Gamification for Engagement

Hudson Kent

Supervisor: Simon Albrecht

Deakin University

Abstract

Gamification is the process of adding game elements to a non-game environment. Gamification is increasingly being utilized in organisational contexts as a new way to motivate and engage staff. Engagement is described as “a positive, fulfilling, work related state of mind that is characterised by vigour, dedication and absorption” Schaufeli, Salanova, González-Romá and Bakker’s (2002). Most gamification research, however, draws on computer and game design literature and the relationship between gamification and engagement is yet to be fully explored. The Job-resources and demands theory provides a well-validated model by which to conceptualise measure and understand which factors promote engagement. Conceptualising gamification in a job resources framework could serve to help understand if, why and how gamification results in workplace engagement.

In the early 1980's Malone, suggested the use of game-like features could aid in the design of instructional environments to make the processes more enjoyable (Malone, 1982). More recently, Jung, Schneider and Valacich (2010), suggested that individuals' motivations to perform a better job could be significantly influenced by the design of the human-computer interface. Gamification in the workplace is an example of using human computer interface to motivate, and engage people in their work. The term gamification was first used in 2008 in a Blog Post by Brett Terrill (2008), who described gamification as the process of adding game mechanics to other web properties to increase engagement. Game mechanics (used interchangeably with game elements) are the objects, and rules, which a game designer uses when creating a video game to make them enjoyable and engaging (Chou, 2013). Game mechanics include points and leaderboards, messaging boards, virtual goods and challenges. Chou's (2013) gamification framework contains an extensive list of game mechanics as well grouping them as to why they result in user engagement in a game (Figure 1). In the context of business and enterprise, a job would be considered gamified to the extent that mechanics are used to elicit engagement in the task.

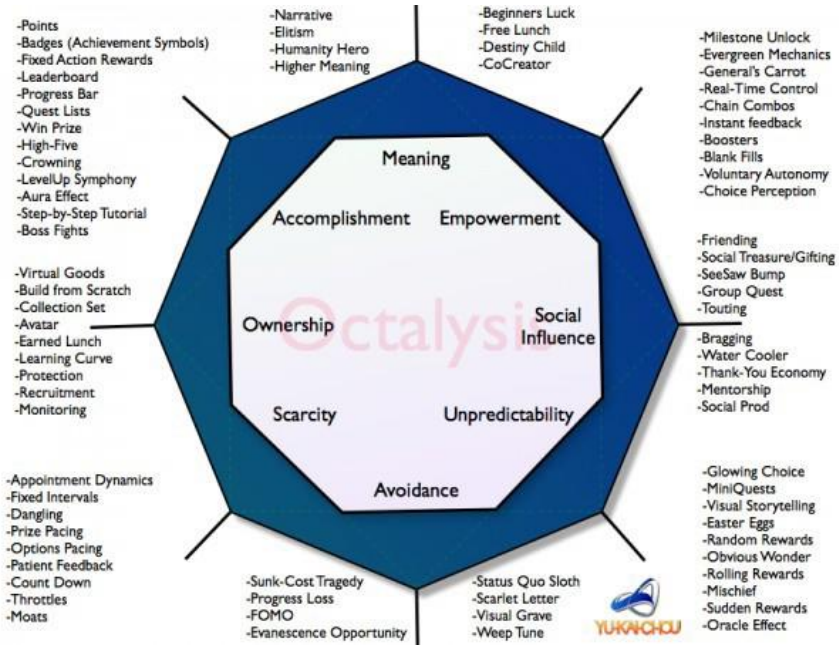

Figure 1 Chou's gamification frameworks

The popularisation of gamifying tasks has in part been brought about by reports of the enhanced user engagement and increased sales of programs which use game elements compared to tasks which don't (Giraldo, 2015). As an example, gamification software called PlayVox is used in a call centre context to reduce call times whilst also ensuring high levels of customer service and satisfaction. To do this game mechanics including points, badges, and leaderboards are added to the call process. Points are awarded based on short times spent in calls, paired with a high customer satisfaction rating for each call. As employees gain points their scores are displayed on a local ladder or leaderboard which ranked employees in terms of their performance. This leaderboard added elements of feedback (understanding how well they were performing) as well as friendly competition (to motivate staff to earn more points and climb the leaderboards. An example leaderboard display is shown below in Figure 2.

Figure 2 the manager's screen of leaderboards.

