

Title Page

The Impact of Gamification on the Feeling of Belonging Among Members of an Online Learning Community

By

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Abstract

Informal online learning communities exist on some of the world's most popular websites like Facebook and Reddit. Gamification, the use of game elements in a non-game setting (Deterdings, Dixon, Khaled, & Nacke, 2011), is also present on these two popular websites. This thesis explored how members of an online learning community felt about gamification and if it had any impact on their feelings of belonging.

This thesis employed a qualitative case study methodology to explore the response of participants in two focus groups and in three interviews to gamification in informal online learning communities on Reddit. The data were coded using the method from Miles, Huberman, and Saldana (2013) and analysed using Saturate App. The coding process developed several minor themes and the major theme, "Cognizant of karma", which illustrated that karma was only a minor motivator to participants. Participants felt receiving "downvotes" carried a sense of "judgment", but also felt downvotes presented a learning opportunity that reinforced community boundaries.

This data may suggest that participants have internalized extrinsic motivation (Gagné, Deci, Ryan, 2013) and that internalization and gamification may co-exist due to the importance both idea place on creating shared value. If this internalization could be generalized, it could show that gamification and online learning communities can coexist in a way that allows members to retain their sense of belonging.

General Summary

Reddit.com, a popular website, is a host to gamified online learning communities. These online learning communities are gamified by using a point system called “karma” where members gain points for good contributions to the community (upvotes) and lose them for bad ones (downvotes).

This thesis explored whether the use of points in gamification would instill a sense of competition among community members and, if so, would that competition undermine the feeling of belonging. The feeling of belonging among members is important to sustain and grow a community.

The evidence that came from the participants in my research showed that they were merely “Cognizant of karma” and did not think of it in a competitive sense. Further examination of the data showed that both upvotes and downvotes could be of beneficial use to an online learning community.

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Declaration

All work in this research, except where otherwise cited, is my own.

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Chapter 1: Introduction

1.1 Literature context

The purpose of this thesis was to investigate the impact of gamification on the feelings of belonging among members in an online learning community. I participated in several online learning communities. Sites like Facebook and Reddit use point systems where users reward each other with points for positive contributions to the community and punish negative contributions by removing points. I wanted to investigate how members felt their sense of belonging is impacted by these point systems.

The type of online learning community (OLC) discussed in this thesis are Communities of practice (COPs). Communities of practice possess three key characteristics: domain, community and practice (Wenger-Trayner, & Wenger-Trayner, 2015). The characteristic of domain is the shared interest among members. A domain provides members with a shared identity and defines the boundaries of the community. The characteristic of community is the contact between members that allows them to build relationships and learn from one another. The characteristic of practice is the shared repertoire of tangible and intangible artifacts created by the community. Wenger-Trayner and Wenger-Trayner (2015) state, “It is the combination of these three elements that constitutes a community of practice. And it is by developing these elements in parallel that one cultivates such a community” (para. 6).

Online learning communities have become increasingly common in pedagogy (Jones & Dexter, 2014). Teachers have used them to create learner-centered environments for their students and have used online learning communities for their own professional development

(Jones & Dexter, 2014). These are known as formal or “bounded” online learning communities (Wilson, Ludwig-Hardman, Thornam, & Dunlop, 2004). Informal online learning communities exist on any website where people can come together to share in learning a common interest. Online learning communities can be found on Facebook and Reddit - two of the United States’ most popular websites (Alexa, 2019). Both these sites have fully integrated gamification in their designs.

Online learning communities have the potential to transform the way information is exchanged and could be considered in all forms of online learning (Kitchenham, 2009; Jones & Dexter, 2014). However, online learning communities can be host to a great number of non-participating members (Bista, Nepal, Colineau, & Paris, 2012; Smith, 2003; Xie 2013). Designers of online learning communities need to look for ways to encourage participation. Some researchers have looked at the use of gamification in online learning communities to encourage participation (Bista, Nepal, Colineau and Paris, 2012).

Gamification is the “use of game design elements in a non-game contexts” (Deterding, Dixon, Khaled & Nacke, 2011, p.10). Gamified elements can include points, badges or levels and, often, have no value beyond the value placed on them by the user or the community involved. Gamification can be used as an extrinsic motivator to influence a user into doing something they otherwise may not do.

As an example of the use of gamification as a means to increase user participation, consider the example of Google Guides, a program where users create or modify information which is then integrated into Google Maps. Users upload photos, restaurant reviews or edit business information in exchange for points. Once a user accumulates the required point score, they increase their level. Once a new level is achieved, the user unlocks badges (Figure 1.2). In

this particular example of gamification, points have led to tangible rewards. Users at a level 5 have received free access to Google Play for a limited time period (Figure 1.1). However, often the points, levels or badges themselves are the only reward when gamification is used (Figure 1.2).

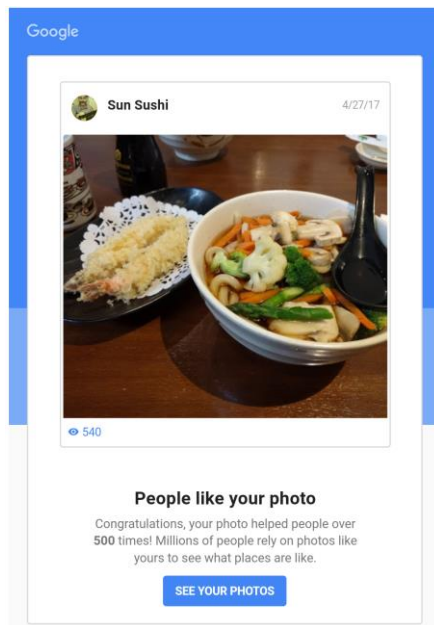


Figure 1.1 - Google Guides provide tangible awards

Local Guides levels

Reach higher levels as you earn points for your contributions.

Level	Points	Badge
Level 1	0 points	No badge
Level 2	15 points	No badge
Level 3	75 points	No badge
Level 4	250 points	
Level 5	500 points	
Level 6	1,500 points	
Level 7	5,000 points	
Level 8	15,000 points	

Figure 1.2 - Google's Local Guides uses level, point and badges.

Gamification is increasing in popularity in the context of online learning communities, employed to increase student motivation (Deterdings, Dixon, Khaled, & Nacke, 2011; Grant & Betts, 2013; Hamari, Koivisto, & Sarsa, 2014; Jung, Schneider, & Valacich, 2010; Witt, Scheiner, & Robra-Bissantz, 2011). Since gamified online learning communities are becoming more commonplace, insight into how they work and what feelings they conjure among their members is worthwhile.

1.2 Reddit: Case Context

The site Reddit.com allows anyone to create a community. Reddit's (2017) *about* section states, "Anyone can create a community on nearly any topic imaginable. Each community was independently moderated by volunteer users. Community members can share content including stories, links, and images." These communities are called *subreddits* and are governed by the subreddit's rules. Reddit allows its members to develop a sense of membership through their interactions with other members. "Redditors can comment on any post on Reddit. Comments are often the best part about Reddit content—they provide additional information, vigorous discussion, context, and often humor." (Reddit, 2017)

Reddit's design allows for upvoting and downvoting each member's post (creation of a new link and/or forum topic) and user comments. Reddit's community vote on posts and comments such that the content with the most positive reception rises to the top (Reddit, 2017). Each upvote gives a member a point of *karma*. A downvote subtracts a point of karma. A user's total amount of karma can be found on their profile page.

Reddit is one of the world's biggest gamified online learning communities. In 2017, it was the 16th most visited site in the world, 4th in the United States and 5th in Canada (Alexa, 2017). These features of Reddit, therefore, makes it a worthwhile setting to examine online learning communities.

1.2.1 Reddit as a CoP

Reddit is a community of communities. Each specific community, a subreddit, was devoted to a specific topic. Some of these subreddits exhibit Wenger-Traynor and Wenger-Traynor (2015)'s crucial characteristics for a community of practice as the subreddits possess domain, community and practice. The domain (Wenger-Traynor & Wenger-Traynor, 2015) of the community is established by members joining the subreddit out of interest in the topic. Each subreddit had a common focus and a set of rules (Figure 1.3). This defined the boundaries of the community. The community (Wenger-Traynor & Wenger-Traynor, 2015) was built through relationships between members. Members' account names were attached to their posts so members could recognize posts from the same member. Some members used third party programs to add notes to another member's name to help them recognize the other member. In this way, whether a subreddit was a community of practice or not is subjective from member to member based on their efforts towards building a relationship. Practice (Wenger-Traynor & Wenger-Traynor, 2015) was developed in a subreddit through their artifacts. Subreddits were part digital archive for members to search previously posted artifacts such as recipes, instructions or advice. This archive helped to develop a shared repertoire for committed members. The shared creation of artifacts, the development of relationships and a shared identity may have allowed some members to feel a sense of belonging to the community (Lave & Wenger, 1991).

Some of these subreddits would more closely fit the definition of network rather than community, as identity did not play an important role and was not actively encouraged (Wenger, 2000). Other times, whether a subreddit met the definition of a learning community would be on a member to member basis, depending on whether a particular member decided to take note of another member who comments on their work. Some members may choose to integrate and

develop a shared identity while other members may not. Often these subreddits do not set a learning-based goal. One such example is r/funny where members simply share jokes. As informal learning communities have no set curriculum, the experience of each participant can vary widely. I will further discuss Reddit's suitability as a CoP in the methodology, but this section has shown that this website is equipped with the tools that one may use a subreddit as a Community of Practice.

Rules

General Rules
Posting only assignment/project goal is not allowed. Read posting guidelines.
Easily googleable questions are not allowed.
Posting screenshot of the code is (generally) not allowed. Read posting guidelines.
Insulting will not be tolerated.
Reddit rules These apply also on this subreddit.
Breaking these rules may result in post removal and/or ban from this subreddit.

Posting

Try out suggestions you get and report back.

[SSCCE](#) Keep your code Short, Self Contained, Correct (Compilable) and provide Example

Include the error you get when running the code, if there is one.

Ensure your example is correct. Either the example compiles cleanly, or causes the exact error message about which you want help.

Avoid posting a lot of code in your posts.

Posting homework assignments is not prohibited if you show that you tried to solve it yourself.

Posting resources

[What Have You Tried \(.com\)](#)

[How to ask a software question](#)

[Writing the perfect question](#)

Code hosting

[Github gist](#)

[Pastebin](#)

Guidelines

Commenting
Try to guide OP to a solution instead of providing one directly.
Provide links to related resources.
Answer the question and highlight side-issues if any exist.
Don't "answer and run", be prepared to respond to follow up questions.
Proofread your answers for clarity and correctness.
Be polite.

Figure 1.3 - Posting rules and guidelines for the *r/LearnPython* online learning community

1.2.2 Reddit as a gamified CoP

Reddit's communities of practice are gamified. The topic submitted to a subreddit can be voted positively, *upvoting* or negatively, *downvoting* by any Redditor who is signed into their account. An upvote move the topic higher in the *hot* tab, being the default tab for every subreddit. A topic receiving a high amount of upvotes as a function of time remained at the top of the subreddit. The Redditor who submitted the topic (a *post*) received a point score called *karma* will be called the *Original Poster* (OP) within the context of that post. Downvotes subtracted from karma. Karma were also collected from commenting on a post. Comments were sorted in a similar manner to posts.

Members awarded karma to a post or comment by clicking the up arrow on the left side of the link. This was called an upvote. Members were encouraged to upvote posts or comments that are helpful to the community.



1.4 - An Upvote



1.5 - A Downvote

Members could also subtract karma from a post or comment by clicking the down arrow on the left side of the link. This action was called a downvote. Downvoting was one way members can deal with trolls - users who purposefully attempt to aggravate other users.

Downvoting differentiated Reddit's use of gamification from that of Facebook. Where Facebook had positive *likes* and recently added reactions to posts, there was no *dislike* button (Figure 1.6).

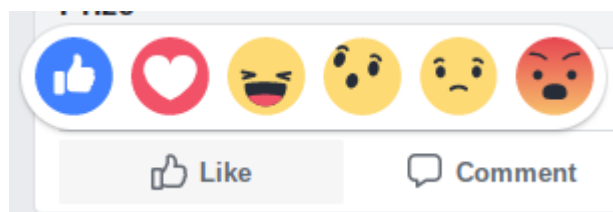


Figure 1.6 - Facebook's reaction buttons

Reddit employed a second gamified element, Reddit Coins, in their system. Members could pay money to the site to bestow Silver, Gold or Platinum Awards to another member for a comment or post. This “gilded” member received small bonuses such as access to special subreddits. It should be noted that gilding, since it requires real money, was far more valuable than upvotes. Reddit Gold was not a focus in this research but was mentioned by participants when comparing the two forms of gamification. My research investigated how members of these

online learning communities subreddits felt about karma and if this form of gamification had any impact on their feeling of belonging to the community.

1.3 Rationale and personal motivation

I have been a member of Reddit for six years and I have learned a great deal from several of its subreddits. I enjoy Reddit during my free time. Sometimes, I passively absorb the conversation of others; sometimes, I go to the site to ask a question with regard to a particular topic. I like Reddit and would consider myself to be a Redditor.

As an educator, I was apathetic on whether gamification should be employed in educational settings. On the one hand, it is only an extrinsic form of motivation, one that does not carry the lasting power of intrinsic motivation, especially when the extrinsic motivator is no longer present (Deci & Ryan, 1985). On the other hand, gamification has shown so much success in increasing participation, with examples ranging from boy scout badges (Hakulinen, Auvinen, & Korhonen, 2013) to business marketing (Hamari, Koivisto, & Sarsa, 2014). Gamification can take the form of internet points and can be integrated into the design of an online learning community. Since the gamified element can be built into the context of the community then the extrinsic motivation should continuously be present.

My interest in the usefulness of gamification stems from real world experience. I am a coach for a First Lego League team. This league's version of a competition is called a *co-operation*, where attendees are supposed to cooperate with other attendees as much as they are supposed to be competing with them. This dynamic led me to wonder if cooperation and competition are as mutually exclusive as I have always assumed.

I began to question if the points Reddit used to encourage community participation would foster competitiveness among members. If so, I wondered if the competitive way of thinking about points be at odds with the intended incentivizing purpose of karma.

1.4 Statement of Problem

Points-based systems have been used by online learning communities such as Reddit.com; however, since points are often associated with competition, it could be anticipated that this form of gamification would create competitiveness among members of a gamified online learning community and undermine their sense of belonging.

Point systems in Online Learning Communities are used to reward members for positive contributions to the community. Some OLCs allow the use of negative points to punish negative contributions to the community. It is possible members may become jealous or competitive over another member's accumulation of positive points. Jealousy and competitiveness may jeopardize the relationship among members and negatively impact a collaborative learning environment by diminishing their emotional safety (MacMillan, & Clarke, 1986).

Members that experience an accumulation of negative points may feel judged and pushed to the periphery of the community. This perception of ostracization is contrary to a community of practice's aim to shepherd peripheral members into the core of the community (Lave, 1991). Negative points may be used for nefarious purposes. For instance, a jealous member may without justification take points away from another that has accumulated more points. Such behaviour could negatively impact the collaboration one expects to find in a community and cause its destabilization.

An important aspect of online learning communities is the sense of belonging members feel towards that community (Pratt & Palloff, 2007; Lave & Wenger, 1991). Though there has been some studies showing the positive impact of gamification on online learning communities (Deterdings et al., 2011; Grant & Betts, 2013; Hamari et al., 2014; Jung et al., 2010; Witt et al., 2011; Andrade & Carvalho, 2015), I have found no studies that *explain* why there would be a positive impact despite the antithetical nature of competition and belonging. Leclercq, Hammedi, and Ponci (2018) found competitive gamification had a negative impact on communities but note a lack of research on the feelings of members in these communities. My research attempts to explore the relationship between gamification and the feeling of belonging in online learning communities.

1.5 Purpose statement

The purpose of this research is to explore the impact of gamification on the feeling of belonging among members of online learning communities. The exploratory research seeks to identify feelings associated with gamification in the online learning community context in order to determine factors online learning community designers should take into consideration when creating a CoP.

1.6 Research questions

This research was undertaken to find an answer to the following questions: To what extent does karma impact members' feeling of belonging in an online learning community? If there is an impact, what emotions are associated with it? Does the use of a karma system impact collaboration and cooperation in a CoP?

1.7 Summary

In this chapter I explained what online learning communities are and they can be found on some of the most popular websites in the world. I also explained what gamification is and that it is used increasingly in conjunction with OLCs. I have shown that gamified OLCs are worth investigating.

I have shown that communities are built on relationships and members sharing a part of their identity. I would expect people to be collaborative and cooperative in order to build relationships and develop a shared identity. Gamification is a form of extrinsic motivator that uses points and awards. I would expect people would become competitive in situations where points are involved. Collaborative and cooperative environments seem to be at odds with competitive environments. Since this is the case, OLCs are worth investigating.

Chapter 2: Literature Review and Theoretical Framework

2.1 Overview of Chapter 2

In this chapter I will discuss the evolution of both online learning communities and gamification from a research perspective. I will also discuss the theoretical frameworks for the research which include the definition of a Community of Practice type of online learning community as defined by Wenger-Trayner et al. (2015). I will illustrate why the CoP framework is preferred over the Community of Inquiry framework. I will describe a “sense of community” by the framework described by McMillan and Chavis (1986). These theoretical frameworks will then be compared to the qualities of gamification.

2.2 Literature Review

2.2.1 Informal Online Learning Community

An online learning community is a congregation of people who meet on the Internet to share an educational journey (Palloff, & Pratt, 2007). A community has a clear purpose as its members have a shared goal (Lave, & Wenger, 1991). Members of these communities are collaborative and supportive. They share values and a part of their identity (Palloff & Pratt, 2007). Online learning communities exist so that members can aid each other to learn. Some communities focus on inquiry learning and are known as communities of inquiry (CoIs). These communities of inquiry focus on Cognitive, Social and Teaching presences to create an educational experience (Garrison, Anderson, Archer, 2010). The CoIs framework was developed for “formal education” (Garrison et al., 2010, p. 6). Communities of inquiry will not be the focus of this Thesis. Instead the focus will be on communities of practice (CoPs) because I am interested in informal communities where participation is voluntary rather than formal

communities where participation is required. Communities of practice are “groups of people who share a concern or passion for something they do and learn how to do it better as they interact regularly.” (Wenger-Trayner, Wenger-Trayner, 2015, para. 4). These communities allow members to share common practices and “identify with something larger than the sum of their individual relationships” (Palloff, & Pratt, 2007, p. 27). The internet allows people from all over the world to meet virtually and so CoPs have moved online and are often referred to as online learning communities.

