

# **Meeting the Needs of e-Therapy Users: Gamification in Web Based Therapy Systems**

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## 1.0 Introduction

Common mental health problems such as anxiety and depression are pervasive and negatively affect both the individual and society as a whole. Depression alone affects 300 million people globally, with fewer than 10% of sufferers receiving treatment (WHO, 2017). Although conventional psychological therapies can successfully treat these illnesses, there remains a significant dissimilarity between need and provision (Knowels, Toms, et al., 2014).

Psychotherapy is the process by which psychologists help individuals deal with psychological health issues that are negatively affecting their lives. Problems such as depression, anxiety, relationship dysfunction, eating disorders, substance abuse, and coping with long-term illness can all be addressed through therapeutic intervention. Psychologists apply research validated therapeutic methods to help clients learn positive adaptive strategies, which in turn leads to healthier, happier, more productive individuals. Talk therapy methods such as cognitive behavioural therapy (CBT), or interpersonal therapy (IT), provide a framework in which both therapist and client work cooperatively to identify belief systems and subsequent behaviours, which prevent the individual from accomplishing their goals (American Psychiatric Association).

The initial stage of the conventional face-to-face psychotherapy process usually begins when a person is unable to cope with life's stressors, and concludes by means of personal introspection, through peers, or by information in their environment that the source of their distress is related to their psychological wellbeing. The person decides that psychotherapy may provide a solution, and arranges an appointment with a psychotherapist (Elliott, Wesmacott, 2014). The therapist and client meet and establish a relationship, referred to as the therapeutic alliance, to commit to the therapeutic process. The process involves behaviour pattern recognition, diagnosis, and treatment plan. When the treatment is successful, the client relinquishes ties to their maladaptive coping mechanisms of the past, and begins to initiate free, appropriate, and voluntary patterns of action. Symptoms decrease, or the client achieves resilience to them through adaptive strategies. The final stage of treatment is reached when the client achieves autonomy, and accepts responsibility for their own life (Rivera, J.L.G. 1992).

Cognitive behavioural therapy (CBT) is a form of talk therapy that helps the individual overcome the negative thinking patterns that drive maladaptive coping strategies, view challenging situations in a more realistic manner, and subsequently deal with them more effectively. CBT approaches psychological problems as being based, in part, on distorted perceptions of reality, and the negative coping mechanisms the individual has learned as a response (American

Psychological Association). Individuals can learn to question those overly negative perceptions, and learn healthier coping methods that more accurately reflect the reality of the situation. CBT encourages the individual to change their behavioural patterns, face their fears, learn to calm the mind, and improve interpersonal relationships.

The efficacy of CBT in adult anxiety disorders has been shown in a multitude of studies. Positive treatment outcomes have been achieved for post-traumatic stress disorder (PTSD), social anxiety disorder (SAD), obsessive compulsive disorder (OCD), and panic disorder (PD) (Dialogues in Clinical Neuroscience, 2011). CBT has been shown to reduce the symptoms of depression, regardless of the initial severity. Guided use of a CBT workbook in clinical trials have a similar efficacy in the treatment of depression, as individual talk therapy (Hawley, Padesky, et al., 2017). CBT has proved an effective treatment in alcohol and other substance disorders, and has provided positive outcomes and ameliorated the damaging effects of bipolar disorder (BD), borderline personality disorder (BPD), and schizophrenia (Hoffman, Asaani, et al., 2012).

The traditional face-to-face therapy model of psychotherapy is frequently cost prohibitive, and difficult to provide in many locations however, and the struggle to meet the increasing demand for less expensive, more convenient, therapeutic modalities has driven interest in how treatment can be delivered more efficiently and effectively (Knowels, Toms, et al., 2014). Utilization of the internet to deliver technology-based treatment has emerged as an alternative to face-to-face therapy, with many web-based programmes designed using cognitive behavioural therapy (CBT). With reduced costs, and greater accessibility, internet mediated cognitive behavioural therapy (iCBT) has proven in clinical trials to be successful in the treatment of mood and anxiety disorders. During the psychotherapy process, users login to a secure server via a website or an app, and work on a series of modules with assignments to complete. Quizzes are conducted relating to completed modules, and this information can provide the therapist with data such as treatment outcomes, and user progress. Treatment can consist of web-based interaction with the programme material only, or along with synchronous, or asynchronous therapist intervention (Anderson, Titov, 2014). Synchronous interventions include video, messenger services, and telephone contact. Asynchronous intervention includes secure email, and other messaging communication technologies.

e-Therapy, or online therapy, is the term applied to psychological counselling, that is partially or fully supported by delivery of services online. e-Therapy is associated with the delivery of mental health information, and therapy, by means of online clinical evaluation and treatment

programmes. Psychological services can easily be accessed by online methods in a cost and time effective manner (Shandley, Klein, et al., 2011). Most e-Therapy courses are based on a progression of consecutive lessons that expand on past lessons, with additional assignments to consolidate the therapeutic process. Many allow revision of previous lessons, but prevent progression until previous course material been completed. (Andrews, G., Williams, A.D., 2015).

Although e-Therapy in general, and internet cognitive behavioural therapy (iCBT) in specific, have been shown to be effective in controlled trials, many online programmes struggle with low user completion rates, (Doherty, Doyle, et al., 2012). Many of the “first generation” of web-based therapy management systems were developed to replicate existing treatment methods, often merely reproducing written treatment programmes to display online, and with little analysis as to how technology could improve the therapy (Knowels, Toms, et al., 2014). MoodGYM is an example of an early stage e-Therapy software. The therapy programme is based on an internet cognitive behavioural therapy (iCBT) intervention, with five individual modules, and a series of personal assignments, and quizzes. There is no social interaction, media usage, or ability to personalize the software. In an evaluation of MoodGYM, only 97 out of 19,607 (0.5%) participants completed all 5 modules in an “open “ setting, and 41 out of 182 (22.5%) completed all of them in a trial setting (Christiansen, et. Al., 2004)

Gamification is the concept of applying game design techniques to non-gaming environments, to improve user experience (UX), and increase user engagement. At its heart, gamification builds on the motivation principles of games in general by increasing user engagement with digital content. Gamification has been incorporated successfully into several disciplines including Digital Marketing, e-Learning, e-Medicine, business, and politics. Game based e-Learning, provides an interactive teaching method, generating a positive emotional response, and successful learning outcomes (Offenholly 2012). Previous research has indicated that e-Learners not only like the game design elements of gamification, they also expect to achieve their goals as a result of them (De-Maros, Garcia-Lopez, et al., 2016).

Gamified e-Therapy systems for mental health however, are still at an early stage of development and validation (Thorens, Billeaux, et al., 2016). As a result, very little peer-reviewed research exists on how the user of an e-Therapy system engages or interacts with a gamified treatment programme, or on its impact to treatment outcomes or adherence rates. However significantly more research exists on the impact of gamification on e-Learning systems. Game design theory applied to e-Learning is aimed at procedural learning; students

are taught how to learn through skill acquisition (Hsu, Tsai, et al., 2015; Chalco, Andrade, et al., 2015). Since most therapy is designed to help clients modify behaviour by learning new skills (Folkens, Brackenbury, et al., 2014; Alahaivala, Oinas-Kuokonen, et al., 2015), then it therefore follows that gamification applied to e-Learning will offer significant insights into its clinical relevance in e-Therapy treatment systems, and will be examined as part of the literature review.

This purpose of this thesis is to answer the question “Meeting the Needs of e-Therapy users: Gamification in Web Based Therapy Systems”. This thesis explores the relevance of user experience (UX) in e-Therapy systems, focusing in particular on the area of gamification, and the ancillary subjects of social and design interaction. Game design principles incorporated into a well-designed e-Therapy treatment programme could hypothetically have a significant impact on the mental health of vast numbers of individuals, with the technology capable of achieving significant scale, far exceeding the scope of traditional face-to-face- therapy systems. Both individual practitioners and national health agencies could provide affordable mental health services that are designed using game design theory, to tackle the biggest health issues in society today, namely anxiety, depression, and substance abuse. The hypothesis of this thesis is that gamification and interaction can positively influence treatment outcomes, and adherence rates, by creating a positive learning environment for users of online treatment programmes.

The following research timeline applied to this thesis:

- November 2016 to February 2017 - a continuous thorough literature review was conducted to identify gaps in the research knowledge, and to identify the specific aims of the project based on research vision, plan, and knowledge gained from the literature.
- March to April 2017 – the first draft of the introduction was written up, providing the background, general context, and scope of the study, in addition to introducing the research question.
- May to July 2017- research into methodologies commenced, and which particular instrument to apply to the research question was determined. The first draft of the Methodologies chapter was written up, and a research proposal was completed and submitted to the Trinity Ethics Committee.
- August 2017- Ethics permission was received, and the research population samples were organized for interview.
- September 2017- The chosen research instrument was conducted, and the Methodologies, Findings & Analysis, and Conclusion chapters were completed. The abstract was drafted, and the final proofing of the entire thesis was completed.

In chapter two of this dissertation, a review is undertaken of previous work upon which the research will focus. At its lowest level of abstraction, the literature review will focus on a comprehensive review of the theory behind gamification, including the elements of game design theory. In addition, the literature review will consider how engagement affects online therapy systems, by analyzing data relevant to the subject of gamification, and interaction, in both the fields of e-Therapy, and e-Learning.

Chapter 3 considers the purpose of the research, and discusses the thesis question including the research methodology required to obtain an answer. The qualitative methodologies used to develop the research instrument are described including; research design, research strategy, research approach, the methods of data collection, and the population sample selection. The chapter will also include an analysis of the research methodology chosen.

Chapter 4 will focus on the findings and analysis of the research data gathered, based on the methodologies described in chapter 3. The structure of the data analysis, including themes and headings, as well as the representative coding system of the collected data will also be presented. The results of the research analysis will be described in sequence, and will articulate the key findings by means of a summary of the gathered data.

Chapter 5 will consist of a discussion on the results obtained in relation to both the research question, and existing knowledge. The chapter will discuss how the research obtained reflects, differs, and extends the knowledge of gamification in e-Therapy systems. The research findings will be interpreted, and their meaning outlined. A comparison between the research findings and the original hypotheses will be analyzed and compared. The limitations and recommendations for future research will also be discussed

## 2.0 Literature Review

Common mental health problems such as anxiety and depression are pervasive and have a negative impact on the individual and society as a whole. Depression alone affects 300 million people worldwide, with fewer than 10% of sufferers receiving treatment (WHO, 2017). Although traditional psychological therapies can successfully treat these illnesses, there remains a significant disparity between need and provision (Knowels, Toms, et al., 2014). Use of the internet to deliver technology-based treatment has emerged as an alternative to face-to-face therapy, with many programmes designed using cognitive behavioural therapy (CBT). Although CBT delivered through the internet has been shown to be effective in controlled trials, many online programmes struggle with low user completion rates, (Doherty, Doyle, et al., 2012).

As Thorens, Billeaux, et al., (2016) have noted, limited trial studies incorporating game design tools into digital therapies, have shown promising results. There is a significant body of research available on gamification in general, and on gamification in e-Learning in specific, however the area of gamification in e-Therapy has been surprisingly overlooked until recently. Very little peer-reviewed data exists for gamification in web based therapy systems. However, significantly more research exists on the impact of gamification on e-Learning. Game design theory applied to e-Learning is aimed at procedural learning; students are taught how to learn through skill acquisition (Hsu, Tsai, et al., 2015); Chalco, Andrade, et al., 2015). Since most therapy is designed to help clients modify behaviour by learning new skills (Folkens, Brackenbury, et al., 2014; Alahaivala, Oinas-Kuokonen, et al., 2015), then it therefore follows that gamification applied to e-Learning will offer significant insights into its clinical relevance in e-Therapy treatment systems.

One hypothesis of this thesis is that gamification can provide a positive therapeutic learning environment that would encourage e-Therapy users motivation, and that a gamified environment would have a positive impact on treatment outcomes. A second hypothesis is that gamification would improve programme adherence rates. There is considerable reference to interaction, both social and design, in the available research of game design theory, and these areas will also be considered.