Badges are also used to elicit task engagement and task performance. As per Chou's (2013) gamification framework, badges or medals are associated with employee experiences of accomplishment or achievement. For example, a call centre employee who maintains a customer satisfaction rating above 80% for the entire month might receive a Satisfaction Champion Badge which would be displayed on the persons profile in the game. This gives

employees a sense of accomplishment in their work. An example of a person's profile is displayed in Figure 3 below.

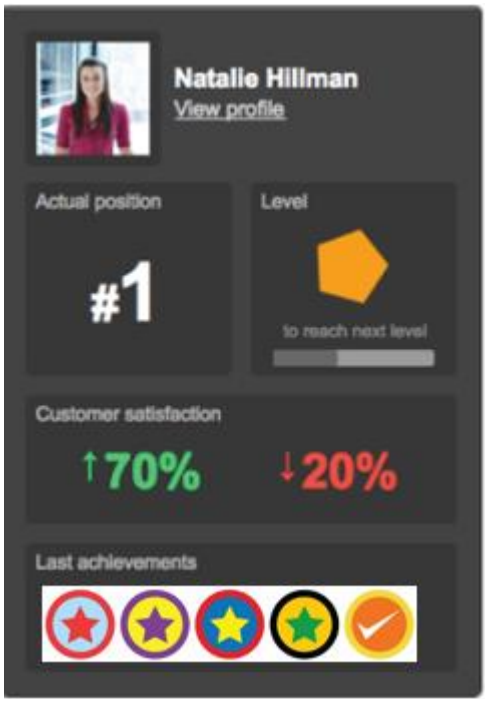

Figure 3 Profile Page with example badges at the bottom

In the example of PlayVox, reported outcomes were not only increased customer satisfaction and decreased call time, but staff being more satisfied with their work (Giraldo, 2015). In other cases of gamification, outcomes reported include better quality of work, change in work behaviours, and workplace engagement (Anderson, Huttenlocher, Kleinberg, & Leskovec, 2013; Eickhoff, Harris, de Vries & Srinivasan, 2012; Flatla, Gutwin, Nacke, Bateman, & Mandryk, 2011).

The term workplace engagement is often used by game companies as an umbrella term for outcomes such as job satisfaction, increased productivity or continued game use (e.g. Giraldo, 2015). As acknowledged by Schaufeli and Bakker (2010), academic researchers and organisational practitioners often use the term engagement in very different ways. In the academic domain, researchers have suggested and demonstrated that engagement can be

both theoretically and empirically distinguished from conceptually different constructs. Employee engagement (characterised by vigour, dedication and absorption) and its theoretical underpinning in the Job Demands and Resources model (discussed in detail later) are well supported in the literature and the concept has matured into theory (Bakker & Demerouti, 2014). The theory is distinguishable from the aforementioned concepts of job satisfaction and productivity. Job Satisfaction, concerning feeling towards work could be seen as an outcome of employee engagement, which is concerned with an employee's mood while at work (Schaufeli & Bakker, 2010; Bakker & Demerouti, 2014). Productivity and continued game use also being outcomes of engagement rather than causes.

Despite emergence of frameworks to explain gamification (e.g., Chou, 2002) there is very little theory linking gamification and engagement. Current research into gamification suggests motivational affordances as an effective way to consolidate previous theories. This theoretical framework has parallels in engagement research, and therefore could potentially help understand the relationship between gamification and engagement.

Before overviewing the core characteristics of motivational affordances, it is important to understand gamification research from within the broader context of game research. Game researchers have attempted to identify what potentially can make games more engaging (Ryan, Rigby & Przybylski, 2006; Hamari & Koivisto, 2014; Robson, Plangger, Kietzmann, McCarthy & Pitt, 2015). Ryan et al., for example, used Self Determination Theory (SDT) to explain how games meet psychological needs in all people. SDT was first developed in 1985 by Deci and Ryan, who aimed to create a comprehensive theory of human motivation and demonstrate that people are not simply motivated by reward. Deci and Ryan (1985) took a cognitive approach to evaluating motivations. Their paper described humans as having an innate tendency towards learning and creating, driven by three fundamental needs: a need for autonomy (a perceived internal locus of causality), a need for competence (factors such as feedback and rewards were

found to conduce this) and relatedness (the need to feel connected and belonging) (Ryan & Deci, 2000). This innate drive was termed, intrinsic motivation.

