that whilst effort will be made in cases of genuine urgency, it will not always be possible for the Ethics Committees to meet such requests.

There are three phases to this research, each dependent upon the previous phase's completion before the next can commence. In order to ensure enough time is available to complete the proposed study before a deadline of May 2020, the researcher will need to begin the first phase of study no later than May 2019.

Thank you for considering this request.

6. SUMMARY OF PROJECT

Gamification is the use of game design elements in non-game contexts as a means to promote engagement. Research has identified that engagement is an important factor with regards to promoting learning. However, a growing number of researchers have raised questions regarding the implementation of gamification in educational contexts. Evidence from the corpus of literature indicates that there is an over-emphasis on points, badges and leaderboard (PBL) mechanisms (which map neatly on to traditional assessment methods). Therefore, the current application of gamification in education is not broad enough to satisfy the multi-faceted motivational affordances that lead to children and young people playing video games. This is leading to an unnecessary disillusionment with gamification as a technology to promote engagement in educational contexts.

As such there is a need to provide educators and researchers alike with a clear framework that maps game design mechanisms onto motivations to play video games. The framework will be useful in providing educators with a range of ideas as to how they might implement gamification (beyond PBL mechanisms) into educational contexts.

Research Questions:

1. What motivates adolescent gamers (ages 12-14) to engage in, and maintain, playing video-games?
2. What game-design elements within video-games link to the motivational factors described by said adolescent gamers?
3. What is the prevalence of video-game engagement for adolescents (ages 12-14) in an urban mainstream secondary school in England?

The purpose of this piece of research is to provide educators and researchers alike with a clear framework that maps game design mechanisms onto motivations to play video games. The framework will serve to provide educators with a range of ideas as to how they might implement gamification (beyond PBL mechanisms) into educational contexts. The framework will support educators in selecting appropriate gamification mechanisms to utilise in order to satisfy their pupils' motivations to play video-games. The rationale behind implementing gamification in education in this regard is to increase engagement in learning.

7. CONDUCT OF PROJECT

Please give a description of the research methodology that will be used

Phase 1

Voluntary, opt-in questionnaire sent to all pupils in Year's 8 and 9 of a mainstream secondary school. Questionnaire (see appendix E) collecting biological data (e.g. sex and age), the number of hours children spend playing video games on a weekly basis, what devices they primarily use to play video games and what types of video games they play.

Phase 2

Stratified random sampling to get 1 male and 1 female who play '20+' hours per week and between 7-12 hours per week from each year. Offer 8 interviews (if below 6 after consent/non-consent conduct another random sample within group(s) underrepresented).

Those participants identified via stratified random sampling will be invited to take part in a semi-structured interview (see appendix J).

Interviews will be audio recorded to aid transcription. Transcription will be analysed qualitatively using thematic analysis in order to generate themes regarding motivational affordances to play video-games.

Phase 3

Phase 3 entails the participation in a focus group between myself and six teachers from the same secondary school to discuss the validity of the proposed gamification mechanisms.

8. DOES THE PROJECT INVOLVE PARTICIPATION OF PEOPLE OTHER THAN THE RESEARCHERS AND SUPERVISORS?

Yes ☑ No ☐

Note: 'Participation' includes both active participation (such as when participants take part in an interview) and cases where participants take part in the study without their knowledge and consent at the time (for example, in crowd behaviour research).

If you have answered NO please go to Section 18. If you have answered YES to this question please complete all the following sections.

9. PARTICIPANTS AS THE SUBJECTS OF THE RESEARCH

Describe the number of participants and important characteristics (such as age, gender, location, affiliation, level of fitness, intellectual ability etc.). Specify any inclusion/exclusion criteria to be used.

- Phase 1 - All pupils in Years 8 and 9 at an urban mainstream secondary school will be invited to take part in the questionnaire (see appendix E)
- Phase 2 - Stratified random sampling to get 1 male and 1 female who play '20+' hours per week and between 7-12 hours per week from each year. Offer 8 interviews (if below 6 after consent/non-consent conduct another random sample within group(s) underrepresented).
- Ideal sample:
  1 male, 12-13, 20+ hours per week
  1 male, 13-14, 20+ hours per week
  1 male, 12-13, 7-12 hours per week
  1 male, 12-13, 7-12 hours per week
  1 female, 13-14, 20+ hours per week
  1 female, 12-13, 20+ hours per week
  1 female, 13-14, 7-12 hours per week
  1 female, 13-14, 7-12 hours per week
- Phase 3 - Voluntary sampling of six teachers from XXXX secondary school.