The key search terms (and their truncated variants) included were, “e-Learning”, “User Experience in e-Learning” (interactive design, human computer interface (HCI), user interface (UI)), “Gamification in e-Learning” (game design theory), and “Interaction in e-Learning” (social). “e-Therapy”, “User Experience in e-Therapy” (interactive design, human computer interface

(HCI), user interface (UI)), “Gamification in e-Therapy” (game design theory), “Interaction in e-Therapy” (social),

Although the research will make reference to various mental health therapy methods, the primary treatment modality for this literature review will be cognitive behavioural therapy (CBT), and its online counterpart: internet cognitive behavioural therapy (iCBT). With the exception of references from the American Psychiatric Association, and the UX Magazine, the following criteria will also apply to the literature review:

<b>Inclusion criteria for review:</b>	<b>Exclusion criteria for review:</b>
Peer reviewed journal articles or conference papers published in any country between 2000 and 2017	Unpublished dissertations, book chapters, or papers published before 2000
Therapy provided for cognitive disorders such as depression, phobia, substance abuse, and anxiety	Therapy provided for cognitive disorders such as dementia, personality disorders, post-traumatic stress disorder (PTSD), or psychotic disorders
Technology used to deliver psychological therapy, and online learning programmes	Although the review will include references to technology-mediated therapy, the primary focus will be on therapy exclusively delivered by technology

## 2.1 Game Design Theory

### 2.1.1 Digital Games

Learning through play is fundamental to humans and to many other animals (Offenholly 2012). Digital games, such as massive multiplayer online role-play games (MMORPG’s), provide a positive and meaningful personal experience for their players, the understanding of which requires analysis through user experience (UX), user psychology, and human computer interaction (HCI) (Takatalo, et al., 2010).

Digital games; counter intuitively, are often hard work, and involve higher order thinking. Players are receptive to the significant effort often required, because of the enjoyment and satisfaction obtained from intense motivation. The motivation in digital game play is based on the level of challenge, sensations and feelings, a gaming community that includes opponents, and/or friends, and a storyline that attracts players and elicits experiences (Offenholly 2012).

Experience, the result of an individual interacting with the gaming environment, is important in gaming. Players chose games that allow them to connect with previous experiences, and establish new experiences while playing. New experiences allow players to advance their skills, and pursue higher achievement levels (Han, Hsiao-Cheng 2015).

The behaviour of gamers during digital game play is significant. Gamers will not give up on a game, regardless of the outcome, and will continue to play until they succeed in achieving the goals of the mission (Takatala, et al., 2011). They comprehend what problem solving strategies are required, follow instructions, use trial and error strategies, sustain their focus, and research collaboratively in order to achieve their goals (Han, Hsiao-Cheng 2015).

For games to be accepted it is essential that games provide high quality enjoyable player experiences. The most significant aspects of digital games are how players interact with a particular game, and their perception of that interaction. Researchers use game play theory, and methods adopted from human computer interaction (HCI), to analyse players experience, and to determine where games fall short (Desurvire, EL-Nasar 2013). Games must ultimately be fun, and one area, which has proven critical to game adherence, is the level of challenge at each stage during the game. Challenge, particularly during introductory levels, is often the area where players develop a negative perception during a game. They can find themselves stuck, and consequently start to get bored, or believe they cannot win. Desurvire and Wiberg (2010), suggest a set of heuristic evaluations that focus on creating positive player experiences:

- Games must be fun in the initial stages, and any goals presented are easily achievable.
- Limitations are placed on penalties in the game, or for repeated failures.
- The pace and activities of the game varies to reduce boredom or fatigue.
- The game offers both major and minor goals, the former presented early, and the latter throughout the game.
- Required skills needed to achieve goals are taught prior to needing them.
- A reward system is in place to connect the player more intensely with the game.

The traits inherent in digital games are the ultimate goal, the rules of the game, the feedback system, and the players' willingness to play. Elements of good game design extend beyond mere usability, and must consider cognitive and social psychology, skill levels, rewards, motivation, feedback, and goals (Han, Hsiao-Cheng 2015).

### 2.1.2 Game Flow

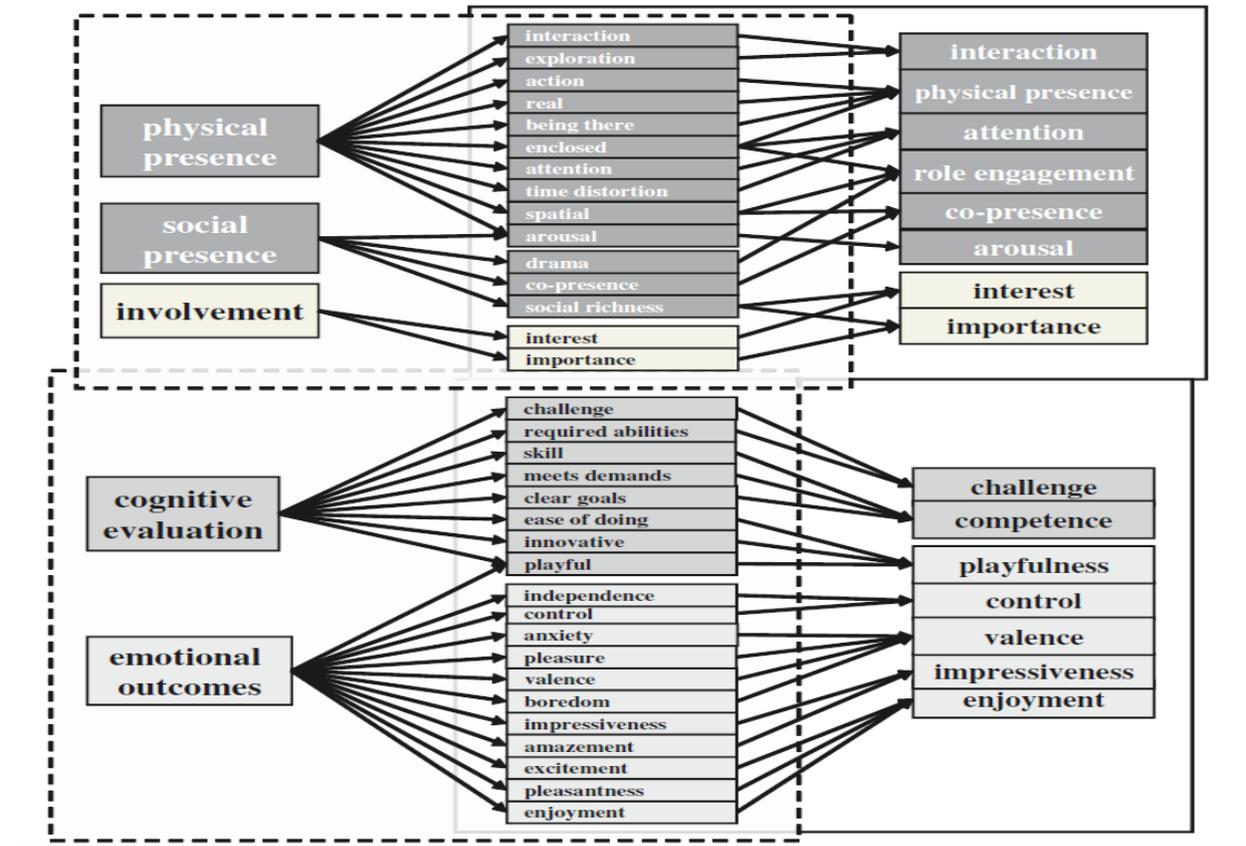


Figure 1 the Presence Involvement and Flow Framework (PIFF)

Flow theory, first suggested by Csikszentmihalyi in 1998, is a psychological state where people experience deep involvement, enjoyment, and creativity (Han, Hsiao-Cheng 2015). Game flow attempts to create the optimal cognitive and emotional experience for gamers. Whitton (2011); posits game flow improves game design by;

- Providing challenges that requires skills to achieve.
- Evoking imagination, empathy, and fantasy, to create immersion into the game.
- Providing clear goals.
- Creating an altered state, and a diversion from reality.
- Offering immediate feedback.

- Incorporating social interaction into the game.
- Creating both a sense of control, and a lack of worry about control.

The presence involvement flow framework (PIFF) (Takatalo 2011), offers an insight into gamer's psychological experiences during digital game play. PIFF attempts to analyse the psychological needs of gamers, and offers a framework to describe how game elements can provide an environment to meet those needs. Presence is described as being in a realistic, socially rich virtual environment that is co-shared with others. Involvement focuses on the relevance of the digital environment to the psychological needs of the individual. The ultimate goal of PIFF is to correlate psychological needs with good game design, and provide rich experiences for gamers.

## **2.2 e-Learning**

e-Learning, Distance Education, or Internet Based Learning, refers to the digital collaborative process of learning through computers, networks, and the internet (Tyler-Smith 2006).

e-Learning can be considered as *“all planned learning that normally occurs in a different place from teaching, requiring special techniques of course design and instruction, communication through various technologies, and special organization and administrative arrangements”* (Moore, Kearsley, 2005). Electronic processes and applications deliver content such as video, audio, and text to create a virtual learning environment. In the traditional classroom based learning model, the teacher provides direction, in a live synchronous environment. In e-Learning the student is self-regulated, and becomes responsible for providing their own direction, often in an asynchronous or autonomous environment (Wu, Tennyson, et al., 2015).

The “first generation” of computer-based education; programmed logic for automatic teaching operations (PLATO), developed text only educational material reproduced to display on a mainframe. With the increase in mainframe processing power, and the advent of the internet, PLATO became the first distance e-Learning platform, developing threaded messaging systems, multi-user games, user anonymity, and real-time chat capabilities (Encyclopaedia Britannica, 2017).

e-Learning successfully provides services that can be offered in real time, or in a delayed manner, and provides the opportunity to overcome geographical boundaries while increasing flexibility, and convenience to students. Massive open online courses (MOOC's) can provide the same content as regular courses, except online (Chang, Hung, et al., 2015). Learning outcomes are achieved at a distance. Individual characteristics such as motivation, along with the

perceived quality and usability of content, have a direct impact on both outcomes and adherence rates (Tyler-Smith 2006).

Baseline student characteristics directly affect outcomes in e-Learning. Individuals with high levels of self-efficacy; those with an internal locus of control, show greater motivation and persistence in their online learning endeavours than those who believe their lives are controlled by external events (Smith, 2006). Higher levels of self-efficacy predicts user engagement, subject mastery, and willingness to learn (Jarvella, Jarvenova, et al., 2013). These are students who are engaged with the e-Learning curriculum. Conversely, students who are not engaged, lack motivation, and are disinterested in learning. Understanding how to maintain the interest of both types of individuals is critical to the success of any online learning environment.

Collaborative engagement and social interaction directly affects student self-regulation (Wu, Tennyson, et al., 2010).

The social environment has a significant impact on drop-out, withdrawal, and non-completion rates from eLearning programmes. Attrition rates as high as 70-80% from distance education courses are not uncommon (Tyler-Smith 2006). Retention rates are increased significantly when students are socially integrated with the e-Learning institute. Social interaction directly affects the motivation and performance of students in e-Learning environments (Jarvela, Jarvenova, et al. 2016). Gamification provides interactive community support (Takatalo 2010), where students feel they are not alone. Social interaction allows students to learn from both their peers, and teachers alike ((Kopcha, Ding, et al., 2016). The combination of social networking and gamification creates an engaging and collaborative environment for students to learn (De-Maros, Garcia-Lopez, et al., 2016; Takatalo, Hakkinen, et al., 2010).

### 2.2.1 Gamification in e-Learning

Gamification is the concept of applying game design techniques to non-gaming environments, to improve user experience (UX), and increase user engagement. Game based e-Learning, provides an interactive pedagogy, generating a positive emotional response, and successful learning outcomes (Offenholly 2012). Previous research has indicated that learners not only like the game design elements of gamification, they also expect to achieve their goals as a result of them (De-Maros, Garcia-Lopez, et al., 2016).