Ryan, Rigby and Przybylski (2006), suggested that the three SDT motivational needs could be met in the context of a virtual environment and that this would explain the observed strong motivation to play. The need for autonomy can be satisfied in a game environment in a variety of ways. Due to voluntary participation being a prerequisite for almost all game use, games provide a sense of volition or willingness to play. This willingness can also be fostered by contextual factors such as game design or appeal. The second psychological need described by Ryan, Rigby and Przybylski, is competence. Factors which enhance feelings of mastery, and effectiveness include the chance to acquire new skills and abilities, as well as tasks which provide the optimal level of challenges and opportunities for positive feedback. These can all be catered for within a virtual environment with feedback being a key driver. Feedback facilitates learning by guiding and training behaviours. Feedback leads to players feeling more competent and has been found to be a strong predictor of performance and motivation (Ryan et al., 2006). Game environments are often feedback rich, and Ryan, Rigby and Przybylski found that competence was among the most important needs satisfactions provided by games. The need for relatedness is also readily provided in most game environments, as most games allow positive interactions to occur between players. Messaging systems, team play and team goals are all examples of in-game systems which result in a player experiencing increased sense of belonging and connectedness with fellow team mates. Team interaction has been shown to result in further game enjoyment (Ryan et al., 2006). Consistent with a SDT understanding of game environments, Ryan et al. (2006) developed a measure of The Player Experience of Need Satisfaction (PENS). Although applied to research on game design, this measure has yet to be applied in gamification research within an organisational context. This theory is one of many which aim to explain the motivational aspects behind games. More generally, and as will be

discussed later in greater detail, SDT also plays an important role in understanding workplace engagement (Bakker & Demerouti, 2014).

Flow Theory is another theory which has been used to explain the motivational effects of games. Flow, as described by Csikszentmihalyi (1990), is a temporary state of being fully focused and engaged in an activity. Flow theory has its origins in research on optimal experiences moments of concentration and deep enjoyment (Csikszentmihalyi,1990). Flow state is dependent on external circumstances and game elements such as challenge and feedback have been found to effect flow state (Hamari & Koivisto, 2014). Hamari and Koivisto (2014) used the Dispositional Flow Scale-2 to measure flow in a gamification setting. It this case measures were taken on users of a sporting app Fitocracy. Fitocracy gamifies exercise by rewarding sporting activity with points and badges, as well by incorporating a social element to participate with friends. The Dispositional Flow Scale-2, similarly to Ryan, Rigby and Przybylski's (2006) PENS measure, assesses the extent that users report their state-level satisfaction of certain psychological needs. When these needs (including a need for challenge, skill development, and autonomous experience) are met, a person is considered to be in flow state and thus more likely to meet the games desired outcome. In the case of Fitocracy the desired outcome was exercising more. Flow theory shares similarities with current conceptualisations of workplace engagement. Similarly to how flow is a temporary state, workplace engagement has been found to fluctuate throughout the day. Engagement and burnout have generally been defined as stable, persistent and enduring psychological states (Schaufeli et al., 2006). Consistent with this view, a large number of cross-sectional, longitudinal, and meta-analytic studies have used 'between-person' averaged engagement scores to determine associations with antecedents, mediators, moderators and outcomes. In such between-person research, day-to-day variations in individuals' experiences are either ignored or treated as measurement error (Tims, Bakker & Derks, 2014). However, it is

increasingly being acknowledged that employee engagement, burnout and their constituent dimensions not only differ between individuals but also vary within individuals over relatively brief periods of time (e.g., Bakker & Bal, 2010; Sonnentag, 2003; Tims, Bakker, & Derks, 2014). Diary studies have shown that 30 to 70 percent of the variance in engagement is attributable to within-person variation (Bakker & Bal, 2010; Breevaart, Bakker & Demerouti, 2014; Simbula, 2010; Xanthopoulou, Bakker, Heuven, Demerouti & Schaufeli, 2008; Tims, Bakker, & Xanthopoulou, 2011).

Another theory which can be invoked to help understand the motivations behind gamification was proposed by Robson, Plangger, Kietzmann, McCarthy and Pitt, (2015). The focal points of their theory were Mechanics, Dynamics and Emotions (MDE). Mechanics are decisions made by game designers to specify goals, rules, the context and types of interactions which occur in the game. Dynamics are the types of player behaviours which develop as players engage in the mechanics. Emotions are the resulting psychological states such as fun or enjoyment which arise as a result of engaging in the game. Robson et al. argued that these factors are essential in explaining what makes players continue to use games. This theory draws attention to specific game elements which could result in a more positive emotional state (Robson, Plangger, Kietzmann, McCarthy & Pitt, 2015). Similar to much of the published gamification literature, although theory is proposed to account for psychological and task performance outcomes, there is a paucity of rigorous empirical research using well-validated measures to operationalise the constructs.