A community was never dependent on a venue. “A community of practice is a set of relations among persons, activity and world, over time and in relation with other tangential and overlapping communities of practice.” (Lave, & Wenger, 1991, p.115). Instead, a community can be found wherever the structure of a community’s learning resources can be hosted, such as the internet, which has enabled people with common interests to find each other even if they live very far away. CoPs have developed all over the Internet. Despite taking on a life of their own, communities still share the same philosophy of communities of practice: members who share a purpose develop a sense of belonging through participation (Wenger, 1998).

CoPs are founded on the mutual engagement of its members towards a shared goal (Lave, & Wenger, 1991). Communities of practice members share a common value (Pratt & Palloff, 2007). Understanding that people are social beings who learn best from other people, Lave and Wenger (1991) described communities of practice as a group of people who share a common goal and develop a shared repertoire, ideas and memories through legitimate participation. A community creates “documents, tools, stories, symbols, websites, etc.” (p. 232) while developing a shared identity (Wenger, 2000). The interaction amongst members of the community helps foster trust and meaningful relationships which leads to developing a sense of belonging in each

member. Through this engagement members develop common routines, sensibilities artifacts, vocabulary and styles. (Lave & Wenger, 1991). These interactions between members develop trust and relationships. Relationships among members allow them to develop an identity within the group and with that a feeling of belonging (Wenger, 2000).

Researchers employ different terms to refer to the feeling of belonging among members of a community such as “sense of belonging, and “sense of community” (Blanchard & Markus, 2002, p. 3), and “feeling of membership” (McMillan & Chavis, 1986, p. 9). The feeling of belonging is:

The sense of belonging and identification involves the feeling, belief, and expectation that one fits in the group and has a place there, a feeling of acceptance by the group, and a willingness to sacrifice for the group. The role of identification must be emphasized here. It may be represented in the reciprocal statements “It is my group” and “I am part of the group.” (McMillan, & Chavis, 1986, p. 10)

The feeling of belonging of each member is essential to the community in which they are a part. It provides members satisfaction and commitment and promotes participation (Blanchard & Markus, 2002).

A CoP is perpetuated by new members, often referred to as “newcomers” in the literature (Lave & Wenger, 1991). To ensure its continued existence an OLC must allow new members but must stay true to its goal. Newcomers enter the community on the periphery. Through “legitimate peripheral participation”, they adopt the characteristics common to the community members and develop a shared identity (Lave, & Wenger, 1991, p. 124). They move deeper into the community to become core members by personally investing in the community and this

personal investment reinforces the member's membership (Chavis & MacMillan, 1986). These core members eventually become "old timers" who help reinforce the community characteristics to the next generation of newcomers (Lave, & Wenger, 1991, p. 123). Old timers must help newcomers develop a feeling of belonging to retain them long enough to transition to old timers.

Lave and Wenger (1991) analysed how new members started at the periphery of a community as newcomers and migrated towards the core as the customs became a part of the newcomer's identity. This transition was identified as a two-way relationship because as the community changed the identity of the peripheral member, the peripheral members brought new insights to the community (Wenger, 1998). Members' interactions with the real-world applications of their subject were facilitated by the community. Members at the core maintained the standards of the community and were eventually replaced by members who have come to identify with the standards of the community (Lave & Wenger, 1991).

2.2.1.1 CoP as a form of learning

A member's relationships with other members in a CoP corresponded with social constructivist theory (Maor, 2003; Simina, 2012). Learners were able to make associations with prior knowledge and the online learning community encourages collaboration, negotiation, and social interaction, while providing various perspectives and motivation for learning (Simina, 2012). Each member played a part in creating a community through their personal actions, choices and attributions of value (De Liddo, & Concilio, 2009). As Maor (2003) described, the goal of an online learning community was to "create a networked community of learning that encourages peer learning and focuses on reflective thinking," (p. 127). An online learning

community was typically formal but could be tailored to suit any environment where participants are willing to share knowledge.

Communities were made up of members that come together “by shared expertise and passion for a joint enterprise” (Wenger, & Snyder, 2000, p. 139). Through their shared interest, members began to develop a common identity (Lave, & Wenger, 1991; Handley et al., 2006; Jones, & Dexter, 2014). Members developed common routines, sensibilities, artefacts, vocabulary and styles (Smith, 2004). The shared identity that developed among members lead to a sense of belonging. This sense of belonging was found to be important for the effectiveness and longevity of the online community.

There has been a large movement of using online learning communities in education because the philosophy of education has shifted from knowledge absorption to interactions with others (Shea, 2006). This trend has been the case for both student and teacher learning.

2.2.1.2 Teachers become facilitators

Positing CoPs as teaching tool suggested teachers give attention to how this could impact their role. Teachers were expected keep themselves abreast of new technology and protocols which required sustained and intensive training with coaching support (Brook, & Gibson, 2012). Online learning communities were an excellent way to support these needs because there are no set times and different members will be able to help with different types of problems (Jones, & Dexter, 2014).

Creating and maintaining an OLC can be aided by establishing a feeling of belonging. The feeling of belonging was found to be affected by factors that impact each member of the community (Shea, 2006). These factors were found to include reasons for taking the course,

physical distance from campus, employment status, and the time to bond during the course (Shea, 2006). A feeling of belonging is also affected by factors that impact the people who facilitate the community.

Instructors must change with the methods of instruction. As instruction transformed into facilitated learning, instructors were required to become facilitators (Shea, 2006). With this new responsibility, there are many things to learn. An ideal facilitator created an acceptable atmosphere for learning, kept students on track, diagnosed student misperceptions, reinforced student contributions, injected their own knowledge, and confirmed student understanding (Shea, 2006). The ideal facilitator also provided continuous, clear and constructive feedback (Gullett, 2009). The facilitator's participation had a great impact on member participation (Deng, & Tavares, 2013). Communities with a motivated facilitator were associated with higher level discussions among members (Xie, & Ke, 2011).

There are many elements that needed to be in place to facilitate a healthy community. The consequences of poor facilitation were low motivation and participation among members (Deng, & Tavares, 2013). Low participation and poor facilitation lead to peripheral users staying on the periphery and not becoming core members of the community (Handley, Sturdy, Fincham, & Clark, 2006). The design of the community helped facilitate the participation among members, provided it was done properly (Liu, Chen, Sun, Wible, & Kuo, 2010). Such a design would relieve some of the responsibility of the burdened facilitator.

2.2.1.3 Design for motivation

The design of the community facilitated motivation if the design is interesting, diverse, not too hard, and having it meet the needs of users at different levels (Liu, et al., 2010). A system

may be programmed in order to fulfill users' motivational needs (Jung, et al., 2010). Researchers have found that interactions among members can be increased by other design features such as games, quizzes, discussion boards and instant messaging (Liu et al., 2010).

Integrating motivational affordances into the design of an OLC would be important because the higher the motivation, the higher the member participation (Xie, 2013). As discussed above, a community's goal was to move peripheral users to become core members through active participation. Higher motivation was also associated with higher cognitive engagement, higher persistence in engagement, and overall higher learning (Xie & Ke, 2011). An online community was more motivational when it incorporated instantaneous communication and provided tools to allow members to be spontaneous and allowed it to grow organically.

Despite many design considerations, participation was often lower than ideal in online communities (Gené, Núñez, & Blanco, 2014). Xie (2013) had even found that members may often log into the system without ever posting anything. Xie argued that these "lurkers" were still learning from the community, however the community did not benefit from their presence.

One design element was particularly important for increasing member participation (Xie, 2013). By employing extrinsic motivators such as allowing peer feedback among members of the community in the form of replies, ratings and scores increases the participation of members, helped to keep the community alive. Ratings and scores in particular were elements of gamification (Deterdings, Dixon, Khaled, & Nacke, 2011).

2.2.2 Gamification

Gamification was the use of game elements in a non-game setting (Deterdings, et al., 2011). Gamification should not be confused with Game Based Learning or Serious Games where learning came from the use or creation of actual games (Domínguez, Saenz-De-Navarrete, De-Marcos, Fernández-Sanz, Pagés, & Martínez-Herráiz, 2013; Gené, Núñez, & Blanco, 2014). Gamification used elements of games such as points, levels, or badges to motivate user participation and retention (Deterding et al., 2011; Hamari, Koivisto, & Sarsa, 2014). Gamification has been successfully employed in various areas such as medicine, business, entertainment as well as education. Gamification was often used to motivate participation (Xie, 2013; Grant, & Betts, 2013; Hamari et al., 2014).

2.2.2.1 Gamification as an extrinsic motivator

Gamification was based on self-determination theory (Nunes et al., 2014). Self-determination theory stated that motivations can be intrinsic – motivations that stem from internal reasons such as interest and altruism, or extrinsic – external sources such as money, rules and points (Ryan & Deci, 1985). Extrinsic motivators, though powerful in the short term, did not inspire the use of an individual's full talent or effort (Deci, Koestner, & Ryan, 2001; Standage, Duda, & Ntoumanis, 2005; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). Extrinsic motivators were classified into four different groups here listed in order of increasing autonomy allowed: external, introjection, identification, and integration (Gagné, Deci, & Ryan, 2013). Autonomy is important because, along with competence and relatedness, it was one of three basic psychological needs for proper development and functioning (Ryan & Deci, 1985).

Self-determination theory stated that when all three of these psychological needs are met, an individual can be expected to achieve optimal growth and functioning (Standage, et al., 2005; Vansteenkiste, et al., 2009; Gagné, et al., 2013). If a means can be found to increase an individual's autonomy, competence or relatedness for a task, then the individual would be more motivated to accomplish the task.

Manipulating an individual's autonomy in a manner that allowed an individual to be motivated not by extrinsic rewards and more by self-determined regulation is a theory called Organismic Integration Theory (Ryan & Deci, 1985). An individual who is amotivated – who lacked any motivation to perform a task – was motivated externally with rewards or punishments. However, once these external motivators were removed, the individual stopped the desired practice (Deci, Koestner, & Ryan, 2001).

The individual could be motivated through introjection. This form of extrinsic motivation is one that is controlled by external forces (Gagné, Deci, & Ryan, 2013). Introjection described an individual feeling compelled towards a task because of their self-esteem. This compulsion may be because of guilt, shame or pride. The individual felt compelled by regulations but did not internalize them (Standage, et al., 2005; Vansteenkiste, et al., 2009; Gagné, et al., 2013).

Identification was the first form of motivation that was autonomous because it persisted without external forces (Standage, et al., 2005; Gagné, Deci, & Ryan, 2013). Identification occurred when an individual began to internalize regulation by identifying with the practice through understanding its importance (Standage, et al., 2005; Vansteenkiste, et al., 2009; Gagné, et al., 2013). The importance of the practice, however, may not match the individual's worldview and therefore over time the motivation may be lost.

If the individual can integrate the practice with their world view, it was likely to persist longer than any other form of motivation. This integrated form of motivation was the most mature form of extrinsic motivation (Gagné, et al., 2013).

Viewed through the lens of Organismic Integration Theory, gamification could be understood as a tool to encourage a behaviour such that it was internalized and practiced by the individual for a long time. (Ryan & Deci, 1985). However, self-determination theory cautioned of some pitfalls that may occur while using external motivators.

When rewards were introduced, an individual may feel a sense of pressure to attain them (Gagné, et al., 2013; Leclercq, Hammedi, Poncin, 2018). An increase in pressure to accomplish a task may diminish the individual's sense of autonomy. Similar findings have been reported in gamification research. Kong, Kwok and Fang, (2012) found that by showing participant standings, participants became envious which caused them to work more independently. The incentive to work independently will in turn diminish the individual's interest and negate motivation. Ironically, the use of a motivator may stifle an individual's motivation. However, the diminishing of one of the psychological needs may benefit another psychological need.

Some individuals may see rewards as a form of feedback. Feedback will enhance an individual's feeling of competence - another psychological need. Since rewards may diminish autonomy but increase competence, it is unclear what their net effect may be on any particular task. The net effect may be determined by personality type.

Gagné, Deci, and Ryan (2013) stated there are two personality types: control orientation and autonomy orientation. Control oriented people preferred regulation and looked for cues from their context to understand what is expected of them. They needed deadlines and rewards to

accomplish tasks. They were also controlling and critical when deployed in management.

Extrinsically motivated people such as this were typically less cooperative but responded well to rewards.

Autonomy-oriented people did not rely on external regulations to understand how they should behave (Gagné, Deci, & Ryan, 2013). Their behaviour came from what was consistent with their own values and attitudes. They felt choice in beginning any practice and they chose based on their interest. These autonomy-oriented people were likely not to respond well to rewards at first as their choice to perform a task was based on their interest and not the extrinsic rewards.

Gamification provided extrinsic rewards to the user – that is rewards that are external to the user as opposed to a feeling of accomplishment or altruism which would be internal. Self-determination theory claimed that intrinsic rewards were vastly more motivating than extrinsic ones (Ryan & Deci, 1985). Tangible rewards can be detrimental to intrinsic motivation because rewards introduced a sense of pressure which decreased a person's autonomy (Gagné, et al., 2013; Leclercq, et al., 2018). However, extrinsic motivators were still valuable tools if used correctly to users through internalization.

2.2.3 Gamification of Online Learning Communities

If an online learning community was to be gamified, then it must be done so with extreme caution as the settings in which gamification are present were important for its success (Hamari, Koivisto, & Sarsa, 2014). Gamification can be useful but must be employed carefully. Participation in even tedious tasks can be increased with gamification but once the gamified element is attained by the individual, participation ceased (Grant, & Betts, 2013). Community

designers using gamification also must be cautious as the rewards may undermine the goal of the community. Lounis, Pramadari, and Theotokis (2014) also cautioned that the gamified elements that are to be used must closely match the outcomes of the online learning community for them to be effective. For example, if performance in a collaborative community is gamified by bestowing members with a rank, it can undermine collaboration as the rank may cause envy which will create a competitive environment which will foster individual learning (Kong et al., 2012). Kong et al. (2012) suggested not rewarding individuals but instead the community as a whole. Alternatively, competition has been shown to increase participant motivation (Gené, Nuñez & Blanco, 2014). Research has found gamified competitiveness to be a motivating factor in a cooperative setting (Kao, Lin, & Sun, 2008).

These previously stated research seemed to present contradictory data with regard to gamified communities. Other research offered some less contentious data. Gamification, in the form of points, can be employed as a form of feedback for users (Mekler, Brühlmann, Tuch, & Opwis, 2013). Points, or similar gamified elements, has been used as variables to monitor the health of the community by measuring participation and member retention (Bista, Nepal, Paris, & Colineau, 2014). There was consistency between the principles of online learning communities and underlying theory of gamification.

In gamification's underlying theory, self-determination theory, if psychological needs of competence, autonomy and relatedness were provided, individuals integrated with the needs and values being motivated (Gagne, et al., 2013). McMillan and Chavis (1986) stated that members integrated into a community through its shared values and needs. If a member served the needs and values of a gamified online learning community, they would have achieved the goals of both

gamification and online learning communities. Based on the fundamental theory to each idea, gamification and online learning communities should be able to coexist.

Despite the use of gamification in online learning being a growing trend (Gené, Nuñez & Blanco, 2014), the application of gamification and online learning communities is a relatively unexplored one (Hamari et al., 2014; Mekler, Brühlmann, Tuch, & Opwis, 2017). In 2014, Lounis, Pramataris and Theotokis wrote, “there is limited research that addresses the impact of different game elements and techniques on user participation experience, engagement and enjoyment.” (p. 2). More recently, Leclercq, Hammedi and Poncin (2018) stated, “more research is needed to develop best gamification practices and properly manage gamification tools” (p. 83). My research aims to explore this research gap.

2.3 Research Framework

This research uses the Wenger-Trayner et al. (2015) definition of CoP and McMillan and Chavis (1986) to define a sense of community to use as a research framework. The McMillan and Chavis (1986) framework will be applied to Reddit’s gamified online learning community. I will organize this section based on McMillan et al. (1986)’s four parts of sense of community: membership, influence, integration and fulfillment of needs and shared emotional connection. This research also uses Gagne et al.’s (2013) self determination theory as a research framework for gamification.

2.3.1 Membership

Membership is “sharing a sense of personal relatedness,” (McMillan & Chavis, 1986, p. 9). Membership is bounded by whether or not someone belongs to the community. The boundary

is created by members' shared competence (Wenger-Trayner, 2015). The boundary of membership provides an emotional fence that gives members a feeling of safety (McMillan & Chavis, 1986). Membership provides protection among members.

Members share a sense of belonging and identification. Each member needs to feel they belong to the community and the community belongs, in part, to them (McMillan and Chavis, 1986). Members of a CoP develop this belonging through personal investment in a shared domain of interest (Wenger-Trayner, 2015). Membership is earned by members through one means or another. Earning a membership means that membership had value. The obstacle of earning a membership, through learning the shared competencies, establishes the boundary of the community. The boundaries should then be reinforced by a common symbol system (McMillan & Chavis, 1986). This common symbol system would be understood by all community members but no one else. A community's symbols must be understood if the community is to be understood.

2.3.2 Influence

McMillan and Chavis (1986) emphasize the importance of influence in a community in order to develop a sense of community. They state that a member must feel influence over a community just as a community should have influence over its members. This reflexive relationship should extend between all members. The greatest community leaders should acknowledge the needs, values and opinions of all members. Members must interact, even if the interaction is not frequent, in order to learn from one another (Wenger-Trayner, 2015).

Reddit's gamified karma system is an excellent example of a member's ability to influence their community. Every member gets one and only one vote on a community contribution and every member's vote carries the same weight. Members can steer their

community by upvoting things they prefer to see in their community and eliminating things from their community by downvoting it. In this way members have influence over the community. The upvoting and downvoting of contributions should be guided by the community's rules. In this way the community has influence over its members. This is reinforced by the community moderators ("the mods").

2.3.3 Integration and fulfillment of needs

The third part of the sense of community is integration and fulfilment of needs, which is accomplished through various *reinforcements* (McMillan & Chavis, 1986, p. 12).