Game based learning methods; the immersion and flow state of serious play, can promote effective learning behaviours (Hsu, Tsai, et al., 2015). Gamification flow adopts a spiral

curriculum method of learning, where students begin with simple tasks to build their skills, and then advance to more challenging problems applying those skills developed during the initial stages of the course. The spiral curriculum approach, in conjunction with gamification, provides an iterative method of learning, where advancement is achieved with skills gained as the subject material deepens. New learning is based on previous learning, students advance as content becomes more complex, and topics can always be revisited (Masters, Gibbs 2007). Both short and long term goals can be clearly defined and all within a supportive social network where students can have their work showcased, and are not afraid to take risks (Offenholly 2012).

Gamification, when applied correctly to educational pedagogy, has the power to significantly engender student engagement and interest (Whitton 2011; Offenholly 2012). Gamification creates a positive learning environment, which promotes self-motivation in students. Negative affective states produce negative learning outcomes (Chalco, Andrade, et al., 2015). To overcome this negative state, immersion into the learning environment using gamification can enhance a positive affective state, known as flow. Flow provides the optimal learning experience where students are energized, fully involved, and anticipating success. Learning tasks must maintain a balance with skill levels in order to maintain flow.

Gamification allows students in e-Learning to begin to play the “game” early on, without having to spend too much time with introductions and protocols. Tasks that exceed the learners’ skill level will quickly lead to boredom, and thus negatively affect immersion and flow states. The complexity of the task at each level must not exceed the skills achieved in previous levels, or students may become bored and disillusioned, and this will have a negative effect on engagement (Whitton 2011). The level of challenge must be commensurate with the student’s level of skill (Chalco, Andrade, et al., 2015). Gamification must provide attainable goals that pushes students out of their comfort zone. Pleasant frustration increases motivation and engagement (Kopka, Ding, et al., 2016).

Unlike traditional face-to-face learning environments, students can explore by trial and error in gamified learning environments. There are no harsh penalties for failure, with failure only requiring the repeat of tasks at that particular level (Offenholly 2012). By constantly attempting a task using creative methods, students will eventually master a skill, and without any harsh penalties. Gamification, and a content rich environment, will hold the student’s interest, and actively encourage them to practice new concepts and skills (Kopcha, Ding, et al., 2016). In

gamified learning, students are not afraid to face challenges and in fact look forward to them (Takatalo, 2010).

Gamification in e-Learning systems borrows the concept of award mechanisms from digital games and students are awarded for skill mastery. Awards such as points, currency, and leaderboard positions, provide positive feedback to students, and allows them to have a sense of accomplishment. The reward system of gamification in eLearning enhances user engagement by promoting interaction with the learning environment (Kopcha, Ding, et al., 2016).

Design decisions must reflect the needs, behaviours, and expectations of e-Learning students, and learning programmes need to be considered in the context of interactive social language games (Rapanto, Cantoni, 2014). The learner's preferences and needs must be taken as a starting point in quality e-Learning programme design and delivery (Ehlers, 2004).

Technology based information, and course related materials that provide value to learners is referred to as content (Wu, Tennyson, et al., 2010). The content of e-Learning courses can be delivered through media such as online discussions, web based courses, questionnaires, and tutorials. Text, audio, video, and graphics provide the media of knowledge transfer in e-Learning programmes. Since the pace at which content is delivered has a direct impact on student attrition rates, content needs to be limited in the initial phase of induction, with the focus on online learner identity, and establishing group norms and cohesion. Information architecture needs to limit content options to facilitate the early induction phase (Tyler-Smith 2006).

In their online magazine: *User Experience Professionals Association*, Rebecca Cheng, and Iris Poon considered gamification in relation to two online e-Learning platforms, to indicate their respective approaches to interactive design. They argue that e-Learning interactive design must consider not only incentives and motivation, but must also offer design strategies that aide the student to apply self-motivation that can positively affect their learning experience, and learning outcome. They applied game design principles to two online e-Learning courses, Duolingo, and Codecademy. Duolingo: an online language course, applies the principles of self-motivation and forethought, by assisting users to control their sessions and setting personal goals. Motivation in the form of social persuasion is applied with phrases such as in the use of the first person "I want to learn" displayed above the language selection area. The existing member numbers

already learning that particular language are also displayed to assure the user that they too can master their chosen language.



Figure 2 Users select the language they want to learn on Duolingo

Duolingo addresses the importance of both user experience (UX), and user interface (UI) design, to engage learners in self-monitoring and self-control of their goals, strategies, and motivation (Cheng, Poon 2016). The application provides a coach like feature where learners can set daily goals, and a progress panel which then displays, comparing goals with actual progress. Learners can interactively set specific strategies to meet their desired goals. A skills tree changes colour from grey through to gold when the course material is completed, providing a visual clue to the user to monitor their self-efficacy throughout the learning process. In addition, the user can reach out for peer support from individuals more knowledgeable in the particular language.

Duolingo assists users in reflecting on their progress and examining their level of self-satisfaction, with visual tools such as a progress bar, mastery level colours, and fluency scores. These interactive elements help the user in planning similar tasks in the future. A “Strengthen

Skills” feature reminds users to practice the words they learnt. Social interaction in the form of peer leaderboards allows users to follow one another’s progress, and a type of currency known as “Lingots” can be gifted between peers to strengthen performance.

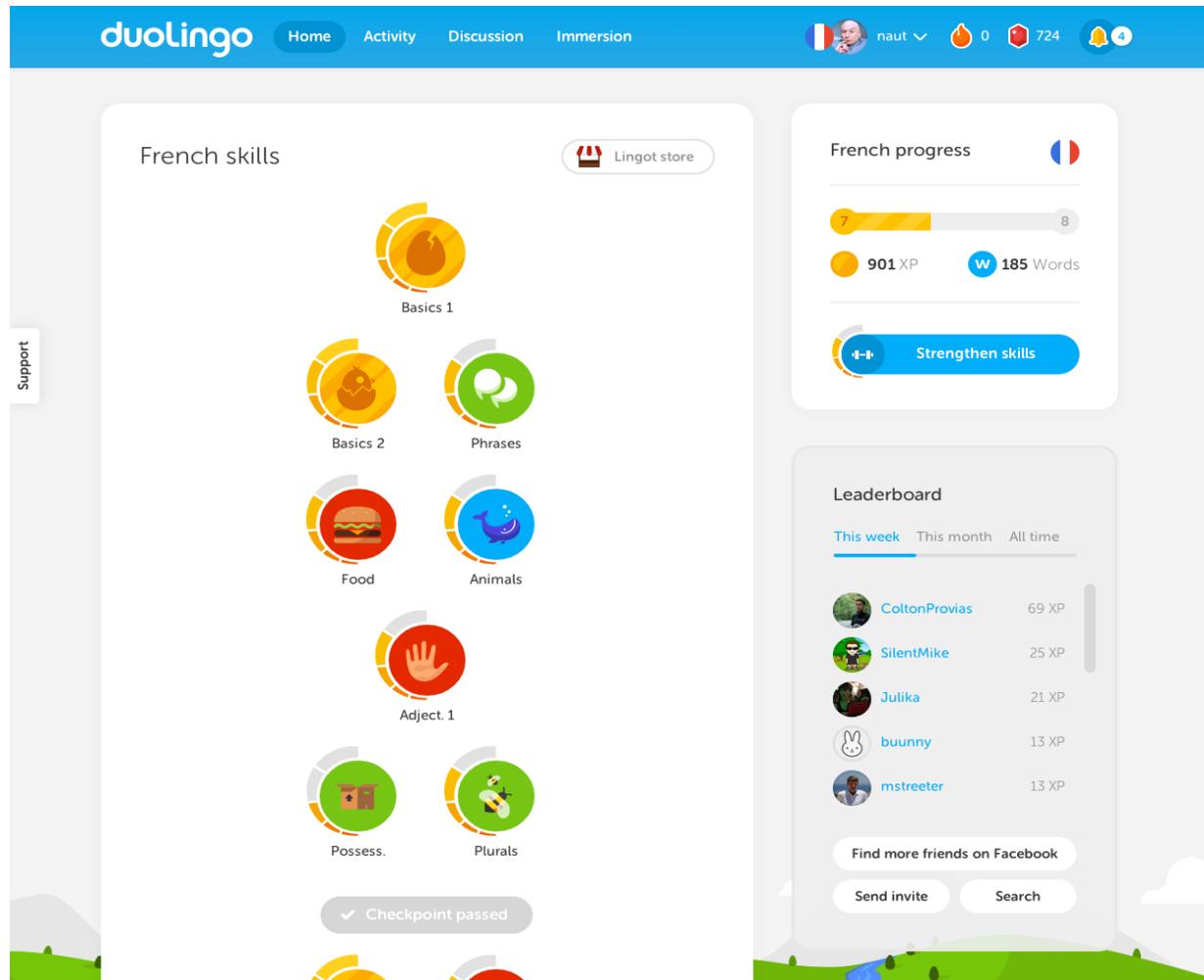


Figure3 Duolingo Language Skill Tree

During the forethought phase of learning on the coding platform Codecademy, users are shown the learner benefits of the course, to stimulate their interest. To demonstrate the intrinsic value of the courses on offer, Codcademy displays user’s success stories on their index, speaking directly to learners ambitions with Life Story statements such as “This is magic. Wow. I can do anything now”.

Beginner level coding tutorials are designed to help students design their own learning path with clear achievable goals (Cheng, Poon 2016). Beginners are offered simplified challenges prior to the choice of learning path to promote self-efficacy and motivation. Tasks as simple as entering

their name into sample code are displayed in the initial phase, to enable students to feel more confident with the self-learning process.

```
1 var myName = "Codecademy";
2
3 var red = [0, 100, 63];
4 var orange = [40, 100, 60];
5 var green = [75, 100, 40];
6 var blue = [196, 77, 55];
7 var purple = [280, 50, 60];
8 var letterColors = [red, orange, green, blue, purple];
9
10 drawName(myName, letterColors);
11
12 if(10 < 3)
13 {
14     bubbleShape = 'square';
15 }
16 else
17 {
18     bubbleShape = 'circle';
19 }
20
21 bounceBubbles();
```

Figure 4 animate your name task on Codecademy

User satisfaction (US) plays an important role in the adoption of IT systems, online course completion, and learning outcomes in the e-Learning environment (Thoms, Erylmaz, 2014). Students must have a positive regard for the e-Learning tools available. Satisfaction is based on information and knowledge availability, the convenience of learning, and the “stickiness” of online interfaces. Inversely, e-Learning platforms that lack social interaction, and have an inefficient learning system, invokes user dissatisfaction (Sanchez-Franco, Peral-Peral, et al., 2014).

Personalization and adaptivity to users individual preference is important in successful interactive design. Users must be able to login and continue where they left off in previous sessions. Course content needs to be presented through multimedia channels, text, video, audio, film. An introductory stage needs to provide advice and any necessary counselling in e-Learning systems. Important information such as course goals, tutor qualification, course content, will need to be clearly stated to the user (Ehlers, 2004).

Tutor support is considered to be an area of significant importance in e-Learning, where students can communicate and cooperate with online tutors. Regardless of individual preferences, between 74.4% and 97.7% of students agree with statements such as tutor support is important, and very important (Ehlers, 2004). Contact interaction between instructors and learners, is a valid measure of performance outcome (Wu, Tennyson, et al., 2010). In relation to interaction, students not only want to receive feedback from tutors, they want to give feedback to the tutor as well. Although students agree with the importance of tutor support, their preference of delivery methods varies. Student are divided on areas such as active moderation by the tutor, or a learner oriented interactive style, versus a content-based interactive style.

e-Learning courses provide users with options regarding social interaction. Online synchronous discussion (OSD) methods involve audio, video conferencing, text, and chat, delivered via the internet for real time communication. Social interaction sequences on e-Learning platforms should especially focus on communication in the form of online discussions, face-to-face chat, and in presence phases (Ehlers, 2004). The social and cognitive presence that exists with OSD significantly influences learning outcomes on e-Learning systems. When OSD is included in the course strategy, students engage more with the learning process, feel more connected to their peers and tutors, and achieve higher grades (Rockinson-Szapkiw, Wendt, et al., 2016). Online asynchronous discussion (OAD) involve learning using email, discussion forums, internet accessible web pages, and management software systems such as Blackboard. Many e-Learning courses are designed on OAD as this offers the learner the opportunity to reflect on the course material before initiating contact, to learn in their own time, and does not require them to be either physically or virtually present at any set time (Benshoff, Gibbons, 2011).