Richter, Raban and Rafaeli (2014), consolidated knowledge of how gamification effects psychological systems. To explain game motivations, Richter, Raban and Rafaeli, reviewed existing psychological theories and grouped the theories into three types. The first of these were needs based theories. These included, as noted above, SDT and Flow theories. The second

grouping encompassed socially based theories such as the social comparison theory and personal investment theory. The third grouping encompassed rewards based theories, such as expectancy value theory. Richter, Raban and Rafaeli concluded that the range of theories can act as a base for the conceptual consolidation of theories. Zhang's (2011) concept of motivational affordances potentially provides a means to integrate theoretical and research perspectives.

Zhang (2008) proposed motivational affordances as a framework to conceptualise the motivational pull of single game design elements in a variety of contexts (Deterding, 2011). Zhang (2008) grouped the large variety of motivational affordances to the psychological needs they meet. Drawing from Self Determination Theory (Ryan & Deci, 2000) and Cognitive Evaluation Theory (Ryan & Deci, 2000), Zhang defined motivational affordances as the properties of an object that determine whether and how it can meet and support one's motivational needs. Zhang proposed three types of needs: Physiological, Psychological and Social. Physiological needs exist within a person's biological systems. Psychological needs arise from one's desire to seek out interactions which promote psychological vitality, wellbeing, and growth. Social needs are similar to the need for relatedness (the need to belong and connect with others) in Self Determination Theory. Zhang (2008) also stipulated that social needs elicit emotional responses which lead to motivation. On the basis of this theory, Zhang listed game design principles, which then act to fulfil such needs. For example, Zhang suggests games should support autonomy and offer creation and representation of self-identity. Autonomy could be promoted in a game environment by allowing the player to choose which task to complete or have freedom to customise the in game representation of themselves. Competence needs can be met through timely and positive feedback. Social and emotional needs can be met in games which facilitate human interaction though elements like group based messaging and goal attainment. Having a motivational perspective to game design which

incorporates both the broad range of motivation theories as well as game theories, is an effective way to consolidate knowledge on the topic of games and their motivations.

Hamari, Koivisto and Sarsa's (2014) review of gamification literature grouped together the research according to motivational affordances, demonstrating the theory's flexibility of fit to gamification research. Hamari et al.'s broad search across the Google scholar and Scopus databases resulted in only four papers on gamification in the context of work.

Anderson, Huttenlocher, Kleinberg, and Leskovec, (2013), demonstrated how badges can be motivational affordances and be used to influence and steer user behaviours on a website.

Eickhoff, Harris, de Vries and Srinivasan's (2012) gamification paper used flow theory as an index of player engagement in a gamified Human Intelligence Task. Eickhoff, et al. added the motivational affordances of points and challenges to intelligence tests to attract and retain high quality crowdsourced workers (Figure 4).