Reinforcements may take various forms: status, group success, competence, or rewards. These reinforcements allow members to satisfy their needs. A community that develops a strong sense of community develops shared values where members may share needs, priorities and goals. "A strong community is able to fit people together so that people meet others' needs while they meet their own," (McMillan & Chavis, 1986, p. 12). A shared interest is what brings members of a community together. The practice in this shared interest is how members develop a shared repertoire of resources (Wenger-Trayner, 2015). These resources can satisfy members' needs.

Reddit offers various means of integration. The most obvious, and the subject of this research, is the collection of karma. Karma is the sum of all of the upvotes a member receives. This number represents how often other members have agreed with all of a member's posts.

In my research I ask participants how they feel being upvoted to establish if some need is being met by the karma system. I also ask what negative emotions are associated with being downvoted to establish if this prohibits their needs from being met.

2.3.4 Shared emotional connection

McMillan and Chavis (1986) stated that a sense of community requires a shared emotional connection. This could be based, in part, on a shared history. Members should share in the development of common experiences, stories, tools and ways of addressing recurring problems (Wenger-Trayner et al., 2015). The more experiences members share together, the stronger the bond. “The interactions of members in shared events and the specific attributes of the events may facilitate or inhibit the strength of the community,” (McMillan & Chavis, 1986, p. 13). Wenger-Trayner et al. (2015) state that members should “interact regularly”. The goal of a community should be to increase interaction among its members.

According to McMillan and Chavis (1986), the more interactions members have, the closer they are expected to become. The bond would be stronger if the experiences were positive or were more important. Accomplishing goals should bring members closer than not accomplishing them. The more members invest in their bond the stronger it should be. Reward and humiliation should have a significant impact on members’ sense of community as if the members shared a spiritual bond.

On Reddit, it is unlikely that many members share a spiritual bond. Even if they do, they are unlikely to be conscious of it; it is a discussion unlikely to be raised during their participation in a community. Redditors do, however, share in practices. Developing content and judging its quality is the main goal of each community. All members are able to participate in the judgment of their community’s content.

In my research I ask participants why they upvote or downvote. This is to establish whether research participants participate in their community and what their motivations are for doing so.

2.3.5 Self Determination Theory

In order to analyse gamification in this case study I will use self-determination theory. Self-determination theory is a theory of human motivation (Gagne, et al., 2013). It is based on the assumption that all human desire to grow. It states that an individual's development is a function of their intrinsic motivation, interests, processes and values of the external world (Gagne, et al., 2013). Development can be optimized when an individual's three psychological needs are met. These three needs are autonomy, competence and relatedness. Meeting these three needs optimizes development by stimulating motivation.

The theory states that there are two means of regulation for motivation: controlled and autonomous (Gagne, et al., 2013). Controlled regulation is the use of demands or pressure to motivate. Autonomous regulation is motivation through interest or choice. These types of regulation can be applied to the four types of motivation described in section 2.2.2.1. External regulation and introjection are considered to be forms of controlled regulation because the individual is being motivated with external forces such as rewards or feelings of shame. Identification and integration are considered to be autonomous regulation since the motivation comes from inside the individual. If Reddit provides support for the three psychological needs, I would expect to see evidence that participants are able to be motivated from the external motivator of karma as this would allow for individuals to internalize the motivation.

2.3.6 Integration of Membership and Self Determination Theory

The crux of this research was the exploration of whether communities and gamification were mutually exclusive. Based on what has been discussed in 2.3 self determination theory needed to be compatible with membership, influence, integration and fulfillment of needs and

shared emotional connection in order for gamification to be compatible with communities. My research investigated the fulfillment of the three psychological needs and how they impeded, enhanced or had no impact on community members.

2.4 Summary

In this chapter I defined an online learning community in terms of a community of practice which takes place online. I identified the psychological needs of a community member and how they can be supported by gamification while other needs will be at odds. I then established that the theoretical framework that I worked with was the framework for a sense of community as laid out by McMillan and Chavez (1986) and Wenger-Trayner et al. (2015).

This framework for establishing a sense of belonging in four pieces is the framework for my research. This framework was used to create the questions to lead the investigation into the impact of gamification on the feeling of belonging among members of an online learning community.

The framework of self-determination theory will allow me to evaluate the use of gamification in this setting. If the context supports the three psychological needs then the use of gamification should be motivational.

Chapter 3: Methodology

3.1 Overview of Chapter 3

In this chapter I will discuss what a case study is, the reasons for using it as a research method, and why other qualitative research methods would not provide the information necessary to answer the research question. I will describe how the case is bounded by being a gamified online learning community because it is gamified and is an online learning community. I will describe how I sought information on participants' feelings on belonging and gamification in online learning communities in general. I will describe the data sources of the focus groups, semi-structured interviews, and participant-observations and why they were used to draw data. Lastly, I will show how I chose the participants and what protocols they followed.

3.2 Method: Case Study

3.2.1 What is a case study?

Creswell (2012, p. 478) described a case study as qualitative research that involved “developing an in-depth understanding of a ‘case’ or bounded system,”. This method is used when variables cannot be separated from the context and therefore employs various forms of data collection to understand and illustrate a “holistic and real-world perspective.” (Yin, 2014, p. 2).

The case that was studied in this research was a system of community members on Reddit who shared a common goal and worked together towards that end while providing feedback to each other's comments and posts by upvoting or downvoting them. There are many factors that contributed to a member's sense of belonging in a community. Those factors cannot be isolated without changing the gamified community experience for members. A study such as

this should not be carried out quantitatively because its variables cannot be manipulated. As Yin (2014) stated, “the case study is preferred when examining contemporary events, but when the relevant behaviors cannot be manipulated.” (p. 10)

This case study investigated the extent gamification could contribute or diminish the feeling of belonging in an online learning community. The goal was to explore the relationship between gamification and the feeling of belonging in the hope of explaining it. Explaining relationships was a potential benefit of using a case study (Suter, 2011). This relationship is very important as research has demonstrated that gamification has had a positive impact on some online learning communities (Bista, 2012; Grant & Betts, 2013; Witt et al., 2011). Alternatively, Leclercq, Hammedi, and Ponci (2018) found that competitive gamification can have a negative effect on a community. Despite this, I have found no research on how gamification influences the feeling of membership among members of an online learning community. Finding the answer to this *how* question is the rationale for using a case study (Yin, 2014).

3.2.2 Why is this a case study?

The main question addressed in this study was “How does gamification impact the feeling of membership among members of online learning communities?” To answer this question, I collected data of members’ experiences by way of focus groups and interviews as data sources. I collected data on the design of the online community as well in order to describe how gamification was employed on the site and to capture the context of the case. The best method to collect data on this system is to employ a case study method. The reasoning is explained below.

This research did not measure variables, test theories or apply results to a large number of people. For these reasons quantitative research did not fit the problem being explored (Creswell, 2012). This research did “obtain detailed information about a few people or research sites,” (Creswell, 2012, p. 64) so it should be conducted a qualitative research. There were various forms of qualitative research and not all of them would be conducive to exploring the problem. There were reasons not to choose some qualitative methods for this research and they are described below.

This research was not well suited to narrative research as narrative research is focused exclusively on the stories of those being researched (Creswell, 2012). Though the experiences of the community members were important to this research, it is not the sole focus. Focusing exclusively on the perspectives of the members may have left out the important context of the community as a whole.

This study was not conducted as a phenomenology for similar reasons it was not conducive to narrative research. Though much of the data involved in this study was members’ perspectives, it was very important to collect data on the site itself in order to describe the context of the case study.

The reason for choosing a case study as the method for examining gamification on online learning communities was that the community is a natural context that is bounded by the members that interact with the gamified elements. Therefore, an online learning community meets the definition of a case, being a natural, bounded context (Creswell, 2012; Yin, 2014). The bounded nature of this study was what differentiated it from an ethnography as an ethnography tends to study a “culture-sharing group’s shared patterns of behaviour, beliefs, and language that

develop over time (Creswell, 2012, p. 462). This research was bounded by the members who interacted with the gamified element that existed on Reddit where the community was hosted. This study, and case studies in general, share elements of ethnographies as a great deal of time was spent “in the field”. In this study “the field” was the subreddits which hosted the online learning communities. Unlike an ethnographic study, I was not investigating the online learning community’s culture as a whole; neither did I investigate gamification in general. Bounds are why the case study methodology was preferred over an ethnography.

This study investigated the feelings of members which are tied to the context in which they participate. As such and for the reasons stated above, the study was best served as a case study and not any other qualitative method.

3.2.3 Case Boundaries

Reddit, the site that hosted the communities that were studied in this research, was typical of gamified online learning communities and therefore a good candidate for a case study on gamified online learning communities. The definition of a typical gamified online learning community will be discussed below. This research was an instrumental case study because it “serves the purpose of illuminating a particular issue” (Creswell, 2012, p. 465). The particular issue in this case was the positive and negative point system employed in the learning communities. Though the issues that arose in this particular case may not be common to all gamified online learning communities, it still had value because it provided ideas of which the creators, facilitators and participants of other gamified online learning communities should be aware.

Defining a case required defining a gamified online learning community. I defined a gamified online learning community as an OLC that is gamified in a typical way. Defining an online learning community was straightforward as there was a great deal of previous research on the subject (Liu, 2010; Maor, 2003; Shea, 2006). As described in the previous chapter, the type of OLCs in this research took their definition from that of Communities of Practice. Wenger (1998) defined a community of practice as follows:

(1) What it is about - its joint enterprise as understood and continually renegotiated by its members. (2) How it functions - the relationships of mutual engagement that bind members together into a social entity. (3) What capability it has produced - the shared repertoire of communal resources (routines, sensibilities, artifacts, vocabulary, styles, etc.) that members have developed over time. (P. 2)



Communities found in some subreddits on Reddit.com satisfied these three characteristics. (1) Subreddits were very clear on their goal. The subreddit's name alone was enough to make it clear what the intention of the community was. Subreddits also stated their community rules on the right sidebar of the subreddit (Figure 3.1).

R/LEARNPROGRAMMING RULES	
1. No unprofessional/derogatory speech	▼
2. No spam or tasteless self-promotion	▼
3. No off-topic posts	▼
4. Do not ask exact duplicates of FAQ questions	▼
5. Do not delete posts	▼
6. No app/website review requests/app showcases	▼
7. No rewards	▼
8. No indirect links	▼
9. Do not promote illegal or unethical practices	▼
10. No complete solutions	▼

Figure 3.1 - Rules stated on the r/learnprogramming subreddit

(2) Reddit allowed users to interact through posting, commenting and voting. Voting was anonymous so it did not allow for relationships to develop between members. All posts and comments were linked to the profile of the user. This allowed other users to recognize poster or commenter and can provide the basis for mutual engagement. This recognition did not occur on every post or comment. The relationships between members varied from member to member; therefore, I allowed potential participant to define that for themselves.

(3) Subreddits had produced a large repertoire of resources. Most commonly, advice was generated. Members who shared competence used similar language, in-jokes and memes - pictorial jokes where the pictures stayed the same but the captions varied to reflect the circumstance. Sometimes information was organized with wikis or other means. For example, on the r/aquaponics subreddit, a member created a nutrient deficiency guide (Figure 3.2).

82  **Identifying nutrient deficiencies** (self.aquaponics)
submitted 9 months ago * (last edited 5 months ago) by MichaelKiselov  announcement

Hello everyone.

This topic is aimed to help novice and experienced agronomists identify problems with **nutrient deficiencies** in plants

We will continue updates of this table with new information here:
https://www.reddit.com/r/ponics/comments/8p0yso/topic_about_nutrient_deficiencies_of_different/^[1]

Feel free to contact me or comment with your thoughts, experience or links to the articles, which can help other growers. All useful information will be included in the main article.

General articles	Guide to Symptoms of Plant Nutrient Deficiencies by Shanyn Hosier ^[2]
	Plant Nutrient Functions and Deficiency and Toxicity Symptoms by Ann McCauley, Soil Scientist; Clain Jones, Extension Soil Fertility ^[3]
	Plant Nutrient Deficiencies with Photos by: Wade Berry, UCLA ^[4]
	Identifying and Fixing Plant Nutrient Deficiencies BY MARIE IANNOTTI ^[5]
	A REVIEW ON DIAGNOSIS OF NUTRIENT DEFICIENCY SYMPTOMS IN PLANT LEAF IMAGE USING DIGITAL IMAGE PROCESSING S. Jeyalakshmi and R. Radha ^[6]
	Nutrient Deficiency: What's Wrong With My Crop? ^[7]
	Identify Nutrition Deficiencies in Your Vegetable Plants by Carol Rossi ^[8]
	VEGETABLE PLANT NUTRIENTS: SOURCES AND DEFICIENCIES by Steve Albert ^[9]
	Micronutrient Deficiency Images ^[10]

Figure 3.2 - A nutrient deficiency guide found on the r/aquaponics subreddit.

Based on Wenger's (1998) definition of a community of practice, and the fact that Reddit hosts the community online, certain subreddits appeared to fit the definition of an online learning community. A user's perception of membership must be considered to fully inform the definition of community.

The definition of a typical use of gamification was the use of points, leaderboards and badges (Deterdings et al., 2011; Grant & Betts, 2013; Hamari et al., 2014; Jung et al., 2010; Witt et al., 2011). The application of typical gamification to a typical online learning community could be considered a typical gamified online learning community. One example of a gamified online learning community would be Stack Overflow. Stack Overflow is a website that hosted a community of programmers who shared the goal of solving programming related problems. This community was gamified as it uses badges to reward users for performing certain tasks. This

could be considered to be a typical gamified online learning community and it has been studied by some researchers (Grant & Betts, 2013).

My research examined a learning community that shared similarities in design to Stack Overflow. Reddit.com is an aggregator of communities where each *subreddit* was a community where members shared a purpose. Each community was gamified as posts by the members were upvoted or downvoted by other users giving positive or negative points to a users' karma. This study aimed to find what feelings are typical about the gamification of community interactions and whether it was beneficial to members' feelings of belonging in the community.

3.3 Participants

This case study found 8 current members of Reddit who were willing to participate. The first three participants were recruited from subreddits where moderators allowed me to post a recruitment request. These subreddits included r/learnprogramming (319,435 users), r/learnpython (76,215 users), r/raspberry_pi (148,133 users) and r/aquaponics. Recruitment for the first focus group was difficult as a post to a subreddit will sink if not upvoted by members. Since few members were interested in my research, the recruitment posts fell out of view for most members. Some moderators were very helpful by making my recruitment post "sticky" on a subreddit. This kept my post at the top of the subreddit and therefore more visible. Unfortunately, this did not result in more participant interest in the study. The remaining five participants were personally recruited. This was done by directly sending the link to the recruitment poster to friends who were Redditors. The participation of these friends was not tracked so they could participate or not and I would not know who did. I see no way my

relationship with these participants would affect the data they generated. Participants were recruited from the site or were asked because I knew they participated on the website. Therefore, this study used purposeful sampling.

3.3.1 Purposeful Sampling

I chose my sample, members of a gamified online learning community because I wanted to know more about members' feelings of gamified online learning communities. "Purposeful sampling" is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned" (Merriam, 2009, p. 77). A sample of typical members would best help me understand their feelings on gamified online learning communities as it is stated in Creswell (2012), "in *qualitative* research, we identify our participants and sites on purposeful sampling, based on places and people that can best help us understand our central phenomenon" (p. 205).

I purposely chose members that represented the typical interactions and feelings among members of a gamified online learning community. I created this selection by vetting participants using a pre-interview. This type of purposeful sampling is called typical sampling (Creswell, 2012). "Typical sampling is a form of purposeful sampling in which the researcher studies a person or site that is 'typical' to those unfamiliar with the situation," (Creswell, 2012, p. 208). Typical sampling allowed me to choose a sample from a typical gamified online learning community such that others may see how it worked and what its benefits were.

3.3.2 Pre-interview

I began with closed-ended questions (Appendix A) to establish if the participants fit the definition of members and the site fits the definition of learning community as defined in the literature. Closed-ended questions allowed me to add support to concepts in the literature (Creswell, 2012). Examples of questions I asked in order to determine if the participants felt membership in their online learning community are: “Do you share any goals with other members of the community?”, “Do you consider yourself a Redditor? (would you say reddit is a part of your identity?)”, “Do you share routines, vocabulary or sayings with other members of the community?” The answers to these questions were recorded with their focus group data in order to analyze the differences in responses from participants who identified as members versus those who did not.

I also asked questions to establish if the participants used the gamified elements of the online learning community. I asked the following questions to do so: “Do you use the upvote/downvote system?” “Have you been upvoted or downvoted before?” All participants answered in the affirmative so the participants had the experience necessary for the research on gamification.

The answers to the pre-interview questions informed potential patterns in new members versus old timers. These patterns could shed light on the impact of gamification on the feeling of belonging of new members versus old members.

3.3.3 Doxxing

Special consideration was given to participants’ confidentiality when dealing with members of Reddit. The community very strongly believed in maintaining anonymity as a

means of allowing its users to be honest without the fear of real life repercussions. To *doxx* someone is to make their online anonymous identity known to the public. My contact with the participants was strictly through their Reddit usernames or their real-life names in order to avoid any possibility of doxxing participants. The focus groups were conducted with the use of pseudonyms to guarantee the real life and virtual anonymity among focus group participants.

3.4 Data Sources

I used several data sources in this study. The data sources employed during this study were participant-observations, focus groups and interviews. Each of these data sources came with their own strengths and weaknesses. As Yin (2014) notes, “no single source has a complete advantage over all the others,” (p. 105). What follows is an in-depth look at how the data sources applied to collecting data on gamified online learning communities and what strengths and weaknesses apply to this particular application of these sources.

3.4.1 Participant-Observation

As a regular user of Reddit, I was able to provide details on the context. “A participant observer is an observational role adopted by researchers when they take part in activities in the setting they observe,” (Creswell, 2012 p. 214). A researcher’s observational role is more involved than simply observing. “Observation is the process of gathering open-ended, firsthand information by observing people and places at a research site,” (Creswell, 2012, p.213). I can provide information on the subreddits and the typical interactions which occur in them.

Creswell (2012) stated an advantage of observation was being able to study behaviour. This is very important for my research since behaviour may stem from feelings and feelings are

the focus of this study. The disadvantages of observation, according to Creswell (2012) are that it may be difficult to develop a rapport with individuals especially ones unfamiliar with research. This was the case in my research. Some moderators of communities were not comfortable with my research being performed in their subreddit which is totally understandable. A good community facilitator removes any distractions from the focus of the community. Despite some of these understandable views, some moderators and individuals welcomed me. My Reddit account that I used exclusively for this study reached a 100 karma. This means that at least 100 members have upvoted my posts. This would be a modest amount to some users who have karma scores in the millions but shows that the activity on my account was, at least to some degree, accepted in certain communities.