### **2.3 e-Therapy**

e-therapy is a mental health treatment modality that is wholly or partially delivered online, and allows for both synchronous and asynchronous communication between an e-Therapy user and a mental health practitioner. The “first generation” of computer based therapy systems were developed to replicate existing methods of therapy, for example with written treatment programmes merely reproduced to display online, and with no analysis as to how technology could improve the therapy. e-Therapy users expressed the desire to have reactive personalized content, that gave recognition to who they were, and their self-controlled treatment path. By allowing users and peers more active control in the therapeutic process, e-Therapy could encourage more positive treatment outcomes (Knowels, Toms, et al., 2014).

### 2.3.1 Gamification in e-Therapy

Game based approaches for mental health disorders are still at an early stage of development and validation (Thorens, Billeaux, et al., 2016). Computer based or online therapies incorporating serious game design tools have produced promising results in the treatment of depression and cognitive behavioural therapy (CBT). Serious games in this instance are the use of gaming interventions to deliver digital treatment programmes. The use of gamification in e-Therapy draws on the addictive nature of massively multiplayer online role-playing games (MMORPG's), and relies on positive reinforcement using reward systems, which cause a release of dopamine, and promote adherence to the therapeutic game. Adherence can also be enhanced by adopting the peer reinforcement effect of MMORPG's, where both synchronous and asynchronous social interaction can occur within the game. The feeling of connection with others holds the key to adherence in serious psychotherapeutic games (Fleming, De-Beurs., et al., 2016).

Gamification has the potential to increase self-motivation (Forman, Goldstein, et al., 2017). Reward systems such as points, badges, levels, and leader-boards can provide interactive incentives to practice skills, and maintain adherence with the treatment programme. Interaction increases engagement, which in turn increases motivation in lifestyle intervention systems (Love, Sanders, et al., 2015). Gamification can be viewed as a form of persuasive or motivational design, where indirect routes of persuasion invoking fun and emotion are displayed initially, with more rational content provided in a separate area, and at a later stage (Alahaivala, Oinas-Kuokonen, et al., 2015).

Synchronous interaction can occur in online mental health interventions by means of an avatar, a digital character that individuals can use to represent themselves, and they can control (Rehm, Foenander, et al., 2016). This method of interaction is suggested as a replacement to face-to-face therapy in online or computer based applications. Therapists and clients can communicate through their virtual representative selves and deal with treatments such as anxiety disorders. Avatars can decrease stigma by allowing users to create a virtual identity, and interact anonymously (Love, Sanders, et al., 2015). Programmes such as *Second Life*, offer peer support communities, where users can interact and discuss sensitive issues.

The most critical element of gamification is engagement; the ability to capture users attention long enough to expose them to treatment (Love, Sanders, et al., 2015). Folkins, Brackenberry et al., (2014) assert that gamification; far from being a mere system of points and badges, requires

a deeper understanding of what makes digital games so engaging. They suggest six elements of game design theory that they consider relevant to e-Therapy systems:

- Immersion in the game, the player's thoughts and feelings are engaged.
- Discovery of how to play with minimal instruction.
- The ability to take risks, to follow your own path.
- Skills learned at earlier levels can be applied later in the game.
- The ability to identify with characters that can be controlled.
- Reward systems giving constant feedback.

Thorens, Billeaux, et al., (2016), argue for the potentially attractive components of gamification:

- Positive reinforcement with the rate of reward distributed throughout the game to optimize the release of dopamine at critical times.
- Content that has visual and emotional appeal.
- A virtual social network that allows users to interact.
- Immersion into a realistic but safe environment.

Whyte, Smith et al., (2014), propose important gamification design elements:

- A narrative that provides context for the subject content.
- The game is focused on both intermediate and long term goals.
- Challenges are designed to be attainable and based on skills from previous levels.
- Continuous feedback and reward systems to motivate users.
- Users can maintain autonomy and design their own path through skill levels.

Interactive design can simulate empathy for the user's feelings through sympathetic content messages and graphics. A sense of anthropomorphism can be achieved through design strategies, with users considering the computer with personal identifiers such as "he", or "she". Some users developed a therapeutic alliance with their e-Therapy programme, with one stating "I felt like the [computer] cared... it was like speaking to somebody but different" (Knowels, Lovell, et al., 2015).

## **2.4 Silver Cloud Health**

The e-Therapy programme Silver Cloud Health is a web based therapy system, which has incorporated the concept of gamification into its design. The design of the interface and the delivery style of the content creates a rich environment, where imagination, empathy, and

fantasy can combine to create an immersive experience. Each user logs into a user admin area, which can be personalized and controlled. Treatment modules are displayed in a convenient manner in the user admin, with the ability to self-regulate, and design your own individual programme.

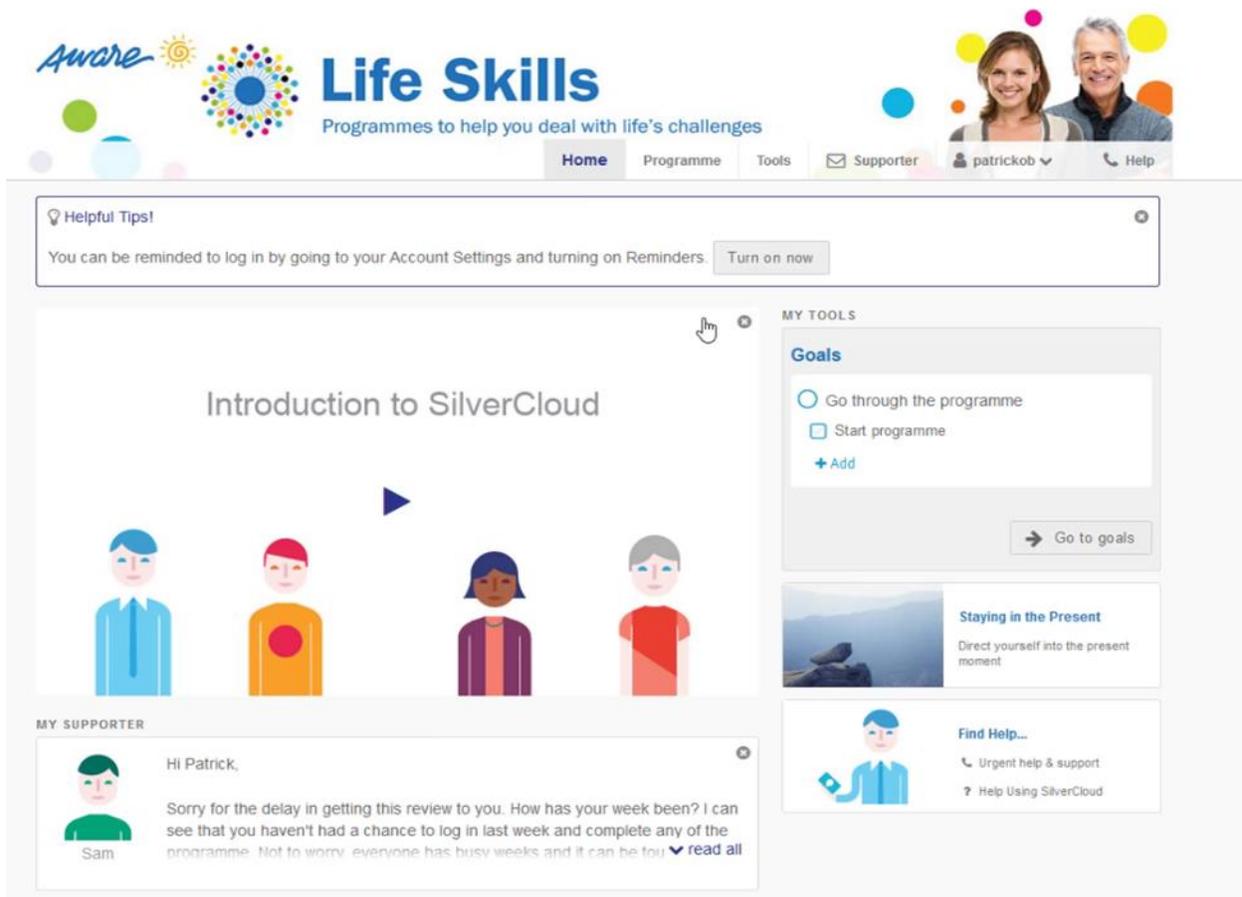


Figure 2 Silver Cloud Health User Admin

The rules of the “game” are explained by means of an introductory video and an intuitive programme design. Game flow is enhanced by means of easy to digest therapy modules, with clear concise goals, both minor and major, and a challenge that requires skills to master. Relaxing activities become unlocked to both provide a reward, and to alter the pace and intensity of the therapeutic process. Game flow is further optimized by an asynchronous supporter message display, to increase social interaction by means of personal support, encouragement, and reviews. Each module begins with an introductory video with people explaining the module content, which further adds to the social aspect.

Self-motivation is addressed within the software by the design of the programme, the ability to control sessions, and the ability to set goals. The content of the programme is delivered by means of text, audio, video, graphics, and animation, which creates a positive motivational environment. Personal stories, exercises, and interactive activities are designed to encourage the user to both learn, and adhere to the programme. Self-reflection is encouraged in the programme by means of a journal and goal setting area, where both goals and mood can be recorded, and progress monitored. Within each module, People's personal journeys with mental health are displayed along with their profile image, to encourage motivation by showing the benefits of adherence to the programme.

## **2.5 Generation**

### 2.5.1 Generation X

Generation X is a demographic group who were born between the early 1960's, and late 1970's. The group, also referred to as the MTV Generation, grew up in the transition phase from analogue to digital, and many are computer literate (NY Times, 2017). Nielson (2016) estimates that Generation X spends more time on social media platforms like Facebook, than the younger demographic, the Millennials.

### 2.5.2 Generation Millennial

Millennials are the demographic group who were born between the early 1980's and the late 1990's. Often referred to as the first true "*digital Natives*", they are the group who are identified as being most familiar with digital communications, media, and technology. The internet is part of their lives, and many are gamers. The majority of Millennials play at least three digital games a week. Games are viewed as a means to obtain work and life skills, create winning strategies, and solve problems (Forbes, 2014).

## **3.0 Methodology**

### **3.1 Introduction**

The review of relevant literature has produced a recurring theme of e-Therapy as a technological solution to address the demand of mental health therapy that cannot be met solely by the traditional face-to-face therapy model (Knowels, Toms, et al., 2014; Thorens, Billeaux, et al., 2016; Fleming, De-Beurs., et al., 2016). e-Therapy software however, have experienced significantly high rates of attrition (Thorens, Billeaux, et al., 2016; Doherty, Doyle, et al., 2012), thereby seriously affecting their suitability to deliver mental health programmes. One method of increasing “stickiness” and user engagement that is still in its infancy is the application of gamification to e-Therapy system design. As Offenholly (2012) has espoused, game based design provides an interactive platform, which can generate a positive emotional response, and successful programme outcomes.

#### **3.1.1 Purpose of Research**

Chapter 2 highlighted both the critical need for successful online treatment programmes, and the current low levels of adherence on existing e-Therapy software. These two conditions were primary drivers for the research. To address the goals of this study, the researcher developed a research strategy that supported the exploratory and descriptive nature of the research.