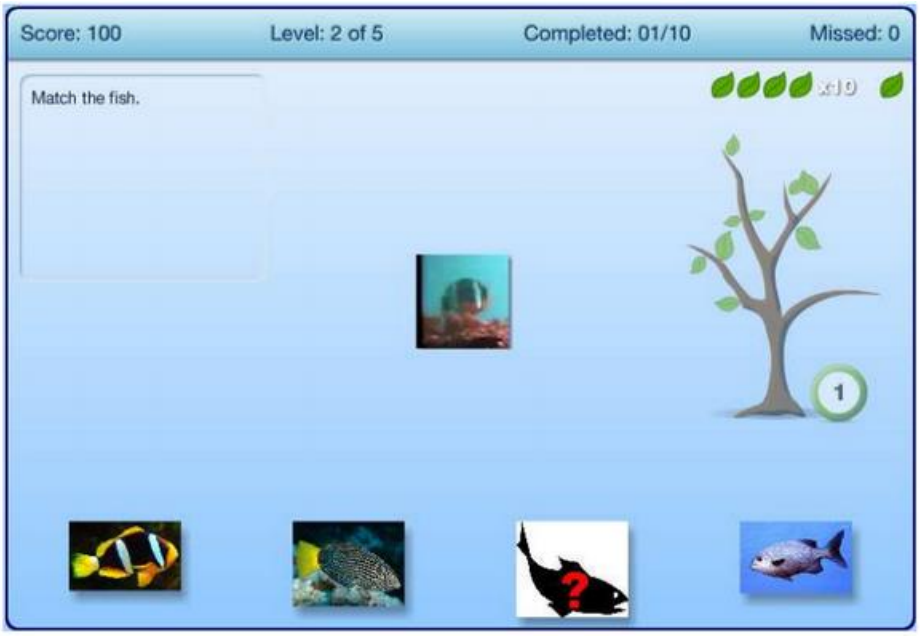

Figure 4 The gamified version of an otherwise tedious intelligence test

They found that alternative incentives of intrinsic motivations, besides the financial reward, can positively influence the outcome of crowdsourced data collection and annotation campaigns. These outcomes observed were significant increases in data quality and consistency for lower financial incentives.

The third of the gamification studies followed a similar process, with the gamification of calibration processes. These tasks involve manually setting a baseline for software, from which it can then measure input later. For example user's ability to see different colours needs to be established so that a screen may deliver the optimal colour experience for the user. Such tasks are often tedious and unenjoyable. Researchers turned this process into a game in a variety of scenarios and the new gamified processes were then compared to standard procedures. The game experience was found to be significantly more enjoyable without compromising the quality of the individuals input (Flatla, Gutwin, Nacke, Bateman, & Mandryk, 2011).

The fourth paper investigating gamifications effect on work processes followed a similar structure to Anderson, et al., (2013) paper, and used the same software, Stack Overflow. Again looking at how rewards systems can steer behaviours. In this paper, Grant and Betts (2013) observed increased behaviour relating to the achievement of a particular badge, compared to after its achievement, therein demonstrating the motivational pull of virtual reward systems.

As previously mentioned, the concept of motivational affordances has many commonalities with that of the Job Demands and Resources Model of Engagement. This provides the opportunity to use proven workplace engagement models in the development of gamified services. To understand how such a process might occur, it is first important to understand current engagement literature: its origins and some of its key concepts.

Research into employee engagement continues to grow rapidly and has become a fundamental driver of growth in the business sector (Macey & Schneider, 2008). Enabling organisations of all

sizes to make the most of their human potential to gain a competitive advantage and benefit employee's simultaneously (Albrecht, 2012). Workplace engagement has been shown to elicit a broad range of individual and organisational outcomes such as well-being, performance, and job satisfaction (Bakker & Demerouti, 2014). Despite a breadth of research, literature, conferences, books, and meta-analyses, aimed to conceptualise and understand engagement, there is still some disagreement in the literature as to whether it is simply a rebadging of pre-existing constructs such as job satisfaction, commitment, and job involvement (Schaufeli & Bakker, 2010). This disagreement is known as the 'old wine new bottle argument' (Macey & Schneider, 2008). For example Macey and Schneider (2008), suggested that there may be an overlap between engagement constructs and other constructs such as flow or job involvement. Although the previously discussed flow theory has some similarities with engagement. Researchers have since moved on from such arguments to recognise engagement as a unique concept. Flow being defined as a temporary state of being fully focused and engaged in activity. Workplace Engagement is measured independently of flow and is considered to be a longer lasting work related state.

The most widely accepted approach to understand and measure employee engagement is Schaufeli, Salanova, González-Romá and Bakker's (2002) three factor model of engagement. Schaufeli et al. (2002) defined engagement as "a positive, fulfilling, work related state of mind that is characterised by vigour, dedication and absorption". Vigour was conceptualised in terms of high levels of energy and psychological resilience whilst working. Items subsequently developed to measure vigour include: "When I get up in the morning, I feel like going to work"; "At my work, I feel bursting with energy". Dedication is characterised by strong involvement in one's work, and willingness to work above and beyond what is expected. This was measured using items including: "To me, my job is challenging"; "My job inspires me". Absorption is related

to being deeply concentrated and focused in one's work. This was measured using items such as: “When I am working, I forget everything else around me”; “Time flies when I am working”. Schaufeli et al. using confirmatory factor analysis, found support for their proposed three factor model of engagement. The measure has since undergone several psychometric evaluations and a nine item version has been validated in a wide variety of organisational settings in a range of different countries (Albrecht & Su, 2012; Schaufeli, Bakker & Salanova, 2006). The three factor model of engagement remains the most widely utilized and accepted, conceptualisation of engagement.