10. RECRUITMENT

Please state clearly how the participants will be identified, approached and recruited. Include any relationship between the investigator(s) and participant(s) (e.g. instructor-student).

Note: Attach a copy of any poster(s), advertisement(s) or letter(s) to be used for recruitment.

The trainee will make contact with a mainstream secondary school which is based in the Local Authority within which they are on placement. Subject to approval, the trainee will then invite all pupils in Years 8 & 9 at said school to participate in the first phase of the research project (the questionnaire). The information sheet (see appendix C) will have an opt-in consent form attached (see appendix D), and a questionnaire to complete should they give their consent.

Participants for phase 2 of the research (semi-structured interviews) will be identified via a stratified random sample as outlined above. Again, the pupils will be given an information sheet with a consent form attached (see appendices H and I respectively).

Participants for phase 3 of the research will be collected via voluntary sampling. The teachers will be given an information sheet with a consent form attached (see appendices K and L respectively).

11. CONSENT

a) Describe the process that the investigator(s) will be using to obtain valid consent. If consent is not to be obtained explain why. If the participants are minors or for other reasons are not competent to consent, describe the proposed alternate source of consent, including any permission / information letter to be provided to the person(s) providing the consent.

- Phase 1:
  - Parental opt-out (see appendix B) – Information sheet provided (see appendix A)
  - Pupil opt-in (see appendix D) – Information sheet provided (see appendix C)
- Phase 2:
  - Parental opt-in (see appendix G) – Information sheet provided (see appendix F)
  - Pupil opt-in (see appendix I) – Information sheet provided (see appendix H)
- Phase 3:
  - Teacher opt-in (see appendix L) – Information sheet provided (see appendix K)

Consent forms will be developed using university headers and university supervisor contact information to facilitate any further questions which may arise. Whilst efforts have been made to simplify the language used for pupil information sheets, teachers will be asked to ensure that pupils who experience difficulties with English (e.g. children with EAL or SEN) fully understand what it is they are consenting to.

Note: Attach a copy of the Participant Information Sheet (if applicable), the Consent Form (if applicable), the content of any telephone script (if applicable) and any other material that will be used in the consent process.

b) Will the participants be deceived in any way about the purpose of the study?
Yes ☐ **No** ☑

If yes, please describe the nature and extent of the deception involved. Include how and when the deception will be revealed, and who will administer this feedback.

N/A

12. PARTICIPANT FEEDBACK

Explain what feedback/ information will be provided to the participants after participation in the research. (For example, a more complete description of the purpose of the research, or access to the results of the research).

The trainee will share findings with participants who took part in phase 2 of the study. This will be through an information sheet pitched at an appropriate level of writing to suit the intended audience. The information sheet will be a summation of the general motivations that children and young people gave as to why they play video games and some examples of how teachers may use such motivations to create gamification mechanisms that can be used in the classroom (to promote engagement in learning).

Likewise, those teachers who took part in phase 3 of the study (focus groups) will be sent a summative report outlining the main findings of the project.

13. PARTICIPANT WITHDRAWAL

a) Describe how the participants will be informed of their right to withdraw from the project.

The consent form will detail participants right to withdraw from the data collection process at both phase 1 and phase 2 of the study.

Should participants wish to withdraw following the completion of the interviews, they will have one month to do so. This will be reiterated to all participants at the start and end of their interview. Parents/guardians of those children who have taken part in an interview for phase 2 of the study will also be given the right to withdraw their child's data within one month of the interview taking place*

It will not be possible for participants to withdraw their individual data from the focus groups

post-data collection. This is outlined in the consent form (see appendix L).

*Please note that particular dates cannot be outlined at this preliminary stage of the research process. However, please be assured that such dates will be explicitly communicated to participants as appropriate.

b) Explain any consequences for the participant of withdrawing from the study and indicate what will be done with the participant's data if they withdraw.

- Individual ID codes will be used to identify participant data for phase one of the study. All participants will be assigned a code, noted by myself on the returned consent forms/questionnaires. This code will use the following format; Initials, age and the date the questionnaire was returned (e.g. AB-12-0505) and be stored on an encrypted memory stick.
- Should a participant wish to withdraw, they will be asked to make contact with myself or the lead supervisor, stating their name, from which the trainee will be able to find the associated ID code and all relevant data and remove responses (i.e. shred any paper copies of data or delete electronic versions). There will be no consequence of withdrawal from the study, nor any perceived risk.
- The same process applies to phase 2 of the study.