The role of a participant observer gave me a clear idea of the context in which I was studying. A disadvantage to being a participant observer, in general, was that it was difficult to take notes while taking part (Creswell, 2012). This was not a factor in my research as my interaction were recorded by publishing posts to the website.

To avoid bias, I used my observations exclusively for describing the context. I did not complete the focus group or interview questions.

3.4.2 Focus groups

A focus group helped participants prompt each other as well as give insights into the inner workings of the community being studied. “A focus group interview is the process of collecting data through interviews with a group of people, typically four to six.” (Creswell, 2012, p. 218). The questions asked to participants in the focus group in this study attempted to establish

their sense of membership on Reddit and whether that is because of or in spite of its use of gamified elements. Participants were allowed to disagree

One disadvantage of focus groups is that it is difficult to facilitate if many members try to speak at the same time (Creswell, 2012). Another disadvantage is that it is difficult to transcribe if participants have similar voices or are speaking over each other (Creswell, 2012). These disadvantages were mitigated through the use of a collaborative writing environment, Google docs (Figure 3.3).

Thoughts and feelings on online learning communities and gamification

What are your motivations for upvoting other people's posts?

Red: I upvote work that I really like. I feel motivated to upvote other people's work when I have myself received some upvotes. Not necessarily back to the person who upvoted or commented on my work but somewhere in the community.

Orange: Quality of content. Comment should be relevant and neutral.

Green: The post is well researched or thought out, the post peaks a very specific interest for me or perhaps the post taught me something that I did not already know. I admit, seeing that a post has already accrued a large amount of likes makes it easier for me to want to like it myself.

Blue: kinda like giving a high five or thumbs up. Just general approval.

Purple: encourage good work and good comments.

Figure 3.3 - Screenshot of Focus Group 2's Google Doc

The questions were typed out in advance and all participants were invited to the document at the same time. Participants wrote their answers to the question simultaneously with the benefit of being able to see each others' responses in real time. Viewing previous responses allowed a participant to refer to other members' responses in order to be prompted for an answer if they struggled to provide an answer.

I recruited eight participants to participate in the focus groups. As mentioned previously, I had difficulty recruiting participants from Reddit so I only found three recruits in this manner. Five participants joined after I personally contacted them and provided an anonymous link for them to join if they chose.

3.4.3 Interviews

Yin (2014) considered interviews to be one of the most important methods for collecting data in a case study. Advantages of the interview method were that it “focuses directly on the case study topics,” and it “provides explanations as well as personal views,” (p. 106). The case study topics I was able to focus on in these interviews were the sense of belonging that has or has not been created by the gamified online learning community; the sense of reward or lack thereof due to the gamification of the learning system; and, if gamification produces any kind of competitive attitude among members of the gamified online learning community. The interview questions were guided by concepts that arose during the focus groups. Interview questions can be found in Appendix B.

Some weaknesses of interviews according to Yin (2014) were “bias due to poorly articulated questions”, “inaccuracies due to poor recall” and “interviewee gives what the interviewer wants to hear” (p. 104). The first and last issue were mitigated with proper planning and a careful explanation with the participants of the expectations of the interview process. Issues with poor recall were aided by using focus groups where other participants can help prompt each other. Yin (2014) believed that “interviewees’ responses are subject to the common problems of bias, poor recall, and poor or inaccurate articulation” (p. 111). Yin (2014) suggested

linking interview data with other sources to reduce these sources of error. In my study, I linked interview data with participant-observation and focus group data.

Participants for the interview were recruited from the focus group. Since I had a very poor turnout by attempting to recruit from Reddit for the focus group, I knew that would not work for the interviews. I thought since these participants had shown interest in the study, they would be more likely to participate in the interview. Three participants accepted the offer to participate in the interview.

3.5 Data Analysis

The research strategy followed theoretical propositions (Appendix C). I followed the theoretical propositions that are apparent in related research literature as a guide in the data analysis (Yin, 2014). It began with closed ended questions to establish the direction in which the analysis is headed. The answers to those questions brought the analysis towards different patterns that appear in previous research. This method allowed me to constantly examine rival explanations.

I followed the data analysis design of Miles, Huberman, and Saldana (2013) during and after the data collection. The data was evaluated to create codes. These codes were based on Miles, Huberman, and Saldana's (2013) first cycle coding. Themes that emerged from the first cycle coding were collected into second cycle themes. The emergent themes will then be evaluated to present one major theme of the research that binds several sub-themes.

3.6 Integrity and Verification

The use of participant observations, focus groups, and interviews allowed me to see similar themes that arose from each form of data collection. The convergence of different data into one theme gave greater validity to the research (Creswell, 2012; Miles, Huberman, and Saldana, 2013)

I increased the precision of the collected data by focusing the interview questions on the member's feeling of belonging and how it was affected by gamification. This focus ensured participants were answering questions within the correct context and so increased the precision of the data (Yin, 2014). Asking tangential questions would confuse participants and draw their attention away from the focus of the research. When possible, I included the phrase "feeling of belonging" in the questions to focus participants on the goal of the research, thus increasing the precision,

Threats to validity were diminished by identifying and ruling out rival explanations in the analysis (Yin, 2014). I investigated different propositions that may have explained the data but these propositions turned out to be proven false by the collected data. This was often the case in the interview data when I was able to question participants about specific feelings about their feeling of belonging. The elimination of these explanations increased the validity of the remaining propositions.

My research made use of several sources of data. Since the data collected from the different sources supported the same interpretation, we can say the interpretation had a higher validity (Creswell, 2012). Comparing various data types is known as triangulation and increases the validity of the study (Creswell, 2012). "Qualitative inquirers triangulate among different data

sources to enhance the accuracy of a study,” (p.256). It was imperative to have accuracy in order to create a valid interpretation of the events during the study.

3.7 Summary

In this chapter I discussed the importance of completing this study as a case study because there are many interconnected factors in this context. I described the sources of data and how the use of different sources increases the reliability of the data. The treatment of the data maximized the validity, reliability and overall integrity of the data. I illustrated the challenges and end results of finding participants on an online learning website.

Chapter 4: Analysis and Findings

4.1 Overview of Chapter 4

In the previous chapter I described how I collected data from participant observations, focus groups and interviews. In this chapter I will describe how I analyzed the data. I collected data from two focus groups and three interviews. The collected focus groups and interviews were also entered into the SaturateApp to aid with the analysis. I codified the data using methods for creating first cycle codes suggested in Miles, Huberman, and Saldana (2013). The patterns I saw in the first cycle of codes allowed me to produce 17 second cycle codes which generalized the ideas from the first cycle. The patterns I found in the second cycles were used to generate themes. I also created a display matrix from the data. I created summaries of the responses and entered them into a spreadsheet with rows representing each participant and the columns representing the questions. This reference allowed me to verify themes against the first level coding. This display matrix also allowed me to compare each participant's particular response to a question to their response on their feeling of belonging in the community.

The major theme that emerged from the evaluation of the second cycle themes was that participants were “cognizant of karma”. Participants were aware of karma's existence and were slightly influenced by it but would not go to any great lengths to accumulate it.

4.2 Data Collection

I collected data by using focus group of three participants and another of five participants along with three interviews. The participants from the first focus group were recruited from subreddits that seemed to operate as online learning communities where moderators approved of the recruitment. This focus group began December 3rd, 2017 and concluded December 22, 2017.

The participants in the first focus group were given pseudonyms Reese, Charlie and Logan. The second focus group consisted of people whom I knew were redditors and responded that they participated in online learning community types of subreddits. I messaged them each directly to seek their participation. This focus group began January 19, 2018 and concluded February 17, 2018. Participants from the second focus group were given the pseudonyms Riley, Cameron, Parker, Jordan and Blake. All participants from the focus groups were invited to participate in the interview. Three accepted and completed an online, written interview through google forms between March 6, 2018 and April 29, 2018. The three participants of the interview were given pseudonyms Ashton, Bailey and Casey.

4.3 Analysis Procedures

The data contained in the two focus groups and three interviews were analyzed using Saturate qualitative data analysis software and with Miles, Huberman, and Saldana (2013) as an analysis procedure. I uploaded the data collected from the two focus groups and three interviews into the Saturate App, a type of computer-assisted qualitative data analysis software. This software allowed me to tag each sentence of the data with codes discussed below (Figure 4.3). I created folders based on the Miles, Huberman, & Saldana (2013) methods for coding which allowed me to group data with similar codes (Figure 4.4). Data is displayed in paragraph form. Each sentence can be tagged with a code.

Do you think the size of the subreddit is a factor in how you feel about upvotes and downvotes?

Reese: Although /r/learnprogramming has a lot of subscribers, it still feels like a small community. And even then, 99% of my posts will get either not get upvoted, or get 1 upvote (usually by the op, and with an accompanying comment, making the upvote really mean much). in a larger community, the upvotes don't really mean anything at all. So either way, upvotes don't really affect me.

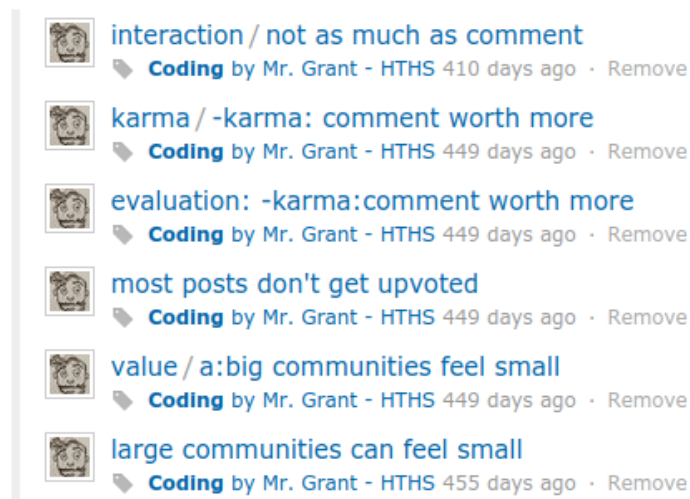


Figure 4.3 - A screenshot of the raw research data in Saturate being codified.

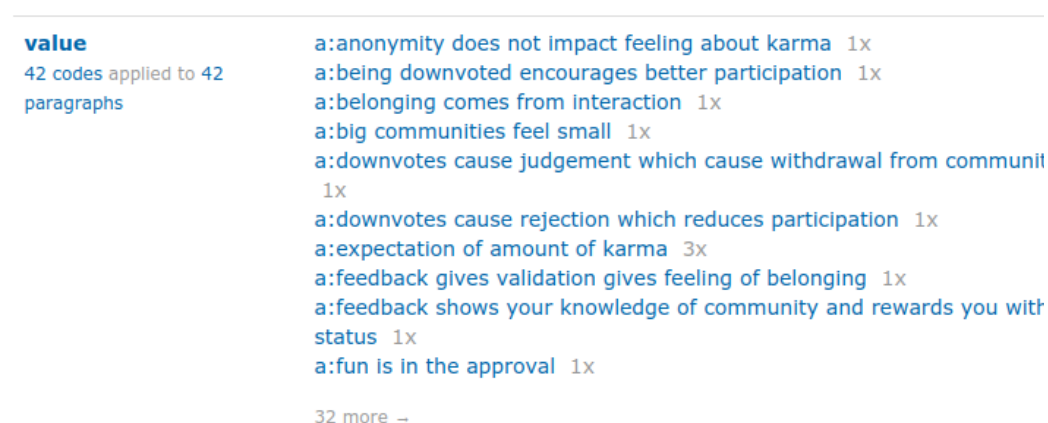


Figure 4.4 - A screenshot of codes grouped by 'value' tag in Saturate which can be exported (see Figure 4.5).

343	value/b:anonymity puts focus on content over poster	Parker: No, anonymity makes it easier for Reddit users to focus on the posts content vs the identity of the post
344	value/b:being downvoted made me improve	Reese: I got downvoted more often when I put less effort into replies, and it made me feel like I had to improve
345	value/b:big communities allow for fringe upvotes	Riley: Yes. Some subreddits are very large with a broader range of people and tastes. Makes its easier to get up
346	value/b:big communities flood posts	Logan: It is hard to say. On the one hand, a big subreddit means there are more users to upvote a post. On the
347	value/b:big communities have more people to give upvotes	Logan: It is hard to say. On the one hand, a big subreddit means there are more users to upvote a post. On the
348	value/b:cared more about karma when i started	Reese: Maybe when I first started out and cared about karma more I could tell you why it affected me, but not a
349	value/b:community size doesn't impact value of upvotes	Parker: Not a factor for me.
350	value/b:community size doesn't impact value of upvotes	Cameron: Size doesn't matter. The average type of comments and users in a sub has a greater effect. For inst
351	value/b:exclusion reduces participation	Bailey: I can relate to this and I think many people would get a feeling of exclusion, especially if they are new, v
352	value/b:fun comes from interaction	Reese: No. The fun part is helping people and learning. I've been on forums before this that didn't have any kin
353	value/b:high karma indicates post quantity not quality	Blake: No. It generally means they post more often/post more accessible information. If I wanted to karma who
354	value/b:karma encourages participation which encourages interaction which encourages connection	Reese: In a way it makes me feel connected, but not directly. I seen a lot of the same commenters in /r/learnp
355	value/b:karma is a compliment that seals a bond and gives approval	Logan: It is like getting a mini-compliment. People tend to compliment each other as a form of sealing a bond. /
356	value/b:karma is mostly timing	Blake: Yes, I've had the top posts in a couple different subs. Sometimes it's validation for a project well done, b
357	value/b:karma is to evaluate activity and appreciate contribution	Charlie: I personally think that karma is there to evaluate how active and appreciated a person's contribution to
358	value/b:karma is validation	Blake: To a certain extent it is validation that you are on the right track, but I'm past that point on the communit
359	value/b:karma not related to content	Blake: Not really, the longer I've been on reddit, the less I believe in the wisdom of the crowd. The intersection I
360	value/b:larger communities = less knowledgeable members	Blake: Yes, but the bigger the sub, the less knowledgeable the user base is and the more likely something is to
361	value/b:limiting downvoting of new users might welcome a new user but detrimental to community	Bailey: I can relate to this and I think many people would get a feeling of exclusion, especially if they are new, v

Figure 4.5 - A screenshot of the 'value' codes Saturate data which has been exported to a spreadsheet.

The data were coded using elemental and affective methods (Miles, Huberman, & Saldana, 2013). The elemental methods, which are “foundational approaches to coding” (Miles, Huberman, & Saldana, 2013, p. 74), consisted of descriptive, in vivo and process codes. Descriptive codes inventoried descriptions of the case by grouping data that consisted of participants’ experience with the online learning community. Some examples of descriptive codes that emerged are ‘connection’, ‘judgment’ and ‘expectation’. In vivo codes used quotes from the participants. Some examples of in vivo codes that emerged were, “merits” - with the associated quote, “Everyone should be judged on their merits”, “Karma contingent” - with the quote, “if you cared about karma”, and “caring less” - with the associated quote, “when I first started out I cared about Karma more”. Process codes involved actions that took place by participants. Examples of process codes that emerged are “upvoting”, “being downvoted” and “gaming gamification”.

Table 4.1 – Examples of Elemental codes

Elemental	Descriptive	connection	Created connection among members
		judgement	Causes of judgement and results of feeling judged
		expectation	Expectations with regard to karma
	In Vivo	merits	“Everyone should be judged on their merits”
		karma contingent	“if you cared about karma”
		caring less	“when I first started out I cared about Karma more”
	Process	upvoting	Why participants upvoted others
		being downvoted	What participants did to get downvoted and how they responded to it
		gaming gamification	How participants used their knowledge of the Karma system to increase their amount of upvotes

From Miles, Huberman, and Saldana, 2013, pp. 74-5

Table 4.2 – Examples of Affective codes

Affective	Emotion	happy	Participants described what made them feel happy and the results of that feeling
		excluded	Participants described what made them feel excluded and the results of that feeling
		safe	Participants described what made them feel safe
	Values	value	‘Meaningless number’: Karma had no value
		attitude	‘Would leave’: extreme downvoting would cause participants to leave
		belief	‘Exclusions reduces participation’: a participant

believe exclusion reduces participation

Evaluation	-karma: high karma = karma whore	A participant evaluated that a member with high karma could be a bad thing because it represents them being a 'karma whore'
	+karma: increases participation	A participant evaluated the karma system being a good thing because it increases participation
	-karma: comment worth more	A participant evaluated the karma system being not as valuable as comments.

From Miles, Huberman, and Saldana, 2013, pp. 75-6

The affective methods, which “tap into the more subjective experiences we encounter with our participants” (Miles, Huberman, & Saldana, 2013, p. 75), consisted of emotion, values and evaluation codes. Emotion codes labeled participants’ emotions. Examples of emotion codes that emerged from the data are ‘happy’, ‘exclusion’, and ‘safe’. Values codes tracked participants’ values, attitudes and beliefs. An example of a value code was “meaningless number”. This code showed participants assigned a value of “meaningless” to Karma. An attitude code was “would leave” where a participant had the attitude that extreme downvoting would cause them to leave the online learning community. A belief code was “exclusion reduces participation” where a participant stated a belief that the feeling of exclusion that comes from being downvoted reduces participation among members. Evaluation codes were used when participants judged the “merit, worth or significance” of the case elements (Miles, Huberman, & Saldana, 2013, p.76). Examples of evaluation codes include ‘-karma: high karma = karma whore’, ‘+karma: increases participation’, and ‘-karma: comment worth more’.

The first cycle of coding generated 366 summarized codes (Figure 4.5, see Appendix D for all codes) that in turn generated “an array of individual codes associated with their respective data chunks” (Miles, Huberman, & Saldana, 2013, p. 89). I then performed a second cycle of coding in order to group the codes “into a smaller number of categories, themes, or constructs” (see Appendix 5) (Miles, Huberman, & Saldana, 2013, p. 86). The patterns that I found in the second cycle codes were grouped into what Miles, Huberman, and Saldana (2013) call *summarizers*: categories/themes, causes/explanations, and relationships among people. Miles, Huberman, and Saldana (2013) also suggest a category of “theoretical constructs” but this is beyond the scope of the thesis as it is descriptive in nature.