In terms of theoretical underpinnings of engagement, the Job Demands Resources Model (JD-R Model) is based on Schaufeli et al’s (2002) three factor model of engagement and is a proven flexible and robust model used to explain what causes employee engagement (Albrecht, 2012). As will be described later, the JD-R model shares many commonalities with motivational affordance theory. First developed in 2007 by Bakker and Demerouti, the JD-R model of engagement describes two factors present in every occupation which ultimately leads to the burnout or engagement of employees: Job demands and job resources.

Job Demands are social, physical or organisational aspects of a job that require sustained physical or mental effort and are therefore associated with certain psychological costs (e.g. exhaustion). Job Demands include aspects such as time pressure, workload and difficult physical environment and have been found to be predictors of burnout in employees (Bakker & Demerouti, 2014). A meta-analysis by Crawford, LePine and Rich (2010) on the JD-R model, also demonstrated that demands are not always negatively associated with engagement, it is only when they outbalance the resources a person can draw on to overcome them that they begin to hinder a worker rather than challenge them, thus negatively affecting employee engagement.

Job Resources are described as aspects of a job that aid in achieving work goals, stimulate personal growth and development, and reduce job demands. Job resources share similarities with Zhang's (2008) description of motivational affordances. Just as motivational affordances act to meet particular psychological needs, job resources fulfil basic psychological needs such as those described in Self Determination Theory like the needs for autonomy, relatedness, and competence. The satisfaction of needs intrinsically motivates employees resulting in them being vigorously, dedicated to, and absorbed in their work (Bakker, Albrecht, & Leiter, 2011).

Research on the JD-R model has steadily increased over the past decade. In 2010, Crawford et al. conducted a meta-analysis to assess the validity of the JD-R model as well as the relationships between working conditions and employee engagement and burnout. The results of the study supported the positive relationships between job demands and burnout and a negative relationship between resources and burnout. A number of resources were found to be positively related to engagement.

Crawford et al. (2010), identified autonomy to be the strongest predictor of workplace engagement in the JD-R Model. Kahn (1990) discussed autonomy in the workplace as an allowance for employees to be effective independent agents of change in their role. Similarly Halbesleben's 2010 meta-analysis also identified autonomy as a strong predictor of work engagement. Halbesleben's analysis suggested that autonomy, compared to other job resources, has the strongest correlation with engagement. Autonomy has also been shown to be generalisable across different cultural contexts. In a study of the JD-R model in a Chinese context by Albrecht and Su (2012), a large telecommunications company was assessed according to the job resources of autonomy, performance feedback and colleague support as well as potential psychological mediators. In this case, where job resources such as feedback were found to be mediated by psychological factors, autonomy had a direct relationship with engagement, suggesting it provides not only intrinsic motivation through the meeting of

psychological needs, it also provides extrinsic motivation by empowering employees to be agents of affect in their role. Based on this it is important that jobs are crafted with high levels of employee autonomy so that employees are able to participate in the decision making process and guide what tasks to prioritise. Ultimately this creates a sense of ownership over an employee's work.

Autonomy has also been identified as important in gamification research. The previously mentioned study, Ryan et al. (2006) described that virtual environments may meet particular psychological needs. In the same way particular work tasks could have game elements added (be gamified) which provides a worker with autonomy. For example having freedom to choose which tasks to engage in gives the user a sense of volition in the game, rather than being micro managed by a boss.

Performance feedback also leads to increased engagement, although feedback did not have a direct relationship with engagement as with autonomy (Halbesleben, 2010). As indicated in the above study, performance feedback served as a source of satisfying employee needs and thus was intrinsically motivating. Proper feedback facilitates learning, and helps employees understand the value of their contributions to the workplace (Albrecht & Su, 2012). This resource can be provided in a variety of ways to employees, Albrecht & Su suggested, multi-rater feedback, and training leaders to give effective feedback could help promote engagement in an organisation. Such feedback systems could also be implemented using online surveys and graphical feedback to provide detailed applicable information to employees (Bakker & Demerouti, 2014). Again such elements are often used in when gamifying a work task. As with the initially described gamification in a call centre, staff are provided with up to date information on their performance on calls, both with timing and customer satisfaction.