14. COMPENSATION

Will participants receive compensation for participation?

i) Financial **No** ☑

ii) Non-financial **No** ☑

If **Yes** to **either** i) or ii) above, please provide details.

N/A

If participants choose to withdraw, how will you deal with compensation?

N/A

15. CONFIDENTIALITY

a) Will all participants be anonymous? **Yes** ☐ **No** ☑

b) Will all data be treated as confidential? **Yes** ☑ **No** ☐

Note: Participants' identity/data will be confidential if an assigned ID code or number is used, but it will not be anonymous. Anonymous data cannot be traced back to an individual participant.

Describe the procedures to be used to ensure anonymity of participants and/or confidentiality of data both during the conduct of the research and in the release of its findings.

Participants will be known to the trainee and therefore complete anonymity is not possible. However, concerted efforts will be made in order to ensure participant data is kept confidential. Through assigning individual ID codes to data (as outlined above), the data

stored will not be identifiable by others. Only the trainee and his supervisor will have access to the encrypted memory stick which contains the ID code/Name combinations.

Pseudonyms will be used during the write-up process. Quotes will in no way be attributable to a particular pupil.

If participant anonymity or confidentiality is not appropriate to this research project, explain, providing details of how all participants will be advised of the fact that data will not be anonymous or confidential.

N/A

16. STORAGE, ACCESS AND DISPOSAL OF DATA

Describe what research data will be stored, where, for what period of time, the measures that will be put in place to ensure security of the data, who will have access to the data, and the method and timing of disposal of the data.

Data (i.e. recordings and transcriptions of sessions and ID codes) will be stored securely using an encrypted memory stick that only the trainee and his supervisor will have access to. Interviews will be recorded using a Dictaphone and recordings will be deleted off of the device immediately after the interview following transfer to the encrypted memory stick.

Paper-based data (i.e. questionnaires) will be kept in a locked cabinet until data has been inputted electronically into analytical software. The software will be stored on the encrypted memory stick. Once the data has been inputted electronically, paper-forms will be destroyed.

The University of Birmingham maintain property over the data once the trainee has finished their course. As such the following data will be stored on the relevant university storage systems: signed consent forms (parental and child regarding phase 2), questionnaire data and anonymised interview transcriptions. Such data will be kept securely for 10 years following the completion of the study. In line with The University of Birmingham guidelines, the trainee's own records will be deleted/destroyed following the completion of the study and graduation from the course.

17. OTHER APPROVALS REQUIRED? e.g. Criminal Records Bureau (CRB) checks or NHS R&D approvals.

NO ☑

If yes, please specify.

N/A

18. SIGNIFICANCE/BENEFITS

Outline the potential significance and/or benefits of the research

Gamification as a technology is still in its infancy but developing at a rate whereby practice has outpaced theory. Therefore, what is known of the phenomenon stems from a fragmented and spurious corpus of literature from a variety of perspectives.

The 'practice' of gamification at present isn't broad enough to address motivational factors regarding playing video games. There is an over-emphasis on PBL (points, badges and leaderboard) mechanisms, most likely because they map more readily onto traditional assessment methods and are perhaps the easiest mechanisms to implement.

There is a need to provide a sound theoretical framework regarding the use of gamification in education so as to ensure that educators looking to implement such a strategy understand *how* to apply it in context and *why* it might lead to increased student engagement (and in turn better academic outcomes). The framework will also serve as a firm foundation from which to base future empirical research.

There is a clear rationale to:

1) to conduct bottom-up research re motivations due to ever-changing context of gaming technology and different game 'modes' (e.g. Pokemon Go, Fortnite).
2) provide educators and researchers alike with a clear framework that maps game design mechanisms onto motivations to play video games The framework will help to provide educators with a range of ideas as to how they might implement gamification (beyond PBL mechanisms) into educational contexts to increase student engagement in learning.

The trainee plans to create a checklist of motivational affordances for educators to use to ensure that the gamification mechanisms being implemented are suitable in satisfying such motivations. The trainee believes that the success of gamification in education is contingent upon understanding individual motivations to play video games. The checklist will be used alongside the proposed framework. Engagement in learning is an important factor in promoting learning.