The 366 first level codes were grouped into 27 categories/themes, 8 causes/explanations and 4 relationships among people. These were grouped into 13 major themes. To verify the themes and evaluate whether a trend was reached among participants, I created a display matrix using the original focus group data.

A display matrix (See Figure 4.6) allowed me to “organize the vast array of condensed material into an “at-a-glance” format for reflection, verification, conclusion drawing and other analytic acts,” (Miles, Huberman, & Saldana, 2013, p. 31). With columns of themes and rows of condensed participant responses, this condensed data provided a method for analyzing whether there was a trend among the perception of the participants. I used the bottom row to summarize any trend participants generated. The display matrix displayed the colour font the participants used in the focus group. In the two focus groups, some colours overlapped and so those colours were also assigned a number. For example, in figure 4.6 below, Riley is Red 2 since they wrote in red in the second focus group. Many of the notes in the display matrix use the notes suggested

in Miles, Huberman and Saldana (2013) such as using ‘+’ to signify an answer in the positive or agreement.

A	B	Z	AA	AB
		Feedback?	Fun?	Connection?
Blake	Purple	+ but surface level	+	- Care more about the comments than karma
Riley	Red 2	+ they upvote what they like makes me feel like i belong	0 upvotes are. downvotes aren't	0 upvote does, downvote is alienating
Cameron	Orange 2	no feeling of belonging	-	- only used for sorting
Logan	Green 1	+ helps belonging	+ only as a function of the approval	+ It's like a compliment
Reese	Red 1	+ more than 2 -> feeling of belonging	- the fun is in helping and learning	+ indirectly, upvoting draws attention to the OP and you can start recogniz
Jordan	Blue			
Parker	Green 2	+ no feeling of belonging, that is from interaction	-	-
Charlie	Orange 1	+ surface level. not enough to refine your knowledge or opinions	- not yet but will in the future	+ give you a connection with someone
Summation		Users view karma as a form of superficial feedback.	Gamification isn't a motivator in terms of it being fun	superficial connection

Figure 4.6 - A screenshot of the display matrix.

From this condensed data, I could verify the 13 themes that emerged from the second cycle of coding in the Saturate App. Themes such as the impacts of connection, feedback and validation of members' feeling of belonging could be used to cluster participant responses. By clustering data, it was obvious to see if a trend was established. For example, by grouping and condensing the responses related to whether participants felt safe posting to the online learning community, it was easy to evaluate that the majority replied in the positive. There was a trend of participants feeling safe (Figure 4.7). Since the participants generally felt safe it follows that they have not felt their belonging was negatively impacted by a lack of safety.

A	B	T
		Safe?
Blake	Purple	+ as a mod, I can ban
Riley	Red 2	0 physical but not emotional: vulnerable
Cameron	Orange 2	+ do not post what I wouldn't say in person
Logan	Green 1	+ i won't be attacked
Reese	Red 1	+ internet barrier is protection
Jordan	Blue	
Parker	Green 2	+
Charlie	Orange 1	+ safe and comfortable. can only find out i'm wrong
	Summation	Users feel safe. gamification does not make them feel unsafe

Figure 4.7 - Screenshot of the display matrix showing the participant's responses to a question asking if they feel safe posting and if safety concerns impact their feeling of belonging. The bottom row is my summation of the group's views.

When responses regarding whether participants actively looked at other members' overall karma score, all responding participants did so in the negative (Figure 4.8). This indicated to me that competitiveness will have neither a positive nor negative impact on the participants' feeling of belonging since they do not seek other members' karma for comparison. This fulfilled saturation since no more questions needed to be asked about looking at other members' karma. When responses relating to whether participants felt judged when they were downvoted, there were mixed replies. In cases like this, I added questions to the interview to seek clarification.

		Compared Karma?
Blake	Purple	- karma is a function of posting not quality of post
Riley	Red 2	-
Cameron	Orange 2	- only trolls
Logan	Green 1	- never looked
Reese	Red 1	-"meaningless number"
Jordan	Blue	
Parker	Green 2	-
Charlie	Orange 1	-"never looked at another user's karma"
	Summation	Users do not compare karma

Figure 4.8 - A screenshot of the display matrix showing the participant's responses to a question asking if they have ever compared their karma score to another member's.

This matrix display also allowed me to sort the participants by length of membership or by whether they had a strong feeling of belonging to the community or not (Figure 4.9). I generated this summation from the pre-focus group survey and from the participants' responses in the focus groups that mentioned their experience, feeling of belonging to the community, and the amount of participation. In figure 4.9, it can be seen that a participant's level of experience, belonging and participation does not relate well to their feeling of being judged when they post. I expected this display matrix to allow me to see patterns in the data where experience, feelings of belonging or participation might impact the theme in question. I did not find any such patterns. For example, I expected participants who were more experience (old timers) to be less prone to the feeling of judgment when being downvoted. The display matrix shows that some experienced feeling judged where others did not, while among the less experienced participants, some felt judged where others did not. There were no focus group questions where responses generated a

clear pattern when comparing the theme to experience, feeling of belonging or amount of participation.

A	B	C	D	E	V
		Old Timer	Belong	Participate	Judged?
Blake	Purple	++	+	+	-
Riley	Red 2	++	++	+	+ lose confidence
Cameron	Orange 2	++	-	+	- truth and information aren't downvoted
Logan	Green 1	+	+	+	0
Reese	Red 1	-	+	+	+ used to now more confident
Jordan	Blue	-	+	-	
Parker	Green 2	-	0	-	- don't take it personally
Charlie	Orange 1	-	-	+	- prefer a conversation
	Summation				No consensus

Figure 4.9 - A screenshot of the display matrix showing the participant's experience (Old Timer), belonging (Belong), and participation (participate).

The display matrix verified that the second cycle themes present in the codified data were important themes for the participants. In particular the theme of “karma as a form of feedback” showed consensus though there was less agreement that it positively impacted the participants’ feeling of belonging (Figure 4.10). All who answered (Cameron and Jordan declined) answered in the affirmative. There was less agreement on whether this feedback impacted their feeling of belonging.

		Feedback?
Blake	Purple	+ but surface level
Riley	Red 2	+ they upvote what they like makes me feel like i belong
Cameron	Orange 2	no feeling of belonging
Logan	Green 1	+ helps belonging
Reese	Red 1	+ more than 2 -> feeling of belonging
Jordan	Blue	
Parker	Green 2	+ no feeling of belonging, that is from interaction
Charlie	Orange 1	+ surface level. not enough to refine your knowledge or opinions
	Summation	Users view karma as a form of superficial feedback.

Figure 4.10 - A screenshot of the display matrix showing the participant responses to whether they viewed the karma system as a form of feedback.

Some major themes that emerged from the second cycle coding and the matrix were “cognizant of karma”, “feedback”, “being upvoted”, and “being downvoted”. The major theme of “cognizant of karma” merged four categories: “meaningless number”, comments over karma, interest in karma, and being downvoted- positive (Figure 4.11). All of these categories under the major theme of “cognizant of karma” included codes relating to participants who felt that karma did not mean much to them or their feeling of belonging to the community but were aware of its existence and preferred to see it increase. This included the in vivo code “Karma is a meaningless number, but it's still nice seeing it go up over time” (Riley). The major theme of “feedback” included codes relating participants’ views on karma being a form of feedback that gave them a sense of validation. The major theme of ‘being upvoted’ included codes relating to how participants felt when they were upvoted as well as things they thought helped them get upvoted. ‘Being downvoted’ was similar to ‘being upvoted’ but for being downvoted.

The major theme “cognizant of karma” is a collection of four groups of codes: Karma is a

“meaningless number”, comments over karma, interest in karma, and being downvoted - positive. Each code group is made up of sub-groups or codes. The numbers represent where to find the codes in the spreadsheet of exported codes. It should be noted that a code with many numbers may not have that amount of individual codes as a datum could have the same code applied twice. For example a datum about karma “it’s a meaningless number” would have been coded as a value code because it is about the value a participant holds for karma (364) but the datum also describes karma and so would also be coded as a description code (234).

Cognizant of Karma

- Karma is a "meaningless number" 195, 234, 236-239, 363, 364
 - Cognizant 206
 - Not taken too seriously 148, 149, 150
 - "Nice to see go up" 365, 195
 - Superficial feedback
 - Not checked by other members 196, 209-216
 - Only look at individual posts 208
 - Indicates quantity over quality 228
 - High number = karmawhore = not useful to community 30, 209, 229-231
 - Low number = lurker enjoying themselves
 - Not connected to quality 150, 203, 358
 - Poor measurement of a compliment 207
 - Evaluation of participation 317
 - Not related to belonging 6
 - "Mostly timing" 202, 355
 - Time Zone diminishes karma 244
 - Gaming gamification
 - Methods of posting 169, 170, 225, 226
 - Karma whores 229-231
 - Knowing community 232
 - Motivational if you care 5
 - Filter, not acceptance 218, 246, 251
- Comments over Karma 194, 240
 - Comments more value than karma 21, 39, 136, 148, 210
 - Engaging other member 39
 - Karma = accessibility 39
 - Comments from respected members 40
 - Feedback is superficial 246, 247
- Interest in Karma
 - Expectation 152-162, 325-327
 - Threshold: 1 or 2 325-327, 249, 250
 - Not achieving diminishes belonging 152
 - Hard to put a number on 153, 155
 - Caring Less about karma over time 4, 9, 23, 347, 111
 - Don't need validation 25
 - Less confidence in members 26
 - New members need more validation 27
 - Function of subjectivity 28
- Being downvoted - positive
 - Learning experience 50, 51, 52, 59, 66, 75, 82-88, 320, 342
 - Nothing against downvoter 115
 - Not worried 76-78
 - Doesn't impact belonging 75, 112
 - Feel safe despite 137-143

Figure 4.11 - Major themes with minor themes and codes as sub-groups and sub-sub-groups.

		Notice Upvoted? Feeling? belonging?
Blake	Purple	+ validation. also upvotes come from timing
Riley	Red 2	+ validation, not as much as a comment
Cameron	Orange 2	+ validation, not as much as a comment
Logan	Green 1	+ feel smart. encouraged to post more
Reese	Red 1	+ "used to care"
Jordan	Blue	
Parker	Green 2	+ connection, shared interest
Charlie	Orange 1	+ happy
	Summation	Validation

Figure 4.12 - A screenshot of the data matrix showing the condensed responses the questions: "Have you ever noticed that your own post was upvoted (positive karma score)? How did it make you feel? Did it impact your feeling of belonging to the subreddit?"

upvoting

24 codes applied to 19 paragraphs

upvoting 8x

accessible 1x

approval 1x

b:big communities allow for fringe upvotes 1x

b:big communities flood posts 1x

b:big communities have more people to give upvote

b:community size doesn't impact value of upvotes

being helped 1x

b:larger communities = less knowledgeable member content 1x

14 more →

Figure 4.13 - A screenshot of the 'upvoting' codes grouped by SaturateApp. 'upvoting' comprised of 14 codes from 19 different responses.

		Notice downvoted? Feeling? belonging?
Blake	Purple	- not affected - don't believe in wisdom of the crowd
Riley	Red 2	+ rejection - less a part of the community
Cameron	Orange 2	+ re-evaluate my comment
Logan	Green 1	
Reese	Red 1	+ "I had to improve"
Jordan	Blue	
Parker	Green 2	
Charlie	Orange 1	+ I might be wrong
	Summation	Need to improve

Figure 4.14 - A screenshot of the Data Matrix for the condensed responses to the questions: “Have you ever noticed that your own post was downvoted (negative karma score)? How did it make you feel? Did it impact your feeling of belonging to the subreddit?”

4.4 Axial Statement

4.4.1 Cognizant of Karma

After the second cycle coding was completed, the relationship participants had with gamification and the feeling of belonging became clear due to the amount of codes and the intensity of the language used in data under the ‘cognizant of karma’ category. The ‘cognizant of karma’ category was also connected to most of the other categories and these connections will be discussed in the ‘Selective’ section. The reasons ‘cognizant of karma’ is a central theme will be discussed in this section.

The theme ‘cognizant of karma’ sprouted from the quote a participant, with pseudonym Riley, stated regarding losing karma: “I’m always cognizant of it but not really worried. Karma

is a meaningless number, but it's still nice seeing it go up over time.” The use of the term “cognizant” implied the participant is aware of karma’s existence but did not consider it to be important. Though karma was not an important feature to this participant, they would prefer to see it increase over decreasing or remaining the same, which suggested there is some value to karma. In short, karma is a minor motivating factor.

Once this view was established as a code, it became clear that other participants felt similarly. Another participant, Blake, stated, “I care more about the opinion of other makers whose work and opinion I respect than I do the opinions of the anonymous masses.” There was no way to tell who awarded you with karma; it was anonymous. This focus group participant felt that the vast number of unknown members wipes out the credibility of the karma system even if some of the karma may have come from trusted members. Another focus group participant, Charlie, stated, “I’d say I don’t really mind a post of mine being downvoted, we can’t share the same opinions on every topic. Someone might get a bit offended or is having a bad day, either way you lose some, you win some.” This participant explained that it is best not to take the karma system too seriously because you cannot predict how others will react to your contributions to the community even if your contributions are high quality. The view that karma was not something to take seriously but had a slight impact on participants is one that took on slightly different forms.

4.4.2 Meaningless Number

One from the ‘Cognizant of karma’ major theme took on was of karma being a “meaningless number” when it comes to measuring the quality of a member. Participants were unanimous that they have never actively looked at the accrued karma of other participants. Charlie stated, “I’ve actually never looked at other user’s karma, even after visiting their profiles.

I guess I kind of look at their posts and comments more if I ever visit someone's profile." Logan stated, "I have not looked at the karma of a [sic] another member of a learning community subreddit. I've only looked at karma scores for a user who hits the front page of Reddit."

Cameron stated, "No. Karma isn't really a concern for me. Users typically do not look at each other's karma scores, so it doesn't do much to effect general discourse." To these participants, accrued karma did not give other members status since the consensus was that one's karma was not usually seen by other members despite its availability. This also eliminated competitiveness among members for karma because they know other members are not concerned with it.

Even if participants did notice a member had a high amount of karma, it did not necessarily mean that translate into status in the community. Some participants were suspicious of members with high karma. In an interview Ashton stated, "The people with the most karma are karmawhores who post quippy popular things to multiple subreddits." "Karmawhores" were members who posted with the intention of accumulating karma regardless of if the post is helpful to the community. With regard to "karmawhores", focus group participant, Blake, stated, "It generally means they post more often/post more accessible information."

To differentiate between a member who earned their karma with valid posts and comments and a "karmawhore", one would need to examine more than the member's karma count. Therefore, high karma alone does not indicate a quality member.

Similarly, participants said that members with low karma scores may still be getting what they want out of the community. Charlie stated:

Someone with low karma score might simply be lurking and enjoying the conversations of others from a distance. I did that for the longest time and I am still doing it for the

most part. In that sense I tend to feel outside'ish compared to others because I am not taking a part of the conversation but It's enjoyable nonetheless.

A low karma score could indicate that the member is a "lurker", or it could indicate that the member is a controversial poster who earns nearly as much negative karma as positive. A high karma score could indicate that the member is a "karmawhore" or it could indicate that the member is a quality poster. Karma can give you an idea of what type of poster a member is but karma alone is not a good indicator of the status of a member. Though karma does provide some information about a member, ultimately it is "meaningless" for making judgments about other members.

The "meaningless number" theme was demonstrated by participants who felt karma is a superficial form of feedback. One focus group participant, Charlie, stated, "It definitely provides a surface level feedback, It's not in-depth enough to improve your knowledge or refine your opinions." Upvotes or downvotes that lead to your karma can be too crude of a tool to measure your performance. Its value as a feedback tool is as good as "hot or cold" is as a navigation technique. "The intersection between up/downvotes and good/bad work is not very strong, particularly in a community where many more people browse/lurk than actually make things," Blake stated. Many of these participants felt that karma is not directly linked with the quality of the content. One interviewee, Ashton, wrote, "Everyone likes to be complemented [sic] on their work, but karma is a terrible measure of it." There were participants who felt differently. Charlie stated, "I personally think that karma is there to evaluate how active and appreciated a person's contribution to a community is." Karma can give you rough feedback on the performance of your posts and comments but this form of feedback is very crude and in this regard it is a "meaningless number".

Participants felt karma was a “meaningless number” and not fully invested in karma because of forces that prevented them to earn as much karma as others. For some participants the force preventing karma was their time zone. Ashton stated, “I make all kinds of things that don’t get much love, mostly because of the time zone I live in and when I post. If I wanted to get a ton of upvotes, I would have to get up at 3 am and post so my posts were at the top of the new queue at 7 am on the east coast.” For Reese the force preventing their karma was the community in which they were a member:

Although /r/learnprogramming has a lot of subscribers, it still feels like a small community. And even then, 99% of my posts will get either not get upvoted, or get one upvote (usually by the op, and with an accompanying comment, making the upvote not really mean much). in a larger community, the upvotes don't really mean anything at all.

So either way, upvotes don't really affect me.

The “meaningless number” theme demonstrates that participants saw a little bit of value in karma scores but it was not refined enough to make confident decisions about other members or find specific ways to improve their own posts and comments. Charlie summed up the feeling by writing, “Nope, no reason to feel like I belong to a community based on a score.” This answered my first and second research questions, “To what extent does karma impact a member’s feeling of belonging in an online learning community?” and “If there is an impact, what emotions are associated with it?” The answer to the first question is that karma has little impact on a member’s belonging to an online learning. The answer to the second question is moot since there is no impact. However, I will discuss the participants’ feelings associated with gamification throughout the remainder of this chapter despite their lack of major impact on belonging. The

answer to the third question involves more discussion and therefore will be presented in chapter 5.

4.4.3 Comments Over Karma

Other themes emerged that demonstrated that participants were “cognizant of karma”. One theme under the major theme of “cognizant of karma” was “comments over karma” which grouped data where participants stated that comments had a larger impact over their feeling of belonging than karma did. Reese wrote about an experience they had while commenting:

In fact I actually commented on a post on the front page recently. I later realized the OP was someone who I had upvoted a lot, and I saw their name and remembered them from posting in /r/learnprogramming. It’s not that fact that I had given karma to them that contributed to belonging. It was that I remembered them and saw them somewhere else on reddit. I feel like I would have the same reaction if I just tagged everyone I saw on learnprogramming.