This research focused on the importance of gamification and interaction on web based e-Therapy systems, by comparing two e-Therapy web based systems; one gamified, and one without gamification, and by designing a method to gather the opinions of sample populations that was coded for trends and differences in the resultant data. Silver Cloud Health, which had already applied many game design protocols to their online platform, was chosen as the gamified software, and MoodGYM, represented the non-gamified software. The purpose of the research was to explore the impact of the gamification elements of Silver Cloud Health on user experience (UX) and retention rates, against the non-gamified MoodGYM, using sample populations, and to present the research findings in this paper. Data collection and analysis provided information comparing a gamified e-Therapy system, against a non-gamified e-Therapy system, to determine if game design theory created a more engaging e-Therapeutic environment, conducive to both positive user experiences, and higher programme adherence rates.

#### **3.1.2 Research Questions**

1. Meeting the Needs of e-Therapy Users: Gamification in Web Based Therapy Systems

2. What do e-Therapy users want?
3. What are the benefits of making e-Therapy into a game
4. What role can gamification play in increasing adherence rates in e-Therapy systems?
5. Can gamification improve user experience (UX) in e-Therapy systems?
6. What importance has interactive design on the motivation of e-Therapy users?
7. What role has social interaction in e-Therapy?

## **3.2 Research Design**

This section presents the research design, data collection, and data analysis procedures that were decided to be most suitable to address the formulated research questions. Both the practical procedures of the research design and the theoretical background of the chosen design will also be discussed.

Creswell (2014): in addition to the nature of the research problem being addressed, refers to research design as procedures of enquiry, and “specific research methods of data collection, analysis, and interpretation” to determine which approach to study a topic. De Vaus (2005) asserts that in order for the research results obtained to answer the research questions as unambiguously as possible, the research needs a structure before data collection or analysis can commence. Maxwell (2013) suggests that typological or linear approaches provide a prescriptive model for research design, by arranging tasks and planning involved in a study into an optimal order.

The research question addressing the role of gamification and interaction in web based e-therapy systems was conducted by means of qualitative, phenomenological, grounded theory, and focus group research design, with data collected through a semi-structured interview process.

### **3.2.1 Qualitative Research**

In comparison to the oftentimes rigid nature of quantitative methodologies, qualitative research methods are considered a more descriptive, and in-depth approach to data collection.

Qualitative methodologies, lends itself more readily to descriptive real life situations where the data required is based on social experiences. Grounded in reality, qualitative research seeks to find information from the everyday world of individuals, and the research sample size is frequently small to explore their reality in-depth. The historic origin of qualitative research comes

from anthropology, sociology, humanities, and evaluation, (Creswell, 2014). Qualitative research is grounded in real life, allowing researchers to examine how social experiences are created and given meaning. Mason (2002) adheres to the concept of qualitative research methodologies as a way to explore *“a wide array of the social world, including the texture and weave of everyday life, the understandings, experiences, and imaginings of our research participants, the ways that social processes, institutions, discourses or relationships work, and the significance of the meaning they generate”*. Participant sample sizes in qualitative research are often small. The value attributed to this form of methodology is the depth and diversity of the data collected, and the complex understanding, which can be attained from the findings.

### 3.2.2 Phenomenological research

Phenomenology is a design of enquiry coming from sociology, philosophy, and psychology in which the researcher describes the lived experiences of individuals about a phenomenon as described by the participants (Creswell 2014). The phenomenological approach to qualitative research achieves its goals through the development of a comprehensive understanding of human experiences. The researcher seeks to solicit information regarding the subjective experiences of selected participants who have experienced a shared phenomenon, and then by means of data analysis, synthesise the interview components into a final report (Goulding 2004). The meanings and experiences of the participants from this method of research are allowed to emerge, without any imposition from the researcher, with the aim of recording raw data that is true to the participants own transcripts.

### 3.2.3 Grounded Theory

Grounded theory is a qualitative research coming from sociology in which the researcher develops a theory about a phenomenon of interest, grounded in the views of participants (Creswell 2014). Grounded theory is a complex iterative process, using multiple stages of data collection, from which core theoretical concepts are identified within categories of information. Tentative linkages are developed between the theoretical core concepts and the data. Grounded theory differs in a number of respects from other qualitative methodologies, particularly with regard to clearly defined sampling practices, which are determined prior to data collection (Goulding 2004). The researcher must collect the sample data until saturation point has been reached, or when no additional information is found in the data. The research data for grounded theory can come from the life histories of participants, secondary data, and introspection.

Regardless of the data source provided for this method of research, the data must undergo constant comparison in order to detect themes, and emergent concepts contained within the samples. When both data themes and core concepts have been detected, emergent categories can be coded to provide theories for the research phenomenon. The process of categorizing qualitative data is referred to as coding. Coding categorizes data, and describes the implications and details of core concepts. Commencing in an open style to examine the data in minute detail, and developing general categories, then gradually becoming more focused to describe the implications and details of emerging data grounded theories, used to explain the research phenomenon (Trochim 2006).

### 3.2.4 Focus Groups

The focus group is an effective research tool that is adept at uncovering the true thoughts and emotions of group participants. The interviewer is afforded the opportunity to record both the verbal and non-verbal communications within the interview process, which often provides a clearer understanding of people's intimate thoughts and perceptions (Mason 2002). Focus groups as a qualitative methodology comes from the field of marketing, and communication research. The focus group is a common research methodology in the IT sector, particularly in the area of user experience (UX) in software design, where the research data requires information on how people feel or think about usability (Nielsen, 1997). The complexity of behaviour and motivation are intrinsic to the research question regarding the role of gamification in e-Therapy, and focus groups provides access to these forces. The group interaction unfolds in the presence of the researcher, and this allows for any follow up questions to be created on the spot. Focus groups allow for information to be gathered on the research question, which would be considerably more difficult in structured interviews, or by means of surveys. In addition, both the range and intensity of opinions on how this phenomenon affects the participants is critical to the research question, and focus groups allows this data to be qualitatively measured.

The focus group is a form of organized group interview consisting of individuals who have a homogenous background, where a focus group moderator records the communication between research participants, in order to generate data. This form of research requires a highly specific group sample, and this is created through purpose, size, procedure, and composition methodologies. The group is "focused" on a collective activity, and the interaction between participants is the method used to gather the research data. The main aim of this type of

research is to explore the participants' knowledge, and points of view, to find out not only what they think, but also why they think as they do (Kitzinger 1994).

The purpose of a focus group is to allow the participants to present issues from different perspectives, allowing for elaboration of views and values, which would not be possible in a one-to-one interview process. The purpose of the interviewer in a focus group is to listen, and gather information, using a discussion guide that constitutes the outline of the major questions that will be asked in the group. By means of a series of open-ended questions, the interviewer can facilitate a discussion on the participants points of view, which if successful will provide data, rich in unique interpersonal vocabulary, participant generated content, and priorities (Kitzinger 1995).

Since the focus group is both situational and interactive, the best form of guided interview technique to utilize is the semi-structured interview, where a group can be guided through a particular set of topics (Mason 2002). This method of research works best when the participants and the researcher are tailor-making situational information on the spot, by frequently taking the research in new and often unexpected directions, and thereby producing richer and more complex data. Interpersonal communication at this level produces responses that tap into different day-to-day communication styles, with interaction frequently including humour, anecdotes, dissent, antagonism, and consensus. Shared knowledge, and group cultural norms and values can be detected within the focus group methodology, due to the interactive nature of the data collection techniques. The negative aspects of this method of research is that individuals may conceal dissent out of loyalty to the group norms, and the presence of a group of participants compromises confidentiality (Kitzinger 1994).

### **3.3 Population Samples**

The research sample population, refers to the selection of individuals to be studied, and must be defined. The individuals that are to be analysed are referred to as the population, and the participants in the study; a subset of this population, are referred to as the sample. Unlike sampling for quantitative research, where random sampling is the norm, population sampling for qualitative research requires participants that have characteristics common to the larger population that are relevant to the research question, and will provide the most appropriate information (Focus Group Training Manual 2012). Grouping particular types of individuals in focus groups with common criteria, relevant to the research, is recommended. If the research is

to be conducted with different “types” of participants, then It would be most appropriate to conduct focus groups separately for each group.

Although definable objective criteria such as age, education, religion, age, or constructed criteria such as behaviour or political affiliation, can be employed in sample selection, the most common methodologies for selecting focus group participants are referred to as purposive, and convenience. In essence, the sample population that will provide the best information, is the preferred sample choice in focus group research. The recommendations for group size vary, but fall within the range of 4 to 12 participants, this range being considered an optimum number, to allow the facilitator to keep the group focused on the research tasks. The number of focus groups required for the study will be determined by when the data saturation point has been achieved; when no new information is being recorded, then no more group sessions are required (Dawson, Menderson 1993). Practice group sessions are recommended, particularly when the researcher is unfamiliar with focus group protocols. In order to compare and contrast the views of different individuals, the group structure must consist of separate groups.

### **3.4 Interview planning**

#### **3.4.1 Interview protocol**

The interview protocol suggested by Nagle, Williams (2013), begins with an opening introduction by the facilitator, followed by a description of the focus group topic, and the aims of the research. Participants are invited to ask questions prior to the interview commencing, which will be answered by the facilitator. The rules of the focus group are then outlined, including turning off mobile phones, one person speaking at a time, without interruption, and a reminder that all information is confidential, and will be summarized for analysis. Participants should be informed that they may be interrupted by the facilitator, in order to ensure as much participation by all the group as possible. All participants are invited to introduce themselves, and if they wish to add any additional information they feel is relevant to the interview. Then as each question is being asked, a prompting question to promote further questions and a probing question to examine an issue in greater depth is included. When the discussion related to the final question is finished, the facilitator concludes the interview by thanking each of the participants.

#### **3.4.2 Interview Materials**

Materials required for focus group interviews:

- Focus group questions
- Focus group protocol

- Sign-in sheet
- Participant consent forms
- Large screen Monitor
- Web connection
- Digital audio recorder
- Name tags
- Timer
- Refreshments

### 3.4.3 Interview Questions

Becoming familiar with the community you will ask questions of during focus groups is essential (Dawson, Menderson 1993). Learning local terms, and how groups behave within that community, are essential in both developing interview questions, and for analysis of the focus group data. The participants are the experts, and the primary goal is to obtain their beliefs, opinions, and attitudes, so questions must be semi-structured, open-ended, and probing, to encourage lengthy answers. Nagle, Williams (2013) recommends five interview questions, with prompting follow-up questions to facilitate interaction, and probing questions to delve deeper into questions.

Prior to conducting the focus group interviews, Nagle, Williams (2013) recommends the questions be pilot tested with individuals that have similar characteristics as the sample populations in the focus groups. Pre-testing interview questions allows the researcher to assess if the interview questions are understood as they were meant to be, and to make any necessary edits to both composition, and question order.

### 3.5 Population Sample Selection

Based on the sampling research data, the sampling method that was used for this study to recruit the focus group participants, was broadly classified as experts, and non-experts. One focus group comprised of Generation X individuals, who were also accredited and practicing psychotherapists, and the other, a group of Millennials, who were also psychology students. Recruitment for the first group consisted of stratified random sampling, and snowballing or chain sampling for the second group (Focus Group Training Manual 2012). The experts group was contacted by phone initially, from search engine results returned on the search query

“psychotherapists Ireland”, and the second group were recruited and screened from among individuals who were acquaintances of the psychotherapists.

The focus group size was restricted to five participants, in order to facilitate management and control by the moderator.

**Included:**

- Inclusion into the expert group required the participants to be both Generation X, and a psychotherapist accredited by an Irish psychotherapy governing body.
- Inclusion into the non-expert group consisted of individuals who were both Millennials, and studying psychology in a third level institute in Ireland.