19. RISKS

a) Outline any potential risks to **INDIVIDUALS**, including research staff, research participants, other individuals not involved in the research and the measures that will be taken to minimise any risks and the procedures to be adopted in the event of mishap

There are no perceived risks to individuals regarding the completion of this research project.

b) Outline any potential risks to **THE ENVIRONMENT and/or SOCIETY** and the measures that will be taken to minimise any risks and the procedures to be adopted in the event of mishap.

There are no perceived risks to the environment and/or society regarding the completion of this research project.

20. ARE THERE ANY OTHER ETHICAL ISSUES RAISED BY THE RESEARCH?

Yes ☑ No

If yes, please specify

There is a **high probability** that at least some of the young people whom I interview will discuss games with age ratings of 16 or 18. This presents as an ethical dilemma considering my proposed sample of young people aged between 12 and 14.

The Video Standards Council (VSC) was established in 1989 and fulfils two basic roles:

Firstly, it is a standard body for the video and video games industries and has a Code of Practice designed to ensure that both industries show a duty of care in their dealings with customers and the public generally.

Secondly, it acts as an administrator of the Pan European Game Information (PEGI) system of age rating. As of 2012, the Video Standards Council was designated by the government under the Video Recordings Act (1984) as the statutory UK regulator responsible for the age rating of video games supplied on physical media. The VSC is now known as the VSC Ratings Board so as to clarify it role.

Under the terms of the Video Recordings Act (1984), the VSC Rating Board is required to consider the likelihood of any game causing harm to the user and, subsequently, to wider society. PEGI descriptors highlight eight types of content: Discrimination, Drugs, Fear, Bad Language, Sex, Violence, Gambling and Online

PEGI Ratings are classified under five different age ratings: 3, 7, 12, 16 & 18. Games are classified in order to restrict their sale to only those over that age. Whilst PEGI classifications of 3 and 7 are advisory in nature, it is a legally enforceable criminal offence to sell a game with a PEGI rating of 12, 16 or 18 to someone under that age. However, it is not a criminal offence for someone under these ages to play such games – on the contrary this is a widespread phenomenon. It is also not illegal for a parent or a third party to purchase a game for a child/young person who is under the stated age. PEGI ratings thus allow parents/carers to make informed decisions on whether or not they believe that particular games are appropriate for their children to play.

Considering all of the information above, I do not believe it is my place to question the judgement and/or decisions by parents/carers in allowing their children to play particular games. Thus, I have made the decision not to restrict discourse on games with PEGI ratings of 16 or 18 (over the age of the intended sample). Nevertheless, the parental consent form (see Appendix G) acknowledges that as primary parents/carers of the young person in question, they have explicitly consented to them being allowed to play such games.

This is a decision I have lent a good deal of thought to. My rationale to not restrict discourse on higher PEGI rated games concerns the very real potential for such a restriction to inextricably skew my data if young people are not allowed to talk about the games which they play the most.

21. EXPERT REVIEWER/OPINION

You may be asked to nominate an expert reviewer for certain types of project, including those of an interventional nature or those involving significant risks. If you anticipate that this may apply to your work and you would like to nominate an expert reviewer at this stage, please provide details below.

Name
Contact details (including email address)
Brief explanation of reasons for nominating and/or nominee's suitability

22. CHECKLIST

Please mark if the study involves any of the following:

- Vulnerable groups, such as children and young people aged under 18 years, those with learning disability, or cognitive impairments ☑
- Research that induces or results in or causes anxiety, stress, pain or physical discomfort, or poses a risk of harm to participants (which is more than is expected from everyday life) ☐
- Risk to the personal safety of the researcher ☐
- Deception or research that is conducted without full and informed consent of the participants at time study is carried out ☐
- Administration of a chemical agent or vaccines or other substances (including vitamins or food substances) to human participants. ☐
- Production and/or use of genetically modified plants or microbes ☐
- Results that may have an adverse impact on the environment or food safety ☐
- Results that may be used to develop chemical or biological weapons ☐

Please check that the following documents are attached to your application.

	ATTACHED	NOT APPLICABLE
Recruitment advertisement	☐	☑
Participant information sheet	☑	☐
Consent form	☑	☐
Questionnaire	☑	☐
Interview Schedule	☑	☐

23. DECLARATION BY APPLICANTS

I submit this application on the basis that the information it contains is confidential and will be used by the University of Birmingham for the purposes of ethical review and monitoring of the research project described herein, and to satisfy reporting requirements to regulatory bodies. The information will not be used for any other purpose without my prior consent.