The connection that this participant made through their interaction with other members was what built their feeling of belonging. Giving karma was a fleeting action that made it less likely for members to make a connection. When asked about being upvoted, Riley responded with a similar feeling: “It did give me some sense of belonging but not as much as a comment did.”

In fact, some participants noted that they would prefer comments over downvotes as well. Charlie wrote, “I don’t feel judged at all, I prefer having a meaningful conversation with someone who downvoted my post to see how they think and what their reasoning behind having a different opinion than mine is.” The interaction that follow-up comments provide allowed for a

deeper connection with the community because it provided more thorough feedback. A member that posted a poor comment may have known they did something wrong based on their being downvoted but only a comment will indicate what they did wrong.

Karma given was anonymous. There is no obvious way to trace what members gave others upvotes or downvotes. As such it is difficult or impossible to know how your post or comment fairs in a particular demographic of the community. Comments can always be linked back to a member. This member's post and comment history can then be researched to establish their status in the community. As Blake stated, "I care much more about comments from people I respect than I do up/downvotes."

In terms of researching the status of other members, their comment history provides a much clearer picture of their value to the community compared to their overall karma. A focus group member Charlie stated, "I've actually never looked at other user's karma, even after visiting their profiles. I guess I kind of look at their posts and comments more if I ever visit someone's profile." A member's karma can overrepresent their contributions if they post "quippy" or "popular" things. A member's karma can underrepresent their contributions if they post in a large community because, as Logan puts it, "if it is a very active subreddit a post may get lost in a sea of other activity." Participating in small subreddits may also cause a member to have underrepresented karma as Cameron stated, "my commenting is based in very small subs, so karma typically only fluctuates between a handful of votes."

When compared to comments, karma may seem "meaningless". Comments allow for more information and nuance when it comes to feedback on performance and researching other members. Comments provide more interaction among members to develop a deeper connection than does karma. Karma, however is more accessible and therefore members will often receive

karma before they receive comments and seeing upvotes is better than seeing nothing at all. In that sense karma is “nice to see go up” over receiving no information at all.

4.4.4 Interest in Karma

Another theme under the topic of “cognizant of karma” is “interest in karma”. The participants had varying opinions on their interest in karma. Despite this, patterns emerged with regard to their expectations of karma and their loss in caring about karma over time.

Most participants that responded to the question regarding expectations of karma stated that they do have expectations for how well their post or comment will perform. As Logan stated, “My expectations are based on the subreddit size, the activity on the thread, how new the post is and the contents of my comment.” I found it interesting that with so many factors that impact the amount of karma participation can receive participants still set expectations for themselves in this fluid environment. Riley had simpler expectations, “I expect at least one or two upvotes per post. Anything less would give me some sense of not belonging.” Reese felt similarly, “When you get more than +2 score on a comment, that’s [sic] is clearly feedback from other members of the community, which definitely contributes to belonging.” By default, anything a member posted received one point of karma. Receiving a second point indicated that at least one person in the community was positively impacted by the contribution. For some participants, helping one person was all they expected.

Another pattern that emerged in the participants’ interest in karma that was surprising to me was that some participants felt they cared less about karma over time. Reese said, “Maybe when I first started out and cared about karma more I could tell you why it affected me, but not anymore.” Reese later wrote, “I used to care about upvotes more than I do now, but at this point upvotes don’t really mean anything to me.” Blake made statements that also indicated that karma

has lost value over time: “To a certain extent it is validation that you are on the right track, but I’m past that point on the community I mod.” Blake later offered some insight into a possible reason for this pattern. “The longer I’ve been on reddit, the less I believe in the wisdom of the crowd.” This pattern was observed among some of the participants who used Reddit the most. The feeling that karma lost value over time did not appear in the responses from all high-use participants, though this was not directly asked in the focus group questions. I followed up with a question regarding the loss of value in the interview questions. I hypothesized that members who feel accepted by the community may no longer feel the need to gain karma but the interviewees did not think that was the case. The participants of the interview did not reach a consensus on what could cause the loss of value over time.

4.4.5 Being Downvoted - A Positive Experience

The last code grouped under the topic of “cognizant of karma” was “being downvoted-positive”. Participants mostly did not lament the loss of karma and took being downvoted to be a learning experience. Participants did not value karma enough to worry about losing it. Reese stated, “I got downvoted more often when I put less effort into replies, and it made me feel like I had to improve myself rather than making me upset or angry at whoever downvoted me.” The consensus was that participants felt being downvoted was an opportunity to learn. They did not mention the loss of karma would cause them worry. Surprisingly to me participants also did not feel negatively towards the community for downvoting them. Charlie stated, “It didn’t change how I felt about the community but rather it made me realize i might be wrong in my answer/approach to a certain problem.” The threat of downvotes forced participants to double check their comments before posting them. Logan wrote:

If I think a post would garner downvotes i would not make that post. Losing the total of karma would not impact my sense of belonging, but avoid the sense of ‘gosh I feel like an idiot or a jerk’ makes me weigh what i post. Same feeling as keeping my mouth shut in some conversations, lest I sound like an idiot.

Participants took being downvoted as constructive feedback and did not worry about the loss of karma. Participants did not worry about the loss of karma but the karma did provide a learning opportunity. Participants conveyed that karma is useful but its value was not important to them directly.

The previous codes have illustrated that participants did not feel strongly about the value of karma but that it was a useful idea. Participants considered karma to be superficial feedback but it was better than no feedback at all. Karma did not describe another member but could provide insight into their motivations. Participants did not worry about losing karma but losing it did provide a learning opportunity.

The major theme “cognizant of karma” summed up the experience of participants as many felt it had only a minor positive impact on their feeling of belonging. In the following section I will discuss how the major theme of “Cognizant of karma” relates to most of the other major themes that emerged through this research.

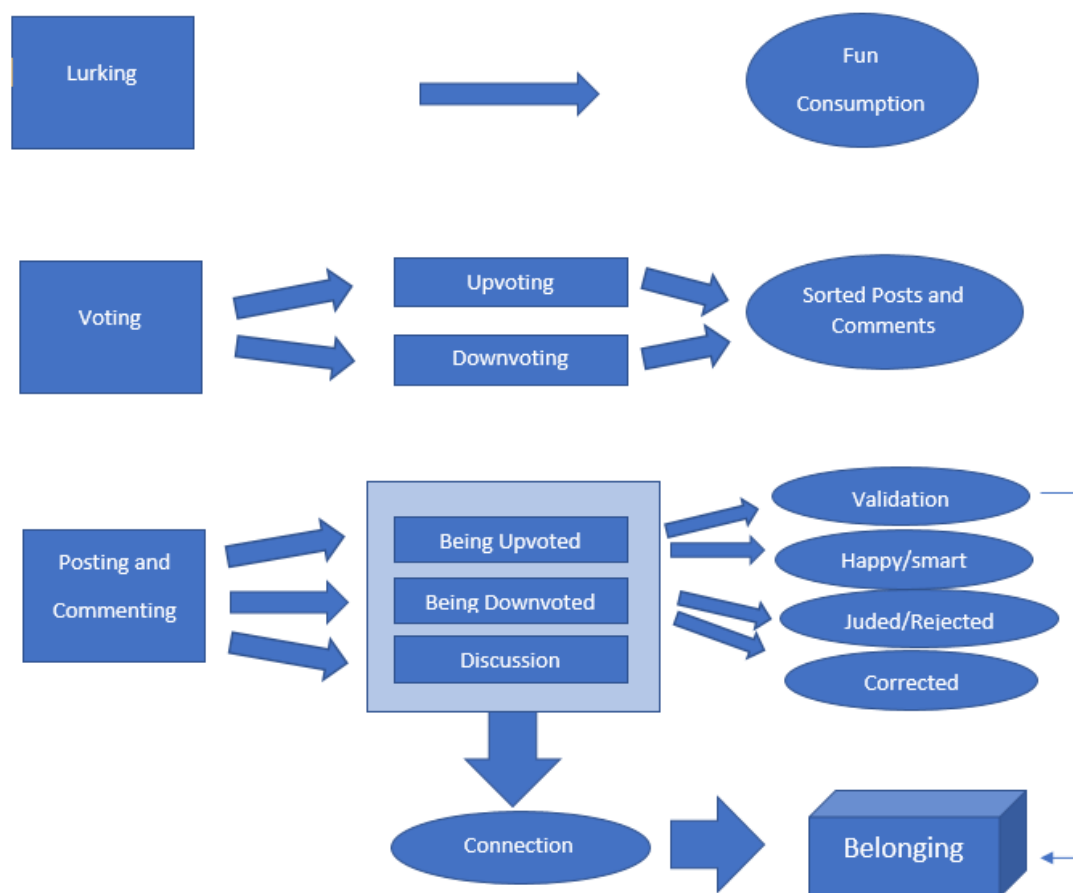


Figure 4.15 - A network of elements affecting levels of participation and how they may lead to belonging. It was developed from the major themes.

4.5 Selective

The major themes that arose from the second cycle coding were interrelated. These connections between themes can best be visualized with a network. With the use of a network I could trace “the emergence and consequences of a particular theme and orchestrate it with others” (Miles, Huberman, & Saldana, 2013, p. 236). The network is based on three initial events at increasing levels of participation: lurking, voting and posting.

4.5.1 Lurking

Many codes shared similar themes of limited participation and learning the community rules. These themes included ‘new members’, ‘anonymity’, ‘community size’, and ‘receiving help’. These were grouped with the theme of lurking. Lurking is the act of browsing the site with no interaction with the community. As Charlie stated:

Someone with low karma score might simply be lurking and enjoying the conversations of others from a distance. I did that for the longest time and I am still doing it for the most part. In that sense I tend to feel outside’ish compared to others because I am not taking a part of the conversation but It’s enjoyable nonetheless.

Lurkers were not well regarded by Blake:

If I post a technique that only a few people are able to do, not getting upvotes does not impact the quality of the feedback. It just means the masses (most of whom lurk and don’t actually make things) can’t understand it.

This participant felt that lurkers do not do much to help the community. Logan stated in a focus group, “I find the fun part of reddit is consuming the information, but I do enjoy the approval when I get an upvote.”

Participants did not indicate that karma was the main cause for them to begin participating in a community however they did indicate it was a factor. Bailey stated in an interview, “I think it draws people in. Getting upvotes has an addictive quality. Once you start getting some, you want some more.”

Karma being a potential conduit for lurkers to become fully participating members fits the theme of “cognizant of karma”. Karma was not the force behind all participation but it offers a slight nudge to lurkers who are on the fence.

4.5.2 Voting

The next initial event was ‘voting’. Voting on posts requires members to interact and so requires more participation than ‘lurking’ but since it only takes a moment, it requires less participation than posting or commenting. As one participant puts it: “In fact I actually commented on a post on the front page recently. I later realized the OP was someone who I had upvoted a lot, and I saw their name and remembered them from posting in /r/learnprogramming.” Voting, either by upvoting or downvoting, initiated interaction among members. Voting is the act of awarding karma to a member by upvoting them or subtracting karma by downvoting them. Participants described their motivations for both upvoting and downvoting fellow members.

The data collected from the focus groups and interviews reveal there are two main reasons participant upvoted posts or comments: “thanking” and “sorting”.

4.5.2.1 Upvoting

Many participants stated that karma was a form of approval - a way of saying “thank you”. As a participant in a focus group stated, giving another member an upvote was “kinda like giving a high five or thumbs up. Just general approval.” The idea that giving an upvote was giving thanks was echoed by other participants. Bailey stated in an interview, “Having the ability to give someone a karma point allows me to thank someone for their contribution to the online community.” The approval given to another member through an upvote can help that member’s feeling of belonging and will be discussed in the “Posting and Commenting” section.

Reddit’s karma system was primarily a sorting algorithm. As stated by Charlie in a focus group, an upvoted can be used “to help out others indirectly by pushing answers/questions to the top so others don’t miss them.” Participants employed the sorting algorithm by upvoting posts and comments whose visibility they want to see increased. As Reese put it, “I will upvote

comments if I think they are something that they OP should read, either because they correct something or they are informative.”

Whether it is for the purpose of thanking or sorting, there were common reasons among participants to give upvotes. Most commonly participants upvoted a comment they feel is “correct” or “helpful”. Other factors lead to participants giving an upvote such as being well researched, humour, and being void of unneeded subjectivity.

4.5.2.2 Downvoting

The karma system can be employed in the opposite way as well. Downvoting can cause posts or comments to lose visibility. Participants downvoted other members for two reasons: “for justice” and “sorting”.

Some participants enjoyed the ability to have some retribution on members who are not properly contributing to the community. Bailey stated in an interview, “it allows me “penalize” someone if I think they make a post that is not a useful contribution.” The ability to downvote a comment or post was important for enforcing the boundaries of the community.

The value of sorting posts and comments using the downvote was as present as it was when participants wrote about upvoting. Downvoting allowed participants to “sink” posts or comments to decrease their visibility. Whether it was to punish or to sort, participants would downvote posts or comments that were wrong, off-topic, rude or biased.

Interestingly, there were a number of participants that stated they do not use the downvote function. Bailey wrote:

It would actually take a lot for me to downvote something. I mostly use the upvotes if I really like something. Generally, if I don’t like something, I just won’t vote one way or

the other. I save my downvotes for users who say something mean-spirited or state something that I know to be wrong.

This sentiment was echoed by other participants and may indicate how high the threshold for participation for simple tasks can be. If a portion of members were not willing to downvote then a portion of members are not likely willing to post or comment.

Voting fits the theme ‘cognizant of karma’ because participants use it primarily to thank, sort or punish other members. These actions can help define a community and though participants did not indicate the act of voting impacted their feeling of belonging, receiving the votes from other members did.

4.5.3 Posting and Commenting

The third initial event was ‘posting and commenting’. When a member posted or commented they opened themselves up to assessment by other members. Their post or comment could then be upvoted, downvoted or could generate a reply. I will first discuss the feelings participants had in association with being upvoted and how it impacted their feeling of belonging. Following that I will discuss being downvoted. Replies in the form of commenting will be discussed in their own section which follows the current section.

4.5.3.1 Being Upvoted

The consensus of participants who were upvoted reported feeling “validated”. Cameron stated, “Knowing that others take value in your statements provides feeling of validity.” Logan wrote that this sense of validation positively impacted their feeling of belonging:

I always look at the karma score for my post. A high score has made me feel smart and that the content of my comment had value to the community. A high score made me feel like I should contribute more often, so, yes it made an impact on my feeling of belonging. Charlie also felt happy for helping another member but this did not translate towards their feeling of belonging: “It didn’t spark any feelings of belonging as much as it made me slightly happy to know that I was able to help someone out.”

For most members being upvoted provided a sense of validation. They viewed karma as a form of feedback and positive feedback in the form of upvotes told them they were contributing to the community in a positive way. Parker put it this way: “The better informed your posts are, the more response they will get from the community, this raising your karma and status in that community.” Reese felt this positive feedback positively impacted their feeling of belonging: “When you get more than +2 score on a comment, that’s is [sic] clearly feedback from other members of the community, which definitely contributes to belonging.” Other feelings participants associated with being upvoted were feeling happy, smart and connected.

4.5.3.2 Being Downvoted

Most participants had experienced being downvoted. Surprisingly the feelings associated with being downvoted were not all negative - in fact the majority were positive. Many participants had similar experiences to Reese who said, “I got downvoted more often when I put less effort into replies, and it made me feel like I had to improve myself rather than making me upset or angry at whoever downvoted me.” Actions that received downvotes showed participants they were not in alignment with the community and gave them an opportunity to reevaluate their position. Reese later stated, “Re-reading my downvoted comments has helped me improve as a

programmer.” Being downvoted was not seen as being attacked by other members, it was seen as other members correcting the participant’s behaviour.

Despite most participants feeling that being downvoted was an opportunity to improve themselves, there were participants who took downvotes as personally as Riley:

Posting a piece of original work is very personal in a way. A downvote is someone saying they don’t like what you created. Even if it’s just a matter of taste and personal preference. A downvote is [sic] gives a sense of rejection that makes you feel slightly less a part of the community. A comment with some suggestions on how to make the work better would make me feel more included.

Riley also wrote about the feeling of judgment associated with being downvoted and the impact it may have on their participation: “I do feel judged. I may have to wait a while before regaining the courage to post again.”

Another focus group participant, Reese, had somewhat mixed feelings. They agreed that downvoting could negatively impact their participation but only in the case of extreme downvoting. “If every single time I posted I was downvoted by other members of the community (either because I was wrong or because they didn’t like me) I would probably leave pretty fast. Other than that extreme case, it would take a lot to make me stop posting.” Reese’s apparent mixed feelings may still be in line with the others who appreciate downvoting. It is unlikely that every post a member makes would be downvoted unless they are posting in a particularly toxic community or if a member continuously posted items that did not conform to the community’s standards. Reese stated that under normal circumstances they sometimes felt judged when downvoted but has learned to use comments to engage downvoters. “Sometimes yes, but over time I’ve become a lot more confident in my responses and I’m willing to argue with downvoters

about how or why I answered in the way that I did.” Reese’s reception of the extrinsic motivator of being downvoted resulted in more participation in the community. Using the comments to engage downvoters was echoed by Charlie who used being downvoted to learn: “I don’t feel judged at all, I prefer having a meaningful conversation with someone who downvoted my post to see how they think and what their reasoning behind having a different opinion than mine is.” Participants in this study have shown that being upvoted or downvoted resulted in generally positive results. Being upvoted resulted in pleasant feelings about the community and being downvoted often resulted in more participation in the community.

4.5.3.3 Cognizant of karma

This research focused on the gamified aspect of the community. Upvotes and downvotes, as gamified elements, did have a slight impact on the feeling of belonging of participants. The increase of karma through upvotes provided participants a feeling of validation which did impact their feeling of belonging positively. Though some participants stated that downvotes gave them a feeling of judgement which negatively impacted their feeling of belonging, the majority took being downvoted as a learning experience. To most participants a comment or post receiving downvotes was a time to reflect on the comment or post and how it did not fit the community. Some participants stated it was an opportunity to engage other community members using comments to explain their reason for downvoting them. Again, we see that participants are “cognizant of karma” in that they are slightly influenced by upvoting and downvoting but they often brought up that they would prefer to engage with other members through comments.