Social Support is another job resource found to promote workplace engagement in a breadth of ways. Schaufeli and Bakker (2004), for example, found positive associations between job resources, including feedback and social support, and the three dimensions of

engagement. Social support provides employees with opportunities to learn in a safe and supportive environment. Clear communication, intergroup informal training, and coaching (online or in person), can help meet a person's need for relatedness and belonging, whilst also equipping them with the skills needed to engage in one's work (Bakker & Demerouti, 2014). Just as the resource can be provided in the workplace context, the game could also provide this resource through messaging systems and group projects which result in increased points for players.

Finally Role Clarity is another more recently conceptualised and researched job resource. Based on prior conceptualisations of the factor, (e.g. Macey & Schneider, 2008), Albrecht (2012) described role clarity as “incorporating role alignment with organisational goals”. A series of questions were then created to capture the construct, such as “I understand how my work helps my site achieve its goals”. This was the first study to measure role clarity as a resource in the JD-R framework. Albrecht found that like other resources of autonomy, or supervisory coaching, role clarity also fit into the higher order of job resources, resulting in increased engagement (Albrecht, 2012). Motivational affordances in gamification such as badges have already been proven to direct user behaviour and give them a clear direction (Anderson, Huttenlocher, Kleinberg, & Leskovec, 2013; Grant & Betts, 2013). In the same way this could be applied to a wide variety of work contexts which have had game elements added so to illicit employee engagement.

As the previous section demonstrates there are a lot of analogies between game literature and JD-R Theory. Seen through the game literature, gamification involves the adding of motivational affordances to a coinciding workplace role to meet psychological needs; this ultimately results in positive workplace outcomes. The proposed model suggests anchoring current game research to current engagement research. When anchoring to JD-R literature, job resources become game resources and gamification engagement in the workplace involves the adding of in game

resources, which meet needs, resulting in gamification engagement. As the game is analogous to a work role, ultimately gamification results in work engagement. This is illustrated in Figure 5.

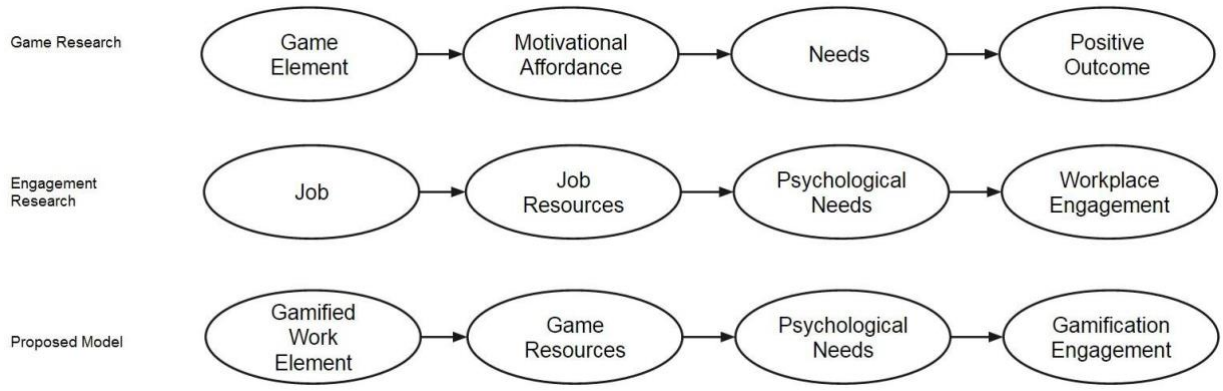

Figure 5

The process of anchoring gamification research to existing frameworks of research has already been proposed in gamification of marketing research by Huotari and Hamari (2012). Their paper aimed to bridge game design patterns to service marketing by mapping motivational affordances onto Service Marketing theory. In the same way it is suggested that motivational affordance theories can be mapped onto the JD-R framework of engagement. Doing this provides gamification research with proven workplace engagement models to build on. Namely the JD-R framework, it being a tested, robust model to understand and measure workplace engagement. The connection between gamification and workplace engagement therefore cannot be based on individual game elements but rather should be understood by the resources that the game provides, as these are what elicit the later engagement. In this case, a game resource refers to job resources which have provided through game elements, which ultimately aids in achieving work goals, stimulate personal growth and development, and reduce job demands.

Future research should aim to investigate this relationship. Using validated models to inform future directions. Research should seek to ascertain whether gamification in the workplace, results in a more engaged workforce and if so, what the driving factors are behind this engagement.

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