I declare that:

- The information in this form together with any accompanying information is complete and correct to the best of my knowledge and belief and I take full responsibility for it.
- I undertake to abide by University Code of Practice for Research (http://www.as.bham.ac.uk/legislation/docs/COP_Research.pdf) alongside any other relevant professional bodies' codes of conduct and/or ethical guidelines.
- I will report any changes affecting the ethical aspects of the project to the University of Birmingham Research Ethics Officer.
- I will report any adverse or unforeseen events which occur to the relevant Ethics Committee via the University of Birmingham Research Ethics Officer.

Name of principal investigator/project	Ben Clyde
Date:	March 2019

Please now save your completed form, print a copy for your records, and then email a copy to the Research Ethics Officer, at aer-ethics@contacts.bham.ac.uk. As noted above, please do not submit a paper copy.

Dear Nicholas Bozic,

Re: "Motivations to play Video-Games for the modern-day adolescent gamer: Implications for Gamification in education"
Application for Ethical Review ERN_19-0307

Thank you for your application for ethical review for the above project, which was reviewed by the Humanities and Social Sciences Ethical Review Committee.

On behalf of the Committee, I confirm that this study now has full ethical approval.

I would like to remind you that any substantive changes to the nature of the study as described in the Application for Ethical Review, and/or any adverse events occurring during the study should be promptly brought to the Committee's attention by the Principal Investigator and may necessitate further ethical review.

Please also ensure that the relevant requirements within the University's Code of Practice for Research and the information and guidance provided on the University's ethics webpages (available at https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Links-and-Resources.aspx) are adhered to and referred to in any future applications for ethical review. It is now a requirement on the revised application form (https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Ethical-Review-Forms.aspx) to confirm that this guidance has been consulted and is understood, and that it has been taken into account when completing your application for ethical review.

Please be aware that whilst Health and Safety (H&S) issues may be considered during the ethical review process, you are still required to follow the University's guidance on H&S and to ensure that H&S risk assessments have been carried out as appropriate. For further information about this, please contact your School H&S representative or the University's H&S Unit at healthandsafety@contacts.bham.ac.uk.

Kind regards,

Ms Sam Waldron
Deputy Research Ethics Officer
Research Support Group

Appendix L: Example Transcript - [Transcript 003 – Identifier 006]

- *B:* So, we'll start nice and easy – What's your favourite game?
- O: Erm, currently it's 'The Last of Us'.
- *B: 'The Last of Us'. Oh okay, 'The Last of Us' part one?*
- O: Yeah. I'm excited for part 2.
- *B: Yeah, it's coming out soon isn't it?*
- O: Yeah.
- *B: So, what do you like about 'The Last of Us' then?*
- O: Erm its like a story game but also the social aspect, so like the relationship between Joel and Ellie the main characters and how it tells a massive story of him being like a Father figure. It's just a normal game that I like to play which is shooters, but with a story aspect of it.
- *B: Oh okay, so you like the story aspect to that game?*
- O: Yeah.
- *B: Do you normally play shooters then?*
- O: Yeah, most of the games I'm playing are like shooters or fighting games.
- *B: Okay, what kind?*
- O: Erm, if it's not 'The Last of Us' its normally like Overwatch. It's not an insanely graphic shooter, it's more Sci-Fi-ish and there's a big roster of characters you can play as.
- *B: What do you like about Overwatch?*

- Erm, the multiple game modes you can play. You're not restricted as much and you have a freedom. You get to get really good and you compete with it and they are adding loads of story events. Like there is a game mode out now for Halloween and it's called 'Junkenstein's Revenge', and it's about one of the main characters being a bit evilish and then a few characters will fight his drones and it adds like a story aspect. They are going to add some more in I think it's either this year or next year, because it's a three-part series. You get 3 base missions and then they're going to add a bit more so you can get like the background of the story.
- *B: Sounds good, so do you play that online?*
- O: Erm yeah, it's an online game. You can play it with your friends or just random people on your team.
- *B: And how do you play it?*
- O: Erm, normally I play it – you just go online, choose your game mode, because there is a wide variety, ranked, casual, arcade games, and weird funky game modes and you go in and just have fun.
- *B: Okay, so going back to 'The Last of Us' for a second.*
- O: Yeah.
- *B: If you had to pick like 3 things that you like about that game, what would they be?*
- O: Erm, the story of course, the dynamic between the characters, not being just like a random person you're playing as, just killing. I like the story mode, and the involvement of like zombies and evilish characters, not a defined bad

character. As well as, there is an aspect of it where you can play multiplayer, it doesn't have to be story – so there is a variety.