**Excluded:**

- Excluded from the expert focus group was anyone who was not from the Generation X era, or not an accredited psychotherapist.
- Excluded from the non-expert group, was anyone who was not studying psychology in a third level institute in Ireland, or was not in the Millennial age group
- Excluded from the non-expert group was anyone undergoing therapy
- Excluded from the non-expert group was anyone with intellectual or communication difficulties
- Excluded from the non-expert group was anyone who was a patient in an institution

**3.6 Ethical Considerations**

Prior to seeking consent from participants, an application was submitted to the Trinity Ethics Committee, with a research proposal outline, and request for permission to carry out the study. Research approval was granted, and a letter of invitation was forwarded to all potential participants, describing the aims of the study, what participation would entail, the rights of each participant, and a description of participant confidentiality, and anonymity of all information provided.

In compliance with the 1988 Data Protection Act, all data collected from participants of the focus group interviews:

- Was obtained legitimately and with processing consent.
- Was not processed further than originally stated.

- Will not be kept longer than agreed.
- Was protected with adequate measures to prevent unauthorized access to the data.
- Respected the fundamental rights of the participants.
- Will not be disclosed to a third part without participants consent.

All recorded data was transcribed verbatim, and then anonymized to ensure privacy. The data was obtained by means of a written consent form (Appendix I) from all participants, prior to the interview process, and the details of the research study was made clear by means of a participant information sheet (Appendix II). The research data was stored in a password protected folder, with only the researcher having access. All research findings were based on factual data from the research, with no false information included.

### **3.7 Research Strategy**

This research conducted a multiple category focus group design when assessing the role of game design theory in e-Therapy systems. The focus groups were conducted non-sequentially using two particular categories, defined as Generation X experts and Millennial non- experts, namely a group of psychotherapists born between the early 1960's, and late 1970's, and a group of Millennial psychology students born between the early 1980's and the late 1990's. The research strategy created two focus groups consisting of information rich participants, which were selected in the population sampling section of the methodology. The researcher interviewed the participants of each focus group, using open-ended questions in a semi-structured interview format, using a pre-designed sequence of questions. During the interviews, the researcher both listened, and facilitated discussion, in order to obtain rich data from the communal discussion.

The focus groups were interviewed after an introduction to both gamified and non-gamified e-Therapy software, namely; Silver Cloud Health, and MoodGYM. Silver Cloud Health Is an online mental health application providing a broad range of digital therapies including internet cognitive behavioural therapy (iCBT), and has implemented game design theory in its design. MoodGYM is a therapy programme based on an internet cognitive behavioural therapy (iCBT) intervention, with five individual modules, and a series of personal assignments, and quizzes, and has not implemented any of the elements of gamification in its design.

The information generated within the group discussion was recorded, and this voice recording was then transcribed into text. The researcher analysed the data and looked for patterns contained within the information, which was then coded, and in turn became the research results. These results describe the impact of gamification elements within Silver Cloud Health, in comparison to the non-gamified MoodGYN, on levels of engagement, interaction, and potential adherence rates, both from the perspective of psychotherapists, and by psychology students.

### **3.8 Sample Questions**

The following questions were created for both focus group interviews:

- How would you characterize the difference in user experience (UX) between Silver Cloud Health, and MoodGYN?  
Probe: Which software offers a better user experience (UX)
- What does an e-Therapy user want?  
Probe: What are the aims of e-Therapy users?
- What are the benefits to making e-Therapy into a game?  
Probe: Does gamification improve user experience (UX)?
- How important are social interaction and personalization to e-Therapy users?  
Probe: What are the social and personalization differences between each software?
- Which software do you believe will have a higher adherence rate  
Probe: Which software will motivate the user to complete the programme?

### **3.9 Focus Group Interview procedures**

Once the group participants had signed in, and provided consent, then the interview commenced. The interview questions were committed to memory by the researcher prior to the focus group convening, to facilitate a smoother conversation flow (Nagle, Williams 2013). In addition, small talk was conducted prior to the interview, as this created a more relaxed atmosphere, and allowed the moderator to determine which individuals were shy, and which were more outspoken. The interview began with introductions with the aim of increasing group adhesion. The session was recorded, and all participants were asked for their permission for this to occur. The group watched an introduction to both the Silver Health Cloud application, and MoodGYM. The groups were then asked five open-ended questions, plus prompting questions to generate as much group interaction as possible. The interview protocol was used throughout the session.

### **3.10 Data Coding**

The qualitative data gathered during the interviews; both audio recordings, and field notes, were coded to provide an analysis of the thoughts and feelings of the interview participants. Both pre-set and emergent codes were used to create a storyline within the data, to provide a representative evaluation to convey in the research.

### **3.11 Research Instrument Analysis**

The focus group research methodology, as the literature indicated, provided a suitable instrument to measure the thoughts and feelings of population samples in relation to a phenomenon. The semi-structured interview paradigm, complimented the subject matter of the research, which by attempting to gauge the impact of gamification on levels of satisfaction in user experience (UX) and adherence rates, was also in essence, measuring the thoughts and feelings of the participants. Having both an expert group and a non-expert group was invaluable in providing information rich data, although a second non-expert sample population consisting of individuals who were neither psychotherapists, nor psychology students, would have, in the researchers opinion, provided an additional source of relevant insights. Such a sample population was considered a risk in terms of ethical considerations, and were deemed beyond the scope of this research. An information saturation point had not been reached with only two focus groups; greater depth of knowledge could have been obtained with the addition of more population samples.

## **4.0 Findings and Analysis**

### **4.1 Focus Group Pilot Study**

A pilot study of the various elements of the focus group was conducted on the 5<sup>th</sup> of September. The participants were a representative sample of the populations in the focus groups proper, and consisted of two Generation X psychotherapists, and one Generation Millennial psychology student. The interview protocol, interview materials, interview procedures, introduction to both e-Therapy systems, and the interview questions with follow up probes were tested during the course of the pilot study.

#### **4.1.1 Focus Group Protocol**

Each participant arrived with their Informed Consent Form, and were provided with a nametag. The introduction and aims of the research were read to the participants, followed by the rules of the focus group. After a personal introduction by the researcher, the participants were invited to introduce themselves, and to ask any questions prior to commencement. When the interview was completed, all participants were thanked for their time and effort, and participants joined in an informal discussion relating to e-Therapy, Psychology, and IT.

#### **4.1.2. Focus Group Protocol Modifications**

As a result of the pilot study the following issues were addressed:

- A formal request for participants to arrive 10 minutes ahead of schedule to facilitate group cohesion.
- Nametags completed prior to interview.
- Focus group protocol memorized rather than read.

#### **4.1.3 Focus Group Materials**

Both psychotherapists were very interested in the specific wording in each area of the two e-Therapy software, and had issues with the size of the PC monitor provided as they were unable to read some of the text areas displayed. The playback of the audio recording was inaudible for one of the participants with a soft voice.

Focus Group Material Modifications:

- Large screen LCD TV
- Move audio recorder closer to the group

#### 4.1.4 Focus Group Questions

Five questions were presented to the participants, with five follow up probing questions. Participants had difficulty with the wording of some the questions. In addition, the question order inhibited the flow of the interview process.

Modified Focus Group Questions:

- How would you describe the difference in user experience (UX) between Silver Cloud Health, and MoodGYN?  
Probe: In terms of how you think and feel, which software do you prefer, and why?
- Do you see any benefits to making e-Therapy into a game?  
Probe: Would game design, social interaction, and personalization help achieve an e-Therapy users goals?
- Which software in your opinion would have the greatest positive effect on a user's self-motivation?  
Probe: Which software would encourage a user to continue with the programme?
- What in your opinion does an e-Therapy user want?  
Probe: What does an individual who signs up for one of these programmes- what are they hoping to achieve?
- Which software do you believe will have a higher adherence rate  
Probe: Which software do you believe would encourage users to complete all the modules?

#### 4.2 Focus Group- Experts

The first focus group interview took place on the 6<sup>th</sup> of September. The participants involved were the expert group, and consisted of five Generation X psychotherapists. Four of the five therapists signed in ten minutes prior to commencement, which allowed for informal conversation. When the interview started, the introduction, and aims of the research were read to the participants, followed by the rules of the focus group. Each participant was provided with a nametag, and after a personal introduction by the researcher, were invited to introduce themselves, and to ask any questions they might have in relation to the interview process. The fifth participant arrived late and was absent for the introduction. All five participants provided their Informed Consent forms.

After a brief description of the background of the two software, the group were introduced to a pre-recorded demonstration of both Silver Cloud Health, and MoodGYM, with a commentary from the researcher. After both demonstrations, the group were asked five questions, and this section

of the interview process was recorded on a digital audio recorder. All five therapists gave their thoughts and feelings on each of the five questions. Although five prompting questions had been devised, only one was required during the interview, as the participants did not require prompts with the other four questions. The focus group interview lasted eighty minutes in total.

When the interview session was completed, and the recording stopped, all participants were thanked for their time and effort, and three of the five remained for a twenty minute discussion.

### **4.3 Focus Group- Non-Experts**

The second focus group interview took place on the 8<sup>th</sup> of September. The participants involved were the non-expert group, and consisted of five Generation Millennial psychology students. One of the five participants was unable to attend, and the interview proceeded with four instead of the scheduled five. Two students arrived early and took part in informal conversation, with the remaining two arriving on time. When the interview started, the introduction and aims of the research were read to the participants, followed by the rules of the focus group. Each participant was provided with a nametag, and after a personal introduction by the researcher, were invited to introduce themselves, and to ask any questions they might have in relation to the interview process. All four participants provided their Informed Consent forms.

After a brief description of the background of both e-Therapy systems, the group were introduced to a pre-recorded demonstration of both Silver Cloud Health, and MoodGYM with a commentary from the researcher. After both demonstrations, the group were asked five questions, and this section of the interview process was recorded on a digital audio recorder. All four of the participants took part in answering each of the five questions, with only two of the probing questions required. When the final question was answered, the recorder was stopped, and all participants were thanked for their time and effort. The interview process lasted approximately seventy five minutes.

Two of the students stayed behind for a twenty-minute discussion in relation to e-Therapy, and the future role of software in mental health services.

### **4.4 Interview Data Coding**

The purpose of the focus group research was to determine the needs of e-Therapy users, and the role of gamification in web based therapy systems. This formed the end strategy in coding the qualitative data gathered in the interviews. Both focus groups were asked questions and gave answers around the research subject, and their answers, along with the researcher's observations, were categorized with a series of codes to create a storyline that addressed the

research question. A pre-set code list was created prior to coding the data, and a second emergent list was compiled during the coding process of analyzing the data.

Coding Scheme; Pre-Set Codes:

- Gamification
- Gamification Versus Non-Gamification
- e-Therapy
- e-Therapy Versus Face-To-Face Therapy
- User Experience
- e-Therapy Users Requirements

Coding Scheme; Emergent Codes:

- Gamification and Self-Motivation
- Severity of Mental Health Symptoms
- gamification and Adherence Rates
- e-Therapy and Age
- Social Interaction in e-Therapy
- Relationship skills

The verbatim transcript was read initially without adding any code, in order to familiarize the researcher with the transcribed information. On the second read, the emergent code list was created, and then both pre-set codes and emergent codes were applied to the data. In addition to the codes, the researcher added notes on ideas and reactions that arose from coding.

#### **4.5 Key Findings**

The focus groups interviewed, consisted of an expert group comprising Generation X psychotherapists, and a non-expert group of Generation Millennial psychology students. Both groups were introduced to a gamified e-Therapy software, namely Silver Cloud Health; and Mood GYM; a non-gamified e-Therapy software. Both groups were asked an identical series of five questions relating to gamification and e-Therapy. Analysis of focus group interview transcripts revealed a number of key findings related to what e-Therapy users wanted, and the role of gamification in online therapy systems. These findings include:

- 1) how psychotherapists, and psychology students perceive the benefits of gamification in e-Therapy,

- 2) the comparison of gamified Silver Cloud Health, and non-gamified MoodGYM,
- 3) the role of e-Therapy in relation to the severity of users mental health issues,
- 4) the impact of gamification on self-motivation,
- 5) Gamification in relation to age,
- 6) The perceived requirements of e-Therapy users,
- 7) The impact of gamification on adherence rates.