This research did not focus on how the use of comments impacts the feeling of belonging of participants. However, participants provided data on the topic which will be presented as a means to illustrate how little the impact karma has compared to the impact of the comments.

Participants were “cognizant of karma” which made them think twice about posting an unhelpful comment. Some participants felt connected to other members of the community when they received upvotes. Despite this many participants felt receiving a reply in the form of a comment more beneficial to their feeling of belonging than an upvote. Riley compared receiving upvotes to comments: “It provided some validation and personal accomplishment. It did give me some sense of belonging but not as much as a comment did.” Riley later wrote, “An upvote with an additional comment give me more a sense of connectedness.” Upvotes and downvotes are anonymous while comments are linked to a member’s profile. Participants were able to associate comments with particular members. Blake stated, “I care much more about comments from people I respect than I do up/downvotes.”

Participants felt that being downvoted was an indication that they were out of line with the community but receiving a comment indicating what was wrong was more helpful for their feeling of inclusion. Riley wrote, “A downvote is gives a sense of rejection that makes you feel slightly less a part of the community. A comment with some suggestions on how to make the work better would make me feel more included.” In an interview Casey suggested new members could avoid large amounts of downvotes if the moderators commented on their post. “Mods could message new users making a faux pas or they could reply to the offending post or comment.” Comments instead of or in addition to downvoting could make for a better learning experience and maintain members’ feeling of belonging.

Another reason comments are more useful than karma is that comments provide more information on members. As previously discussed, the karma a member has accrued does not necessarily indicate whether the members contribute positively to their community. The quality of their comments, which are linked to a member’s profile, give a better indication of the

productivity of the member. Charlie stated, “I’ve actually never looked at other user’s karma, even after visiting their profiles. I guess I kind of look at their posts and comments more if I ever visit someone’s profile.”

The negative side to comments was the effort that participants put into the comment could go unnoticed, making them feel excluded. Riley indicated they would like to see some form of acknowledgment when they make the effort to write a comment and not receiving an acknowledgment has a negative impact to feeling of belonging. “In some subreddits, you may get no movement in karma either way as well as no comments. No action at all on a post also gives a feeling of exclusion.”

Comments being more important than karma begged the question whether karma is worth using on an online learning community at all. As Bailey stated, the karma system may only encourage members to post high karma valued items that do not help the community. Bailey wrote about the karma system:

I think it only impacts my ability by adding incentive for me to make a contribution at all where I might normally have not. It may also subtract from the community where people who are only really interested in karma points may make comments that aren’t really that helpful but do it just to have said something.

Bailey suggested that an online learning community that only allowed comments and no voting system may diminish comments that are not beneficial to the community. This was not in line with the consensus among participants. The “cognizant of karma” theme that emerged from the data suggested that, though karma did not impact a participant’s feeling of belonging in a large way, it was better to have it than to not because it did have a two small positive impacts. The two positive impacts were: 1) the karma system acted as a reward for good posts to a

community by being upvoted and 2) downvoting showed members when their contributions are not in line with the community.

In addition to the small positive impacts the karma system provided to members, the karma system is also a sorting system to rank posts. As one focus group participant stated, “Karma is a smart filter operated by humans. It’s what makes the difference between toxic Facebook feeds and a proper forum where you can have discussions or receive answers to queries.” The karma system is integral to reddit and so long as it does not have a negative impact on belonging then it should remain a part of the site.

4.6

4.7 Summary

In this chapter I illustrated how the data were analyzed and the themes that resulted from the analysis. The data from two focus groups and three interviews were coded using Miles, Huberman, and Saldana’s (2013) coding scheme for first cycle of coding. I evaluated these codes for patterns and these patterns became second cycle codes. I verified these second cycle codes by comparing them to a data visualization matrix. The confirmed second cycle codes were grouped into themes. The major theme that emerged was “cognizant of karma”. “Cognizant of karma” states that participants were aware of karma and were slightly motivated by it but did not consider it to be a strong motivating force. Many participants stated that receiving downvotes inspired them to perform better. These findings imply that the karma system could work well in an online learning community as being upvoted or being downvoted are beneficial to the community in general.

Chapter 5: Conclusion and Discussions

5.1 Overview

In this chapter I will discuss the results from the research. I will discuss whether or not the communities of practice that I investigated provide the psychological needs in order for internalization of gamification to occur. I will then discuss the commonality between the internalization process and the needs of a community. I will argue that evidence from the participants demonstrates some level of internalization and that this coincides with the goals of the community. The implication of this argument is that gamification can coexist within communities of practice. I go on to discuss limitations of this research.

5.2 Discussions

This research investigated the intersection of two increasingly popular technology trends that appear in education: communities of practice and gamification. In this chapter I will establish that Reddit, through features programmed into the site, allows for communities of practice to establish a sense of belonging based on the McMillan and Chavis (1986) framework discussed in chapter 2. Gamified online learning communities also appear on Reddit, however, the impact of its gamified systems on their online learning communities has yet to be explored. This research intended to explore the relationship between gamification and online learning communities. The reason gamification is used in these communities is to increase motivation among participants. Some of Reddit's users could be expected to be intrinsically motivated regardless of the presence of the extrinsic karma system. No one is forced to join Reddit or any of its subreddits; people join them because they are interested. In this case, research has demonstrated the presence of controlled motivators like karma may be a hindrance to optimal

learning. “The additional presence of controlled motivation next to autonomous motivation detracts rather than contributes to optimal learning” (Vansteenkist et al., 2009, p. 679). For those that are not intrinsically motivated, extrinsic motivators may encourage participation. According to Deci and Ryan (1995), this can only occur if three psychological needs are fulfilled. The three psychological requirements that needed to be filled for autonomous motivation to occur are autonomy, competence and relatedness. (Deci, & Ryan, 1995; Gagne, et al., 2013). This section will discuss how Reddit meets, and sometimes fails to meet, the fulfillment of these three psychological needs as they were described in chapter 2.

5.2 Reddit Establishing Sense of Community

In chapter 2 I discussed McMillan and Chavis’ (1986) four-part definition of sense of community which included membership, integration, influence, and shared emotional connection. In this section I will discuss whether Reddit allows for these four qualities to be established in the communities of practice that I investigated.

Membership begins with the creation of the community and its rules. The moderator of the community would be the first one to enforce the boundaries with new members adopting the practices. Members who’s posts and comments fit the community boundaries will be upvoted more often than downvoted. The promotion of content that fits the community boundaries will reinforce the definition of that community as new members will have more artifacts with which to understand the community. The boundary of membership is established by the karma system as users who are posting or commenting in a manner that does not reflect the community will be downvoted. Since upvotes must be earned, it is given value (McMillan & Chavis, 1986). Being downvoted encouraged Reese to reflect on what they had posted and how they could bring their identity in line with the community’s: “I got downvoted more often when I put less effort into

replies, and it made me feel like I had to improve myself rather than making me upset or angry at whoever downvoted me.” Reese is also demonstrating that they are integrating into the community by changing their behaviour to match what is expected in the community. Integration can occur in Reddit’s communities of practice through upvotes as McMillan and Chavis (1986) state reinforcement is a means to fulfil the needs of the member. The karma system established boundaries for membership and encouraged integration for these participants and thus aided to develop their sense of belonging.

Influence can be exerted by using the karma system. Upvoting or downvoting content helps determine its visibility to other members. Because the use of the karma system is easy, it ensures that it is constantly used. This constant influence encourages members to learn from each other (Wenger-Trayner, 2015). The power to influence the community helps develop a sense of community (McMillan & Chavis, 1986). This power to influence was wielded by participants to thank other members for posting informative or correct content. Reese illustrated his use of this power by saying, “I will upvote comments if I think they are something that they OP should read, either because they correct something or they are informative.” The power to influence was also used to penalize people when their contributions are not useful. Bailey described how they used their power to penalize: “it allows me “penalize” someone if I think they make a post that is not a useful contribution.” The karma system empowered participants to influence their community and thus help to develop a sense of community.

Shared emotional connection is developed through shared experiences and the more often shared experiences happen, the stronger the connection (McMillan & Chavis, 1986). Ideally, shared experiences would be meaningful and even spiritual (McMillan & Chavis, 1986). However, interactions of that caliber are not common and difficult for a moderator to create the

circumstances in which they would occur. Since the quality of the interactions would be difficult to manipulate, the quantity of the interactions would have to suffice. Reddit's karma system does this by encouraging lurkers into participating. In section 4.5 I discussed how the karma supports users into participation from lurkers, to voting to interaction. The influence the karma system exerted on participants is illustrated by Bailey's statement: "I think it only impacts my ability by adding incentive for me to make a contribution at all where I might normally have not." By adding incentive to interact with other members of the community, the karma system helps to increase the number of interactions among members should help to develop a sense of community.

I have shown how Reddit's karma system helps to develop a sense of community as defined by McMillan and Chavis (1986). Next, I will discuss how Reddit meets the psychological needs in order for gamification to work properly. This is based on Gagne et al.'s (2013) self determination theory as was discussed in chapter 2.

5.3.1 Reddit Meeting the Psychological Needs

The first of the three psychological needs for autonomous motivation I will discuss is competence. Feelings of competence come with an interest in the environment and being able to create wanted results (Standage, et al., 2005; Gagne et al., 2013). Individuals can be assumed to have an interest in subreddits since most of the OLC type subreddits have to be joined to participate. A majority of the participants in this research said in their pre-interview that they chose to interact with others on Reddit in order to contribute to a community. Individuals could create wanted results in various ways in subreddits through the creation of content but some participants received results in the form of validation through the karma system. When asked about being upvoted, participant Logan stated, "I always look at the karma score for my post. A

high score has made me feel smart and that the content of my comment had value to the community”. Blake shared similar feelings about being upvoted, “It provided some validation and personal accomplishment.” Participants needed to feel a mastery of their environment which can be measured by the amount of karma they accrue. Mastery of the environment can be done on Reddit with the challenge of acquiring karma and the feedback that karma provides. Reddit was able to deliver the psychological need of competence to individuals through the use of the karma system.

The second psychological need I will discuss is autonomy. Autonomy can be built if participants have a voice and feel they have agency (Standage, et al., 2005; Gagne et al., 2013). Individuals had the choice to subject themselves to being upvoted or downvoted by choosing to post. Individuals also had a voice through upvoting or downvoting comments. One participant, Charlie, stated they upvoted comments in ways that improve the community: “I find myself upvoting posts that are either helpful or are seeking help. Like specific questions that remain unanswered for a long time.” This input gives individuals a voice since their votes in the karma system dictates what is more visible on the subreddit. Here we saw the karma system deployed such that it provided autonomy to individuals.

The last psychological need that determined motivation is relatedness. Relatedness occurred when individuals feel connected and accepted by their peers (Standage, et al., 2005; Gagne et al., 2013). Relatedness can be built with interaction fostered by design which can be done through upvotes and commenting. When asked about receiving upvotes Parker stated, “I felt good about it because I feel that other people share this interest.” Cameron stated similarly: “Knowing that others take value in your statements provides feeling of validity”. Relatedness was achieved when there is meaningful social interaction and participants feel cared for. The

karma system was able to achieve this when individuals post in accordance with the rules to receive upvotes which they tend to take as a form of validation.

5.3.2 Reddit Failing to meet the Psychological Needs

This research has found evidence to suggest the gamification-based karma system provides the psychological groundwork for motivation to occur among some individuals. However, there are many ways that the karma system can fail to provide the three psychological needs. For instance, the system can undermine competence since quality posts are not always upvoted. Acquiring karma was as much about timing as it is about quality posts, according to Blake: “Sometimes it's validation for a project well done, but mostly it's just timing. If you want your post upvoted, post at 7-8 am EST.” Not acquiring karma due to your posting time could undermine an individual’s feeling of competence since a contribution is being judged on something other than its merit.

Research suggested autonomy can be undermined by any form of extrinsic motivation (Vansteenkiste, et al., 2009; Van Roy, & Zaman, 2018). Extrinsic motivators compelled individuals to do something which reduced an individual’s feeling of autonomy. Because this is an informal online learning community, members are not required to vote or comment and so their autonomy in this sense should remain intact. However, the judgment some participants felt when they did choose to comment did sometimes impact their motivation. The participant Riley stated, “I do feel judged. I may have to wait a while before regaining the courage to post again.” The feeling of judgment may be an indicator that the participant is undergoing the first stage of internalization: introjection. The participant may later internalize the downvoting and use it as a motivator like many of the other participants did. This begs the question: how many users leave

the site before internalization can occur? Users who do not internalize the extrinsic motivators quickly enough or at all would not participate on Reddit for very long.

The karma system could undermine an individual's need for relatedness. Being downvoted could cause individuals to feel judged, resulting in less of a feeling of connectedness. Riley wrote about being downvoted: "I do feel judged. I may have to wait a while before regaining the courage to post again." The negative side of the karma system, downvotes, can pose a threat to individual's need for relatedness.

An individual who used Reddit may have come across challenges to their psychological needs for motivation but on the whole, the evidence gathered in this research suggested the karma system supported the needs to allow for individual motivation. Merely providing the needs did not guarantee motivated individuals. Some individuals were intrinsically motivated by the joy of learning about their subreddit's topic while some individuals may have been suffering amotivation. Providing the three psychological needs can allow individuals to move through stages of extrinsic motivation through the process of internalization (Deci & Ryan, 1985; Standage, et al., 2005).

Autonomy may be challenged by any form of gamification. Karma, on the surface, was an external motivator as upvotes were rewards and downvotes are punishments (Gagne et al., 2013). External motivators limit the amount of autonomy an individual has because they may feel pressure to perform when they may otherwise not. Vansteenkist, et al. (2009) cautioned the use of external (controlled) motivators when the intrinsic (autonomous) motivator is already in place: "the additional presence of controlled motivation next to autonomous motivation detracts rather than contributes to optimal learning" (p. 679). It should be noted that Vansteenkist, et al. (2009)'s research was performed on high school and college students. This formalized setting

would force students to participate in the extrinsic motivators. By contrast, participants in this study participated in informal learning communities where participation is not forced.

Despite the difference between formal versus informal setting, some participants in this research did offer evidence to support Vansteenkist, et al. (2009)'s study. Participant Logan stated, "If I think a post would garner downvotes i would not make that post." For Logan the external motivator is inhibiting the intrinsic motivation. There must be some degree of intrinsic motivation if Logan is placing some value on downvotes. On the other hand, for other participants like Reese, the extrinsic motivators became less important over time. Reese stated, "I used to care about upvotes more than I do now, but at this point upvotes don't really mean anything to me." Perhaps this is the result of Reese's movement through the internalization process. Perhaps Reese has internalized the motivators to a point where participation in community is entirely intrinsic and so extrinsic motivators hold little value.

The reason for this disparity between data in my research and previous research on external motivators could be because the participants in my research could be farther along the internalization process. This seems consistent with other research because if they did not progress through internalization, they would likely not continue to use Reddit and so would not be participating in this research. Additionally, online community research has found that the old timers of a community are less negatively impacted by loss than newcomers (Leclercq et al., 2018). Most likely, participants in this research had moved beyond viewing karma as an external motivator to introjection or beyond.

5.3.3 Karma and movement through the internalization process

I discussed in section 5.1.1 that there is evidence that Reddit has provided for the psychological needs of at least some participants. These participants may be moving through the internalization process. There is evidence that some may have gone through introjection, the first step of internalization. Gagne et al. (2013) defined introjection as a type of extrinsic motivator that affected individuals emotionally. Introjection was a controlled regulation in which an outside manipulation motivated an individual to action because their feelings pressure them to do so. Many participants described feelings of judgment for posting comments that received downvotes. When asked about their feelings of being downvoted, Riley stated, “I do feel judged. I may have to wait a while before regaining the courage to post again.” Reese answered that they used to feel judged for being downvoted but no longer feels that way, “Sometimes yes, but over time I’ve become a lot more confident in my responses and I’m willing to argue with downvoters about how or why I answered in the way that I did.” These participants’ emotions were manipulated by an extrinsic motivator, karma. In the case of Riley, the manipulation did not occur in the way Reddit’s designers would have liked as Riley’s feeling of judgment reduced their participation in the community. Reese’s journey from feeling judgment to engagement with the community is much more productive for the community as a whole. It may be possible that Riley’s statement is demonstrative of their movement from introjection to identification.

Identification, the next step in internalization, is an autonomous extrinsic motivator where the external motivators cause participants to develop a new personal view (Gagne et al., 2013). Users reflecting on their own posts to evaluate what they did wrong would be

identification and this extrinsic motivator was exemplified in the data several times. Participant Charlie stated, “Losing karma would not affect how I feel towards a community. It will encourage me to be a bit more strict with myself on how freely I talk and how ignorant I am of others’ feelings.” This statement shows that karma can be used to cause individuals to develop a new personal view. What is particularly interesting is that Charlie is talking about being downvoted, a form of gamification some gamified websites do not use. Other participants agreed with Charlie’s perspective. Reese stated, “I got downvoted more often when I put less effort into replies, and it made me feel like I had to improve myself rather than making me upset or angry at whoever downvoted me.” Reese also wrote, “I hope people upvote my comments because they're helpful, and downvote them if I'm wrong. Re-reading my downvoted comments has helped me improve as a programmer”. Being downvoted was a reminder to the participant to reflect on the needs and values of the community and assimilate with them. When asked about being downvoted Logan wrote, “If I think a post would garner downvotes i would not make that post.” Logan’s reflection before posting may demonstrate that the participant has already assimilated with the needs and views of the community that are reinforced through downvoting.

If Logan’s needs or values change based on karma then integration would have occurred (Gagne, et al., 2013). Integration is the most mature form of internalization and occurs when an individual has internalized the previously external motivations into their own needs and values. What is striking about the process of internalization in this context is that it mirrors the literature’s description of peripheral members becoming core members. During the identification stage of internalization individuals identify with the importance of a behaviour that is being motivated and begin to make it their own (Gagne, et al., 2013). Similarly, in CoP literature, community members on their journey to becoming core members will develop an identity which

includes their shared interest of the community (Wenger-Traynor & Wenger-Traynor, 2015). During the integration stage of internalization individuals internalize the needs and values that are being motivated and make them their own (Gagne, et al., 2013). As a community member moves from peripheral participation to core member, they too would attribute value to the goals that are valued by the community (DeLiddo & Concilio, 2010). The commonality between high level internalization and the movement from peripheral community member to core member shows that gamification can not only co-exist with online learning communities, but they can reinforce each other. The commonality between gamification and online learning community may only exist for members who are far enough along in the internalization process. Members who are only at the beginning the journey of internalization may have greater difficulty reconciling these two ideas. This answers the third research question: “Does the use of a points-based system impact collaboration and cooperation in a CoP?”, as the collaboration and cooperation that are typically present in a CoP should not be negatively impacted by a points-based system if the participants are able to move through the internalization process.