- *B: So, you like the freedom to choose how to play.*
- O: Yeah.
- *B: so, do you know if I said genres of video games do you know what I mean by that?*
- O: Yeah.
- *B: What genre do you play the most?*
- O: Genres. I usually like shooters or like story-mode games, sci-fi games, galaxy games so Star Wars or something like that.
- *B: So… what is it you like then about shooters? What keeps you playing them?*
- O: I've always been interested in guns, because there is a massive debated topic about whether guns should be legal or illegal and I've always seen like the good aspect of them. And like the games you can kind of become addicted to it – because you're not harming anyone, you're just having fun. A lot of people, especially teenagers like having a dark theme or aspect, not always being bright and colourful – they like different varieties.
- *B: Okay.*
- O: And being like tactical, so more realistic. I think people really like more tactical and realistic games.
- *B: So you like the realistic aspect of it?*
- O: Yeah.
- *B: But Overwatch though, that's not realistic is it?*

- O: Yeah it's a weird game, but it's like super fun. There's a lot of great memories you can have – you can make custom games and have really weird game modes, like a paintball game where characters have certain abilities that you have to use to kill people, well not kill but defeat them.
- *B: So what do you like about that kind of mode?*
- O: It's a chance to express yourself. It's also a chance to become involved in things because if you get to create something, you can get credit for it, and I think people really like being known for summet.
- *B: So being known… who knows you?*
- O: So a lot of my friends, there's a streamer, I know him personally, his name is '####', he streams like a lot on PS4 and that and he's used my custom games – so I get a bit of respect for that, I get a bit of popularity. I'm seen for something that I enjoy doing.
- *B: Oh okay that's really cool. So people watch his streams, and he's playing your custom games?*
- O: Yeah, he's always like shouting me out. I sometimes play it with him as well – it's fun.
- *B: And do you like watching those videos back on YouTube?*
- O: Yeah because it's fun to see myself like how I act, and how people perceive me as. People see someone who is really good at games and who enjoys games.
- *B: That's really cool. What games are you playing most?*
- O: Most of the time its 'The Last of Us', Overwatch. Recently it's… I've been starting to get into Star Wars Battlefront 2.

- *B: Okay.*
- O: Because it's like Sci-fi, story and multiplayer.
- *B: Okay, what do you play the most on it?*
- O: Erm, Heroes vs Villains. So you play like classic characters like Luke Skywalker, Han Solo and like Darth Vader. It's really fun, because you use certain abilities and you always want to win. You can also get certain collectibles, so its fun when you're rewarded with summet you really like.
- *B: So what kind of… can you expand on that?*
- O: So like skins you can get certain types, you can get voice lines which is like a bit of a taunt but also a way to celebrate.
- *B: Right okay. So… you like the collectibles?*
- O: Yeah, you can earn credits from completing missions or just like ranking up a level, and then you can buy character skins, you can buy emotes. So let's say, there's one from Yoda, he does like one of his abilities where he heals his teammates, and he does an emote where like he puts his hands out and he heals himself and you can see like green energy coming off him and it's really cool.
- *B: But you have to earn that?*
- O: Yeah you have to earn and activate it whilst you're in the game. Say you've just killed someone and you found it really hard, you can use the emote as like a bit of power.
- *B: So… do you like trying to earn those then?*

- O: Yeah, when you earn them it's like really nice and it's a really good feeling. You get to express yourself and you get to help other people doing that and I really like to help others.
- *B: Within the game?*
- O: Because I feel like, if I go into game chat and people are like "Oh thanks!" – it's just simple emotes that can help others a long way.
- *B: And do you know these people or?*
- O: If you go on random games then no. Some people will just be on game chat and you can make new friends. Which I see as really fun. You just talk and get a conversation and it's a bit easier in the game because you help each other in the game. So, like "Could you help me on this side?" or summet.
- *B: Okay so you kind of like the teamwork aspect of it?*
- O: Yeah yeah. You don't have to talk to them, you can just unplug your mic or mute them if you're being annoyed. Or you could just go on your normal party chat where you have invited people to talk. So it's really fun.
- *B: What do you do the most do you think?*
- O: I normally just go into party chat and talk with my friends.
- *B: Right okay. Erm… so kind of stepping back from specific games…*
- O: Yeah.
- *B: Why do you play video games in general?*
- O: Erm its like a pastime, I don't always want to be glued to my phone, I want to do summet like active, not really active, something like social. It also stimulates my brain to do summet. I feel like it helps me to accomplish

things, like to understand. And it's rewarding when you finish a game – and I can take that in to real life essentially, I don't just get it, I work for it. You never just get summet, you have to work and I learned that from video games – it's never that easy, you always have to do summet, like if it's a fighting game you always have to defeat a certain boss – you don't get it, you've gotta work hard for it.