Each of the above key findings are further elaborated below. A synopsis of the major themes that emerged from the focus group interviews in relation to each of the key findings are displayed in a bullet list, followed by a more in-depth analysis of the participants' thoughts and feelings in relation to each finding. This analysis will include actual participant narratives in relation to each of the key findings, to provide a greater depth of understanding to the research body.

Excerpts from focus group discussions will be in the form of direct quotes, and unless otherwise stated, these have been specifically chosen to represent the opinions of the majority of the participants. All quotes have been chosen based on how well they illustrate the bullet points of each key finding being discussed.

#### 4.6.1 Key Finding 1: Gamification in e-Therapy

- Preventing game flow and immersion
- Failing to live up to the expectations of gamification
- Failing to provide a good treatment delivery system

Participants from both focus groups were asked to consider the benefits of making e-Therapy into a game. The gamification elements in Silver Cloud Health were perceived as *“quite academic... technical and programme like”*. Silver Cloud was considered *“heavily dependent on training, support, technicalities”*. The majority (89%) of both psychotherapists and psychology students believed the software failed to live up to their expectations of what gamification in e-Therapy would entail. Although the consensus was that *“it would be useful for some people to make e-Therapy into a game”*, the assumption was that Silver Cloud Health would be *“more like a game”*. Although the gaming elements were understood, *“it's not like an XBOX”*. A psychotherapist, and a psychology student respectively expressed these sentiments:

I was expecting something lighter, something that you would get pulled into. I was hoping that the software felt more game like than it actually is. Silver Cloud wasn't in anyway what I was expecting when I heard the word –game.

Maybe gamification for some people, but in a very limited way. It might have some use as a reference, but not beyond that. Maybe some people would be into that, whereas I wouldn't be into computers and games, but maybe some people might get into that.

Silver Cloud Health was seen by some psychology students (50%) of falling short in terms of treatment goals being lost in the overall design delivery. The gamification elements in particular were viewed as having a negative effect for the user:

I think [Silver Cloud Health] is very sales orientated; this is us, we are very good, and we can do a lot of things for you. But once you get into it, you are into a series of questions....

Although [Silver Cloud Health] was more polished and commercial, and tailored to appeal to its audience, somehow there was something lacking.

#### 4.6.2 Key Finding 2: Gamification versus Non-Gamification

- Creating an interactive online space
- Providing social interaction
- Positively impacting user experience (UX)

Gamification and Silver Cloud Health was not conclusively preferred over the non-gamified MoodGYM, with the preference for MoodGYM and Silver Cloud Health being equally divided. However the *“interactive stuff”* presented in Silver Cloud was clearly important. The interactive design elements of Silver Cloud Health were viewed as important aspects of gamification with *“more visual content, more video content”*. The ability to customize user areas was also considered an important element, *“the fact that they can personalize things for themselves, so they can create their own work environment”*. Silver Cloud Health was perceived as being *“overloaded with stuff, whereas MoodGym was more tailored to somebody who might be suffering from anxiety or depression”*. Elements of both software appealed to both

psychotherapists, and psychology students alike, *“I would go with MoodGYM actually. Although I did like the idea of a support person in Silver Cloud Health”*. As one psychotherapist expressed:

I wouldn't be a games person, it has no appeal to me at all, but to make it more attractive, particularly to adolescents, it needs to be on the level where it does intrigue them, and pep their curiosity, and their need to find out more. I think along with adult supervision to have game elements in e-therapy would make it more interactive, and help adolescents to identify thoughts, feelings and behaviours.

Gamification was not considered as having created a significantly better user experience (UX), with only 33% of psychotherapists, and 50% of psychology students preferring the gamified Silver Cloud Health. Neither software was perceived as providing an ideal experience:

I didn't see a big difference in user experience between the two of them to be honest, I wouldn't find either of those attractive, wouldn't make me want to use it, because it's too much like filling in forms basically. Both feel like having to do administrative duties, that's what it feels like to me. I was expecting Silver Cloud to be more like a game somehow.

#### 4.6.3 Key Finding 3: e-Therapy as a treatment modality

- Unsuitable as a replacement to face-to-face counselling
- Augmenting face-to-face therapy
- Providing reference material
- Providing a skills top-up

Regardless of whether the e-Therapy system had applied gamification or not to its design, there were limitations as to the perceived efficacy of e-Therapy as a treatment modality *“I wouldn't say it would be for anyone suffering severely from depression, or anxiety”*. Both Silver Cloud Health and MoodGYM were seen to be more suitable for milder cases of any mental health issues, and not *“when you are in quite a bad place”*. The lack of human contact was viewed as one of the most significant drawbacks to e-Therapy, with two therapists stating:

From my experience from working with clients, I have yet to see anything in e-Therapy that could help a client that has a genuine problem, you're not going to solve that in a non-humanistic way.

I don't think if someone is particularly vulnerable that those websites would work. They need to be held until they find their own power.

Gamified e-Therapy was viewed more as an aide to face-to-face therapy, rather than a stand-alone solution "*It's something that could be used with counselling*". Both psychotherapists (60%) and psychology students (50%) agreed that gamification and e-Therapy were perfectly placed to offer educational skills training in relation to mental health issues:

People have a range of difficulties, and I think there is a use to it in terms of learning skills. It would be useful for the general population, and it would be useful for someone with some level of anxiety. They may have already gone to therapy, and they could use it to top up their skills. I don't think it replaces face to face counselling for people.

#### 4.6.4 Key Finding 4: Gamification and Self-Motivation

- Providing useful feedback
- Encouraging self-motivation
- Requiring initial self-motivation

The gamification aspects inherent in Silver Cloud Health were considered by psychotherapists (100%) and psychology students (75%), to have a positive effect on an e-Therapy users motivation. Although it was acknowledged that, "*you would have to be self-motivated to use it*", and "*in that frame of mind where they would be motivated to play a game*", the software was viewed as offering interactive design features that encouraged motivation. Motivation was considered as crucial to the success of e-Therapy programmes with one therapist stating:

It's all down to motivation. The second one would provide more motivation because you would feel like you started something and you want to finish it, there would be more of an urge to keep going. If you view it in terms of a course, then you would be motivated to finish the Silver Cloud course.

The social interaction elements of gamification were considered to further enhance a user's motivation, with Silver Cloud Health providing each user with a personal sponsor, and an asynchronous messaging system. The sponsor was viewed as providing a level of accountability, and an incentive to keep going with the programme:

People's motivation often comes from what outsiders are thinking of them, they get a reward from recognition. The sponsor would encourage people, it's like a weigh in during diet club.

Gamification was considered to provide an interactive environment where motivation could be enhanced, "*Silver Cloud gives you more tools*". Media was seen as a positive element of the design with the use of visual aides to increase learning and motivation:

The videos are useful at the end- the meditation and the mindfulness.

Gamified design features such as journaling, and goal setting were also viewed as conducive to encouraging self-motivation

I think if you were motivated and wanted to change, I think Silver Cloud Health. I think the diary entries, the journaling, and getting the feedback, if you had some level of motivation, and you stuck to it, it would probably be the best.

#### 4.6.5 Key Finding 5: Gamification and Age

- Appealing to younger people
- Educational applications
- Requiring IT literacy

Both Generation X psychotherapists (60%), and Generation Millennial psychology students (75%), considered gamification to be more suitable to younger people rather than to adults, "*I could see how life-skills and certain elements of gamification would be very useful to teenagers*". Gamification was also seen as a suitable resource in a teaching environment, "*I think parts of it could be very useful to use in an educational setting, primary or secondary school, as a way to educate kids how relationships work*"

Gamification could be very helpful in identifying emotions, and practice those emotions in an environment where it's safe. They

can then apply it to everyday life. Online does provide a safe place for children to do this. They can practice who they want to be, and then come into the world and try it in reality. I think it would have a purpose for some audiences, but in conjunction with support.

I could see it having a use for some people- particularly young people. I do think gamification has its place, and it should be introduced as early as possible into a child's life- that they get to name their emotions, take responsibility for them, and to be able to recognize when their parents aren't behaving healthily, and for them to find a way to know that they can be separate.

#### 4.6.6 Key Finding 6: Requirements of e-Therapy Users

- Seeking online solutions
- Seeking information
- Seeking validation

e-Therapy users were considered to be individuals who are seeking validation, that their mental health issues are normal, "I think *they are looking for normalization of their symptoms, that they are not alone, that there is a community out there, and that they are not going crazy, that there are people just like them*". They wish to connect online in order to compare themselves with others, and, "to see *how they fit in with their peers*". The perception amongst psychotherapists and psychology students was that they were looking for instant gratification, a cheap, quick solution that would eliminate the need for face-to-face therapy. The consensus amongst therapists was that an e-Therapy user "*is trying to avoid human contact, resisting human contact*". Users were likely to be looking for information about their health issues, as well as a way to learn adaptive strategies to deal with those issues, "I would say they are looking for skills; self-care skills, coping skills, and information". e-Therapy was considered a suitable introduction to mental health, but despite users beginning with an online solution, "*without having to leave the house*" they would eventually recognize the need to actually see a therapist:

If I was at home, and I had anxiety, or I was depressed, I would look for validation that I need help with this problem. That there is a name to associate with this problem. Perhaps someone who is looking for a quick fix, instantaneous results. So they may use these type of sites, the same way that someone would use a

herbal remedy before going to the doctor. But I believe that most people would end up going to see someone.

It's like the typical doctor Google thing, they have gone online and googled this. They are looking for a quick answer. They are looking for someone to direct them into what's going on, and to find ways to get support in that process

#### 4.6.7 Key Finding 7: Gamification and Adherence Rates

- Adherence rates assisted by support
- Interactive design positively impacting adherence
- Adherence dependent on levels of mental health severity

Gamification was viewed as having the potential to increase adherence rates in e-Therapy due to both interactive design, and social interaction, "*the Silver Cloud course gives you more tools, advice; things that would work in everyday life if you finished the programme*". In addition, having to interact with a support person provided a level of commitment by the user which was considered important in terms of adherence, "*you are more accountable to your support person*".

I think if someone is suffering from anxiety or depression, or is really suffering, the thought that they are going to sit and work their way through MoodGYM.... whereas Silver Cloud with a support person, they are more likely to finish that.

## 5.0 Discussion

The gamified elements in Silver Cloud Health failed to achieve the immersion and flow states described by Whitton (2011) as being crucial to successful gamification. The tasks did not exceed the understanding of the psychotherapists and psychology students, but the technical aspects of the introduction and protocols of the programme may have led to boredom, which had a negative effect on engagement. The focus group participants did not experience the pleasant frustration recommended by Koka, Ding, et al. (2016) to increase motivation and engagement, but instead confirmed that unpleasant frustration decreased motivation and engagement. The focus groups did not experience the high quality enjoyable experience that Desurvive and Wiberg (2010) suggest as essential in acceptance of the gamified environment. They developed instead a negative perception of Silver Cloud Health, believing that the software had not been fun.

Gamified e-Therapy was confirmed by the focus groups to have the potential of creating the positive learning environment suggested by Hsu, Tai, et al. (2015). e-Therapy users could learn about their mental health issues, and learn skills that would encourage positive adaptive strategies in their lives. Chalco, Andrada, et al. (2015) posit immersion into the e-Learning environment can only be achieved through positive affective states. Both psychotherapists and psychology students viewed gamified e-Therapy as a suitable method of providing users with information to normalize their feelings and to confirm they are not alone or defective, and to offer the hope that they can anticipate a successful outcome to their problems.