- *B: And do you like that? Or would you prefer that it just went straight to the end?*
- O: I feel like it's better that way because it's more fun. You get a lot of challenge out of it and people like to have a challenge. There are games that are a bit more chilled, and some people prefer that, but me specifically I prefer like challenging games.
- *B: You prefer the challenging aspect. So, what would you say is the best thing about video games then?*
- O: The social aspect, you're just playing games that interest you, you're just playing with your friends and you're just learning. You're talking, getting a better friendship. I think a lot of people's friendships do increase.
- *B: Because of online gaming?*
- O: Yeah.
- *B: Okay. Erm… right, pick a random game.*
- O: Erm…
- *B: Just random.*
- O: Brawlhalla.
- *B: So, tell me three things you like about Brawlhalla, specifically though.*

- O: There's multiple characters you get; you have to earn the coins; you have to buy them and earn them; it's a lot of competitive play which I prefer. It's fun as well because it is custom gaming as well, its just the social aspect as well, you're always making friends, always talking to people and getting along, but it's not always like that.
- *B: Okay, and then one more.*
- O: Erm, just the dynamic where you never always have the same fight, it's always different, it's always varied. It also gives you challenges, some fights they are quite easy, some are hard. You get to learn certain moves, like combos or summet. I feel like that's really important, to learn – you never just wanna stay the same.
- *B: Okay, that sounds really good. And then, how are you earning the coins?*
- O: Doing challenges. Daily you get three challenges set and you can complete them to get coins. Also, just levelling up and beating people, you get a certain amount of coins.
- *B: Okay, and then what's the point of the coins? What do you do with them?*
- O: Erm, you can buy new characters, you can buy upgrades, you can buy skins which a lot of people find interesting, you can buy emotes.
- *B: Okay, so you like levelling up your character?*
- O: Yeah.
- *B: Okay, and then upgrades. Does that actually have an effect on the gameplay?*
- O: Erm yeah. So when you level up and buy them, you can get like extra damage for certain moves, like special abilities, or like just standard simple

attacks. Say you get an upgrade for your dexterity – it takes longer to get you out of the match, so you take more damage.

- *B: So you're upgrading your character?*
- O: Yeah.
- *B: Right… have you always played video games?*
- O: I haven't always but I started getting into it really when I had the PS3. That's when I started getting interested, when I was like five-ish we only had a PS2.
- *B: What was the first game you played?*
- O: The first game I remember playing was Lego Batman – one of the old ones. I was always interested in Lego and Batman, I find it cool that they were combining it, you can play as your favourite characters in it – I just find it cool.
- *B: Do you remember anything else about the game? What you liked about it at the time?*
- O: Like the story mode, but there were two aspects to it. So you can complete the Batman storyline and then you can play as the Villains on the other side of it – so it's never always the same.
- *B: Oh okay. Do you think that when you're older you'll ever stop playing video games?*
- O: I don't think I'll stop, I think I might grow up always playing games. Like I come home, I get my homework done, I'll eat and then I'll just play my videogames. When I'm older I'll have a job and everything so I'm going to be

a bit distracted from playing video games. I'll still play them, but not all the time.

- *B: How come you think you will still play them?*
- O: There's a lot of new games coming out, like there's VR (Virtual Reality) games which I think will be really cool to try them out. There's a lot of development, they will always be fun and there is a lot of socialisation – like some friends will be from America or summet, and you can only talk to them through like PlayStation, so it's the socialising I like.
- *B: The social aspect that you really enjoy?*
- O: Yeah
- *B: So, would you say that's what motivates you to play video games?*
- O: Yeah a lot, and just feeling accomplishment when you complete a game or you complete a level – a lot of people get a lot of confidence from completing summet. So say I complete my school work, I feel confident in doing more work. So in games, I feel more confident in the game and in fighting more people.
- *B: What would you say is your favourite game ever?*
- O: Ever?
- *B: That you've ever played.*
- O: This is a difficult one because it depends on the genre.
- *B: you can pick a couple if you want. If that helps?*
- O: I've always been interested in the Mortal Kombat games because it's a massive storyline and the fighting aspects of it. Also the Call of Duty

franchise, the storylines and the shooting. Different genres interest me in certain ways.

- *B: So you're not loyal to one genre?*
- O: I'm not entirely specific, but I like certain types like fighting, shooting, puzzles, I like strategy games – it just depends on how they've executed the game.
- *B: What do you mean by that?*
- O: Like certain aspects of it, like the graphics, whether it is animated or it a bit more realistic; certain controls also can be a bit difficult.
- *B: How do you prefer the graphics to be?*
- O: I prefer them to be a bit more realistic because its more relatable, but I don't mind the cartoonish games because I feel like there's a humorous aspect, and it doesn't always have to be realistic.
- *B: Anything we haven't talked about? Any games we haven't mentioned?*
- O: A lot of strategy games actually help in education – you can play games like chess online which is more strategy so it like flexes the brain a bit, which I'm interested in.
- *B: Do you ever play games like that?*
- O: Erm I don't play them as much now, but I did used to when I was in Year 7 because I was a bit more interested in playing chess and that.
- *B: Yeah.*
- O: And games like Portal, where you have got to think thoroughly.
- *B: Yeah definitely.*

- O: It's not only one thing that will work, its multiple things. I feel like that actually helps a lot of people, because it flexes their brain and is also stimulating it, which a lot of games don't do, they are simple, whereas games like education stimulate the brain – which is what education does.
- *B: Anything else?*
- O: No, that's it.
- *B: Thanks, you've been really helpful.*

Appendix M: Pen Portraits

For each of the participants in the study a pseudonym has been used in order to ensure confidentiality. Presented below is a short pen portrait for each participant so as to provide the reader with some additional background information.

Daniel

Daniel is a 13 year old male pupil who is in Year 8. Daniel shared that he plays video games between 12-20 hours per week and that he primarily plays games within the sports genre, with football games such as 'Fifa' being his favourite. Daniel frequently referenced playing games with other people, including his brother, his dad, his friends and his cousins. Such play with others seemed an important aspect of video gaming as a leisure activity for Daniel.

Pedro

Pedro is a 14 year old male who is in Year 9. Pedro is an above average pupil with regards to academic attainment and was able to speak eloquently about his motivations to play video games. Pedro shared that he played video games over 20 hours per week and that action/adventure games were his preferred genre.

Pedro spoke at a greater length than the other participants and was able to give detailed answers to questions asked. He demonstrated a good insight into why he played the games that he did, and as such little inference was needed at times on behalf of the researcher as Pedro explicitly named his motivations, e.g. "*it is just escapism more or less".*

Emily

Emily is a 13 year old female pupil who is in Year 8. Emily shared that she plays video games between 7-12 hours per week. Her taste in video games is rather eclectic and she seemed to enjoy video games from a wide variety of different genres. Emily struggled at times to articulate her answers coherently. Thus transcribing her interview was difficult at times. As such I listened to the recording of Emily's interview on multiple occasions in order to ensure I captured accurately what she had said. The reader might note that quotes from Emily's interview tend to include discourse from the 'researcher' so as to ensure the reader is provided with the necessary context.

Fred

Fred is a 13 year old male pupil who is in Year 8. Fred shared that he plays video games between 12-20 hours per week and that his favourite genres of video games are shooting games and action/adventure games. Fred was able to answer questions with a useful level of insight and frequently referenced the importance of narrative within video games. Fred was excited to take part in the interview and was eager to paint video games in a good light. On a number of occasions he drew parallels with

how video games could teach useful life lessons, e.g. "You never just get summet, you have to work and I learned that from video games".

Edward

Edward is a 13 year old male pupil who is in Year 8. Edward shared that he played video games for over 20 hours per week and indicated that he enjoyed a number of different genres, such as action/adventure, shooting games, fighting games and sports games.

Edward receives support at the special educational need level within school. As such, although he exhibits functional receptive and expressive language skills, he struggled at times to give answers in detail. Therefore Edward's answers were often very short and it was clear he had no intention of elaborating further. An interview schedule primarily based around open-style questions thus proved a poor fit for purpose in this particular interview. Ultimately, due to the closed nature of his answers, this led to much fewer quotes of Edwards being incorporated into the findings of the research project.

George

George is a 13 year old male pupil who is in Year 8. George shared that he played video games between 12-20 hours per week and that his preferred genre was shooting and fighting games. George spoke well throughout the interview and was able to give detailed answers. He often made reference to enjoying the ability to choose which game modes he played and the availability of customisation within games.

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