Knowels, Lovell, et al. (2015), assert that interactive design can simulate empathy for the users feelings through sympathetic content and graphics. The majority of both focus groups viewed the gamified design elements of Silver Health Cloud to be important, and considered them as helpful in guiding users towards achieving their mental health goals. The award mechanisms and visual feedback systems for skills mastery suggested by Kopcha, Ding, et al. (2016) were acknowledged by the focus groups as providing a sense of accomplishment in Silver Cloud Health. Ehlers (2004) recommends designing with the user's needs and preferences as a starting point, and members of both focus groups viewed the gamification design elements of goal setting, journaling, and a customizable user admin, in a positive light. Cheng, Poon (2016) recommend content delivery through multi-media channels in e-Learning, and the gamified elements of Silver Cloud Health were viewed by the focus groups as transferring knowledge through its methods of content delivery, particularly the medium of video.

The data from the focus groups confirms the assertion by Love, Sanders, et al. (2015) that interactive design and gamification increases engagement, which in turn increases self-motivation. The majority of both focus groups considered the gamified tools such as goal setting, journaling, and the feedback messaging system, provided by Silver Cloud Health, as encouraging skills training. Ehlers (2004) concluded that tutor support was an area of significant importance in e-Learning. Jarvela, Jarvenova, et al. (2016) suggest that social interaction directly affects the motivation and performance of students in e-Learning environments. The presence of a support person in Silver Cloud Health was considered by both focus groups as providing social interaction, encouraging self-motivation, and increasing adherence rates.

De-Maros, Garcia-Lopez, et al. (2016) advise that e-Learners not only like the game design elements of gamification, they also expect to achieve their goals as a result of them. Both psychotherapists and psychology students saw gamification and e-Therapy as suitable only in the case of mild mental health issues, or in conjunction with counselling. Gamified e-Therapy was considered an educational tool, and not a suitable replacement for face-to-face therapy. Gamification and e-Therapy were viewed as more suitable for children and adolescents, rather than a treatment modality for adults.

Cheng, Poon (2016) point to the importance of user experience (UX), to engage e-Learners in self-monitoring and self-control of their goals, strategies, and motivation. Silver Cloud Health provides features many gamification design features such as goal setting, a progress area to compare goals with actual progress, a journaling area, an asynchronous messaging system, social interaction in the form of a support person, other e-Therapy users stories, and interactive content delivery. The majority of the focus group participants however, viewed the user experience (UX) on Silver Cloud Health unfavourably. The initial introductory stage of questionnaires was considered far too tedious, and negatively affected their experience of the software.

## **5.1 Limitations**

This descriptive research of gamification and the needs of e-Therapy users has limitations. How well the sample populations were representative of their respective populations cannot be determined. Although having an expert group of Generation X psychotherapists, and a non-expert group of Generation Millennial psychology students did provide a range of contrasting

opinions, there were limitations within the data gathered during the interview process. Saturation point had not been fully achieved with just two focus groups; the research would have benefited with information from additional groups. Other sample populations consisting of individuals who were not connected to psychology, with a range of mental health issues, would have greatly enhanced the data range.

## **5.2 Future Research**

One potential avenue for future research is to look at gamification in conjunction with live synchronous communication, where the impact of game design theory and e-Counselling can be assessed. Artificial intelligence (AI) is increasingly making a presence in online therapy, with code and machine learning (ML) capable of simulating emotion, compassion, and empathy. A second possible area for research would be to consider the impact of AI in simulating e-Counselling in conjunction with gamification. In addition, gamified e-Therapy may need to be considered as a new type of therapeutic intervention, requiring a clear theoretical framework, with research that promotes greater delivery methods to meet the requirements of users.

## **5.3 Conclusion**

The purpose of this research was to determine the requirements of e-therapy users, and the role that gamification has in meeting those needs. Although gamification can under certain circumstances, provide elements that enhance a user's experience (UX) of e-Therapy systems, it is not a silver bullet in web based treatment programmes. Gamified or not, users who are looking for a quick online solution to mental health issues may be disappointed in any e-Therapy treatment systems that does not include direct communication with a therapist. What is evident from the focus group interviews is the noticeable absence of the therapeutic alliance in Silver Cloud Health, and regardless of the contributions that gamification can make the gap between online software and face-to-face therapy remains. Gamification may provide an interactive environment, but this does little to resolve the issues of many who would require a more serious intervention. Gamification does however provide a design methodology that encourages skills learning, self-motivation, and adherence, particularly among digital natives. Interactive design, and the presence of an asynchronous messaging system between user and support person, encourages self-motivation, and programme completion.

As the disruptive technologies of both IT and automation play an increasingly larger role in shaping the future of mental health services, there is increased certainty, that e-Therapy will be pivotal in the provision of mental health treatment. The future no doubt, will see an expansion of gamification in e-Therapy services, with future research paving the way for the development of

new treatment modalities in conjunction with technology. Mental health providers, software designers, and e-Therapy users will need to be educated regarding the delivery of gamified therapy online, and research is required to create a richer user environment that encourages motivation, successful treatment outcomes and high adherence rates. This research found a variety of responses from both psychotherapists and psychology students on many aspects of gamified e-Therapy, and indicated the need for further research, into the training and acceptance of online therapy systems.

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## **8.0 Appendices**

### **Appendix I: Participant Information Sheet**

#### **E-Therapy as a Game: Gamification and Interaction in Web Based e-Therapy Systems**

I would like to invite you to take part in a research study. Before you decide, you need to understand why the research is being done and what it would involve for you. Please take the time to read the following information carefully. If anything you read is not clear, or if you would like more information, feel to ask as many questions as you would like. Take time to decide whether or not to take part.

Hello my name is Patrick O'Brien. I am completing a research thesis as part of my Masters degree in Management of Information Systems in Trinity College Dublin. I have chosen the significance of e-Therapy software that has applied gamification to its design, and conventional e-Therapy software without gamification, in relation to user experience (UX). I would like to gain a better insight into how e-Therapy systems can better enhance the experience of users, and the potential in applying the rules of game design theory, and the inherent interaction; both social and design, that is part of the gamified environment.

I would like to invite participants to take part in a ninety-minute audio recorded interview, along with a small group of other participants, known as a focus group, to answer questions, and join in a discussion on the research topic. The interview will be conducted in a small private hotel conference room, and the group will be shown a gamified e-Therapy software called Silver Cloud Health, and a non-gamified e-Therapy software called MoodGYN, on an LCD screen. The functions and interactive elements of both websites will be explained, and then the group will be asked a series of five questions in relation to gamification and interaction, and the e-Therapy systems being displayed.

I would like to invite participants to take part in the interview process, for two distinct focus groups. One group will consist of Generation X licenced psychotherapists, and the other, a group of millennial psychology students. You have been chosen to take part in this research because you are either a psychotherapist born between the early 1960's and late 1970's, or you are currently a student of psychology, and were born between the early 1980's and late 1990's. Taking part in this research will require completing a consent form prior to any interview, and

then joining in a group discussion on the research topic, allowing the interview to be recorded, and the data to be further analysed for research purposes.

This is purely an invitation, and this is completely voluntary on your part, there is no obligation for you to take part in this research, except by your choice. You are completely entitled to refuse to participate, to withdraw at any time without consequence, or to refuse to answer any question in the interview.

The proposed benefits to the participants of this research will be to join in a discussion in a new area of web based therapy systems research, where the game design and interactive elements of an e-therapy software will be compared to a conventional non-gamified software. Participants can join in a discussion on the difference in user experience (UX), between gamified and non-gamified e-Therapy software. The inherent risks associated with this type of interview process, are very low, and all aspects of the interview will be assessed to ensure the physical and psychological comfort of all participants. Should a risk become evident during the interview process, then the interview will be stopped until the risk is removed.

All research finding will be portrayed in a confidential manner, with all data anonymized to ensure privacy. Audio recordings will be transcribed verbatim, and any identifiable content will be removed. All digital data will be stored in a password protected folder, which only the researcher has access to. All research findings will be based on factual data based on the research, with no false information or accusations included. The only circumstance when confidentiality will be compromised is when the researcher believes there is a serious risk of harm or danger to either the participant, or another individual, such as in the event of any form of abuse, including child abuse, to prevent a suicide, or to prevent a crime. Certain data will not be anonymized such as the Informed Consent Forms, and both these and the audio recordings taken during the interviews, will be collected and retained as part of the research process.

Signed consent forms and original audio recordings will be retained in a password protected folder, which I will have access to until after my degree has been conferred. A transcript of interviews in which all identifying information has been removed will be retained for a further two years after this. Under the Freedom of Information Act 2014, you are entitled to access the information you have provided at any time.

This research is undertaken solely for the completion of a masters degree from Trinity College, and will not be disseminated to conferences, publications, or for teaching purposes. Thank you for taking the time to read this letter.

**For further information, please contact:**

Patrick O'Brien

Springhill

Carlow

Co. Carlow

**Email:**

**Phone:**

## **Appendix II: Informed Consent Form**

### **LEAD RESEARCHER:**

Patrick O'Brien

### **BACKGROUND OF RESEARCH:**

Common mental health problems such as anxiety and depression are universal, and have a negative impact on the individual and society as a whole. Depression alone affects 300 million people worldwide, with fewer than 10% of sufferers receiving treatment (WHO, 2017). Although traditional face-to-face therapies can treat these illnesses, there are insufficient resources to meet the demand. E-Therapy is the term applied to the delivery of psychological counselling services by means of the internet, and has been considered as one possible solution to deliver treatment more efficiently and effectively. Many e-Therapy programmes however, struggle with low user completion rates.

Gamification is the principle of applying game design theory to non-gaming environments. Gamification has been shown to increase user engagement, and have a positive impact on retention rates in such fields as e-Learning, and e-Medicine. The focus of this research is to consider the role of gamification, and its inherent social and design interaction, in improving user engagement, and retention rates in e-Therapy systems. The Silver Health Cloud platform has been selected as a representative example of an e-Therapy software, designed using gamification principles, and MoodGYN has been selected to represent a non-gamified e-Therapy software.

### **PROCEDURES OF THIS STUDY:**

The research will involve the participation of two focus groups, with five participants who fit the required criteria, in each group. Both focus groups will take part in a ninety minute recorded interview, where they will be asked a series of five questions, and five follow up questions, in relation to gamification, Silver Cloud Health, and MoodGYN. The interviews will be held in a conference room in a hotel that is in a convenient location. A risk assessment of the hotel, and conference room will be requested by the researcher from the hotel management, and any risks that arise during the group interviews will be addressed immediately. All participants must provide their consent forms prior to the interview stage, and any ethical issues that arise will be addressed. The recorded data generated during the interviews, will be anonymized to ensure the confidentiality of all participants. All digital data in connection with the research will be stored in a password protected folder.

**PUBLICATION:**

This research is undertaken solely for the completion of a master’s degree from Trinity College, and will not be disseminated to conferences, publications, or for teaching purposes.

Individual results will be aggregated anonymously and research reported on aggregate results.

**DECLARATION: (Please tick each box)**

- I am 18 years or older and am competent to provide consent.
  
- I have read, or had read to me, a document providing information about this research and this consent form
  
- I have had the opportunity to ask questions and all my questions have been answered to my satisfaction and understand the description of the research that is being provided to me.
  
- I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity.
  
- I understand that if I make illicit activities known, these will be reported to appropriate authorities.
  
- I understand that I may stop electronic recordings at any time, and that I may at any time, even subsequent to my participation have such recordings destroyed (except in situations such as above).
  
- I understand that, subject to the constraints above, no recordings will be replayed in any public forum or made available to any audience other than the current researchers/research team.
  
- I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.
  
- I understand that I may refuse to answer any question and that I may

withdraw at any time without penalty.

- I understand that my participation is fully anonymous and that no personal

details about me will be recorded.

- *<Since the research involves viewing materials via an LCD screen>* I

understand that if I or anyone in my family has a history of epilepsy then

I am proceeding at my own risk.

- I have received a copy of this agreement.

**PARTICIPANT'S NAME:**

**PARTICIPANT'S SIGNATURE:**

**Date:**

**Statement of investigator's responsibility:** I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

**RESEARCHERS CONTACT DETAILS:**

**Email:**

**Phone:**

**INVESTIGATOR'S SIGNATURE:**

**Date**