Researchers have suggested incorporating gamification in a CoP to be a difficult task. Wenger (2008) stated, “Because communities of practice must be self-organizing to learn effectively and because participation must be intrinsically self-sustaining, it is tricky to use reward systems as a way to manipulate behaviour or micro-manage the community,” (p. 8). The integration of gamification with online learning communities was a difficult proposition because communities needed autonomy. If the community was not allowed to evolve organically, its participants would not be motivated to participate. But even Wenger stated that this form of motivation should not be ignored altogether.

Lave (1991) stated legitimate peripheral participation involved the training of newcomers to the community to become core members. Based on the data gathered in this research, the use of gamification may be a useful form of peripheral participation. As participant Bailey stated, “I think it only impacts my ability by adding incentive for me to make a contribution at all where I might normally have not.” The incentive of points may convince members to post where they might otherwise not. This incentive may allow newcomers (lurkers) to make to move to full-fledged members.

Xie (2013) states that lurkers can be useful to a community. Lurkers may not post because the idea has already been stated, they are not sure how to phrase a response, they prefer to read, or they may receive what they need from only reading. Lurkers can be important as they can eventually be motivated to participate. “The significant correlations suggest that a student’s reading and evaluation activities eventually may lead to some tangible behavioural consequences, which are posting or replying to a message,” (Xie, 2013, p. 296). Xie’s observations suggested the karma system may motivate lurkers to participate as evidenced by Riley’s previous statement.

Once lurkers graduate to full-fledged members, they need to be encouraged to continue to participate. This encourage may be best achieved through feedback as it can promote intrinsic motivation (Xie & Ke, 2011; Xie, 2013). The data from this research has shown that karma was viewed as a simple feedback system. This perception was best exemplified with Jordan’s statement on why they upvotes others, “kinda like giving a high five or thumbs up. Just general approval.” This description of the purpose of upvoting is consistent with previous research that defined feedback in an OLC to be replies, ratings received or a ratings score (Xie, 2013; Bista,

et. al, 2014). Xie (2013) found that feedback was proportional to participation so it would not be surprising to see gamification increase participation.

Being downvoted may reduce participation and participation is closely tied with community belonging (Zhao, Lu, Wang, Chau, & Zahng, 2012). Kong, Kwok, and Fang, (2012) found that publishing performance figures in a collaborative learning site bred envy among participants. Envy in turn lead to a competitive environment in which students favoured individual learning. This dynamic was not the case in my research. The Kong et al. (2012) study looked at Massive Multiplayer Online Game (MMOG) environment where envy “results from a social comparison between the player and his/her peers.” (p. 3) The Reddit environment differs from MMOG environment in this regard in that member’s accrued karma is not prominently displayed. The data in my research suggests that participants rarely viewed other members’ karma. The focus group participant, Charlie, stated, “I’ve actually never looked at other user’s karma, even after visiting their profiles.” Logan stated, “I have not looked at the karma of a [sic] another member of a learning community subreddit.” When asked about viewing other members’ karma, Cameron wrote, “karma counts are still something I do not view much.” Reddit avoided prominently displaying users’ karma. Further research should investigate whether this is the reason for the apparent lack of competitiveness and envy among members.

Some members from my research expressed concerns of judgment from being downvoted but most had positive reactions to being downvoted. It seemed the participants took the karma point system to be a nearly inconsequential system. Participants stated that they seldom looked at another member’s karma. Logan wrote “I have not looked at the karma of a another member of a learning community subreddit”. Perhaps this is related to the downplayed nature of karma on

Reddit. It is visible in the top right corner of the site, but it is not overstated. It does not provide any rewards. It is something participants were aware of but did not place a lot of importance on it.

The use of negative points in an OLC may seem contrary to the goal of establishing a cooperative spirit among members. The data from this research has shown that, though there are those who felt judged for being downvoted, many participants said it was a sign that they needed to re-evaluate their position. This self-reflection by the participant is consistent with research which has shown that boundaries are established from member deviation and that this helped to define the community (McMillan & Chavis, 1986; Blanchard & Markus, 2002). A community needs to be defined by its boundaries and downvoting may be a great tool to do that.

Even if karma had no impact positive or negative on a member's experience, it may still be worthwhile keeping. The data karma generates about users could be very valuable. Bista et al. (2014) stated behaviours can be analyzed if gamification is being used. The gamified element could be used as a measuring device to monitor member activity and overall community health. My research found a similar idea. One participant, Cameron, stated that they used karma as a means to identify members who post low quality content. "Only compare to trolls, but karma counts are still something I do not view much." Karma can be useful to community designers to monitor activity in the community by drawing correlations between posting history and karma score. Users could sort members by karma to see if they are, in fact, having a positive effect on the community. Given that it appears karma's influence is mildly positive, receiving valuable member data is a great bonus.

5.4 Implications

This research has found that gamification provided value to this online learning community because it harvested a “Cognizant of karma” attitude among members. This attitude allowed for a best of both worlds’ application of gamification: Participants felt slightly motivated to post quality content to gain positive karma and avoid negative karma but did not place enough value on karma to worry about losing it by posting. Community designers would be wise to attempt to create a similar attitude among members of their gamified online learning community.

If an online learning community designer was deciding on whether to incorporate gamification, it would be important to ensure the three psychological needs for motivation would be satisfied. Research suggested that extrinsic motivators would only work if autonomy, competence and relatedness are available to the user (Gagne, et al., 2013). Evidence from this research suggested that the participants did feel these needs were provided for and, therefore, were able to internalize the extrinsic motivations.

Some participants did note that repeated downvoting would cause them to feel judged and convince them to stop posting. Such discouragement may be intentional by Reddit designers aiming to limit posts that collect negative karma. If, in fact, discouraging posts is not an aim of the karma system then community designers may consider instead limiting the amount of negative points a member can accumulate for a legitimate post. Limiting point penalties could involve the facilitators (moderators) intervening or an automated system referring the posting member to a community rule page.

Moderators of subreddits have the option of turning off the ability to downvote. Based on the data from this research, if the subreddit is being used as an Online Learning Community, this

would not be recommended. As discussed OLC subreddits can benefit from the downvote button.

OLCs operating on the Facebook do not have the option to use any type of downvoting. This research suggests that Facebook should consider the option. Facebook does however offer gamification in the form of likes and other interactions. Based on this research, this application of gamification could be beneficial to OLCs. Further research is required.

There is a great amount of interest online communities (Zhao et al., 2012) as well as a growing interest in using them in the educational setting (Shea, 2006). This research appears to suggest that gamified OLCs may be of use in the educational setting. However, in an educational setting, OLCs would likely be formal as opposed to informal. Previous research has ascertained that successful use of gamification begins with the satisfaction of the three psychological needs (Van den Berghe, Cardon, Tallir, Kirk & Haerens, 2016). One of those needs was autonomy. Autonomy would be heavily hampered in a formal setting where students are made to participate. Further research should be conducted on gamified online learning community in a formal setting.

5.5 Limitations

As a case study with small number of participants, this research has limited generalizability. Its generalizability is limited to case studies that share a similar context.

The study was limited in its number of participants. Recruitment was very difficult on Reddit because any post there only remains visible so long as members view it as important to the community. In most cases, my recruitment posts fell in visibility precipitously. The communities cannot be blamed as my research was not a goal of their community and keeping my posts from being visible is an appropriate action for the moderators and members. Because

my recruitment efforts fell from view so quickly, and on many subreddits I was only permitted to post once, it made recruitment directly from Reddit very difficult. There were, on the other hand, moderators who were very helpful. The moderators of the r/aquaponics subreddit “stickied” my recruitment post for a number of weeks, keeping it at the top of the community for maximum visibility. My suggestion to future researchers on Reddit is to develop a report with motivated moderators in order to secure a stickied post.

Another difficulty was participant retention. I felt it was dangerous to offer a financial incentive for participants because I believed it would motivate participation from members who might rush the questions simply to receive a gift card which might compromise the focus group with at best, superficial and at worst, incorrect, data. The lack of motivator meant I had to weigh the demands I placed on the participants in order to keep them from giving up on participating. For this reason, my questions were short and I did not require them to learn definitions. If I had, I may have seen more consistency between the pre-survey data and the focus group data. In the time since, I have witnessed other researchers on Reddit using financial incentives for research participation. It seems that it did not have the ill effects I thought it might.

A final limitation of this research was its scope. The conclusion of the research presents evidence that merely suggests why it is possible that gamification and online learning communities can co-exist and allow a sense of belonging to remain intact. The evidence shows that it is possible that some participants may have reached integration through internalization of extrinsic motivators, but it does not guarantee that this happened. If further research in this area were to be conducted, I would suggest researchers find participants willing to do an extensive interview to uncover if their experience as a Redditor went through the stages of internalization.

This could then be used to show that the end result of internalization is consistent with membership in an online learning community.

As mentioned in the previous section, further research should be conducted on gamified OLCs in a formal setting. Since educators are investigating the use of OLCs for education (Shea, 2006) and educational settings would imply the use of formalized OLCs, more research should be conducted on formal, gamified OLCs in order to establish their use in the educational setting.

5.6 Conclusion

The research began with an attempt to explore the impact of gamification on the feeling of belonging of members of an online learning community. The data collected during the research suggested that comments which lead to discussion are the best way to develop and maintain a feeling of belonging among members of an online learning community. The “Cognizant of karma” theme supports that gamification is a minor means of aiding a feeling of belonging among members of an online learning community. Participants felt that karma was a means of giving and receiving feedback. Receiving positive karma with an “upvote” was to akin to a “high five or thumbs up”. Designers of online learning communities should consider whether the effort to create a gamified system is worth the minor positive impact it could provide. In Reddit’s case, the gamification system is directly tied to the site’s function and so it is worth the effort.

Perhaps it was the fleeting value of extrinsic motivators that worked in karma’s favour. Participants expressed appreciation for receiving karma but also stated that accumulated karma has little value to them or others. Participants were positively impacted by receiving karma but not necessarily negatively impacted by losing karma.

The data related to negative karma, “downvotes”, was perhaps the most interesting. Some participants felt judgment from being downvoted while many felt being downvoted was an opportunity to learn. Participants stated they re-evaluated their comments when they received downvotes to understand why the comment was out of line with the community. This dynamic may be evidence that gamification and online learning communities can co-exist. These participants demonstrated that they feel that other members matter to them, an aspect of having a sense of belonging (McMillan & Chavis, 1986). At the same time these participants appear to have shown they have assimilated the needs and values that were being motivated through the karma system. This assimilation of needs and values may be evidence that the participants have moved through internalization of extrinsic motivators to integrated motivation, the highest form of extrinsic motivation (Gagne et al., 2013). This evidence may support the idea that if the proper psychological needs are provided in a gamified online learning community, members can undergo internalization of external motivation while maintaining their sense of belonging.

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Appendices

Appendix A: Ethics Approval

Interdisciplinary Committee on Ethics in Human Research (ICEHR)

ICEHR Approval #:	20181114-ED
Researcher Portal File #:	20181114
Project Title:	<i>The feeling of belonging among members of a gamified online learning community</i>
Associated Funding:	Not Funded
Supervisor:	Dr. Alireza Moghaddam
Clearance expiry date:	November 30, 2020

Dear Mr. Matthew Grant:

Thank you for your response to our request for an annual update advising that your project will continue without any changes that would affect ethical relations with human participants.

On behalf of the Chair of ICEHR, I wish to advise that the ethics clearance for this project has been extended to **November 30, 2020**. The *Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans* (TCPS2) requires that you submit another annual update to ICEHR on your project prior to this date.

We wish you well with the continuation of your research.

Sincerely,

DEBBY GULLIVER

Interdisciplinary Committee on Ethics in Human Research (ICEHR)

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Appendix B: Focus group questions

Pre-focus group questions

Why do you interact with the subreddits where you learn skills like r/learnpython, r/woodworking, or r/aquaponics subreddits?

Do you feel you belong to the any of these subreddit communities? (If you do not feel you belong in a subreddit in any way, you do not need to continue)

On average, how often do you post to any of these subreddits?

Why do you post to any of these subreddits?

Do you consider yourself a Redditor? (If you do not identify as a Redditor you do not need to continue)

Do you share routines, vocabulary or sayings with other members of the community? (Do you understand memes and in-jokes that appear in these subreddits?)

Thoughts and feelings on online learning communities and gamification

What are your motivations for upvoting other people's posts?

What are your motivations for downvoting other people's posts?

Have you ever noticed that your own post was upvoted (positive karma score)? How did it make you feel? Did it impact your feeling of belonging to the subreddit?

Have you ever noticed that your own post was downvoted (negative karma score)? How did it make you feel? Did it impact your feeling of belonging to the subreddit?

Do you think the size of the subreddit is a factor in how you feel about upvotes and downvotes?

Do you think your anonymity is a factor in how you feel about upvotes and downvotes?

Why do you think other people upvote or downvote your posts?

Karma's impact on belonging

Do you feel safe when you post? How do you feel safety impacts your feeling of belonging?

Are you ever worried a new post will result in downvotes that will take away from the karma you already have? If so, does losing the karma you already have impact your (lack of) feeling of belonging?

Do you feel judged when you get downvoted? If so, how does it impact your (lack of) feeling of belonging?

Have you compared your karma to other members? If so, how did that impact your (lack of) feeling of belonging? How would it impact your feeling of belonging to know someone had higher/lower karma?

Can you think of any reason that karma has made you feel like you didn't belong that hasn't been mentioned in this focus group?

Do you have expectations of how well a post should perform in terms of acquiring a certain amount of karma? If so, on what are those expectations based and how are they related to your (lack of) feeling of belonging?

Do you see upvotes or downvotes as a form of feedback? If so, how does feedback impact your (lack of) feeling of belonging?

Do you think karma makes posting fun? If so, how does fun impact your (lack of) feeling of belonging?

Does being upvoted or downvoted make you feel connected to other members? If so, how does connectedness impact your (lack of) feeling of belonging?

Can you think of any reason that karma has made you feel like you do belong that hasn't been mentioned in this focus group?

Conclusion

Of the factors listed above (competition, expectation, feedback, fun, connection, or another factor mentioned), what is the biggest reason karma would help you feel like you belong in this subreddit?

Of the factors listed in this focus group (safety, losing karma, judgement, competition, or another factor mentioned), what is the biggest reason karma would keep you from feeling like you belong in this subreddit?

Overall does karma help, hinder or have no impact of your feeling of belonging in the subreddit?

Appendix C: Interview Questions

Do you feel Reddit's karma system is conducive to developing a community feeling and a sense of belonging among members of the subreddit? If so, why? If not, in what ways should it be changed?

Official reddiquette states: "If you think something contributes to conversation, upvote it. If you think it does not contribute to the subreddit it is posted in or is off-topic in a particular community, downvote it." Does this fully describe how you vote? If not, in what ways does it differ?

Do you think Reddit's karma system is conducive towards allowing new members to become core members? Why or why not?

In what way does karma impact your ability to help the community?

Some participants said the feeling judgement they receive when they are downvoted, especially when they are new to a subreddit, is the biggest factor towards them not feeling like they belong in a subreddit. Do you think the feeling of judgement should be minimized for new members? If so, what factors would minimize the judgement of newcomers to the subreddit feel when they are downvoted? If not, why not?

Does your knowledge of the community rules help you feel less likely to be judged and downvoted? If not, what could minimize the feeling of judgement for new members? If yes, what ways can the community rules be used to minimize new members' feeling of judgment?

Many participants agreed that there was a sense of validation associated with being upvoted. Some participants talked about karma not being important to them "anymore". Does karma lose its importance once you feel validated or accepted by the subreddit? If so, what was the turning point? Is there another reason karma would lose importance over time?

Appendix D: Proposition Flowchart

Do points affect members' feelings of belonging in a gamified online learning community?

0 – No: *Members feel they belong based on other factors despite the threat of downvotes or the encouragement of upvotes.*

Are the factors that encourage the feeling of belonging to the subreddit consistent with OLC literature (Ie: membership, influence, integration, shared emotional experience)?

1.0 – No: *Members are not motivated to belong by points or membership in an OLC*

This group does not fit the definition of community or runs contrary to all research.

0.1 – Yes: *Members are not motivated to belong by points but are motivated by other OLC elements.*

The gamification element of points is not an important element in OLC design relative to the elements of OLC. Similar OLCs could forgo the effort of designing and implementing a gamification system. *Lurkers prefer to read and not interact with OLCs (Xie, 2013)*

1 – Yes: *Members feel their belonging is influenced by points.*

Do points encourage the feeling of belonging?

1.0 – No: *Points affect belonging but does not encourage it. Therefore points must negatively affect belonging.*

Why do points diminish belonging? (Lack of emotional safety (MacMillan and Clarke, 1986) prohibits self-investment, which in turn prohibits the feeling of earning membership.)

1.0.2 – Fear of losing current points: *Peer extrinsic motivation (Kong et al., 2012)*

1.0.3 – Fear of being judged: *Lack of autonomy reduces intrinsic motivation (Xie and Ke, 2011)*

1.0.4 – Contradictions between learning community identity and points: *Points introduce competitiveness which reduces relatedness among members. Lack of relatedness reduces intrinsic motivation (Xie and Ke, 2011) Envy creates competitive environment which reduces collaboration (Kong, Kwok and Fang, 2012)*

1.1 - Yes: *Belonging is encouraged by gamification.*

Gamification increases participation which is consistent with research (Mekler, Tuch, Bruhlmann and Opwig, 2013)

Why does gamification encourage a feeling of belonging?

1.1.2 Fun: *The game of attaining points is fun and reinforces participation and therefore belonging. Enjoyment increases participation (Hamari, Koivisto and Sasa, 2014); fun is an intrinsic motivator (Kong, Kwok and Fang, 2012)*

1.1.3 status: *member is motivated by the reputation or status relative to others. Peer extrinsic motivation (Kong et al., 2012) People will work towards a goal (Grant & Betts, 2013); competition is an active learning motivator (Kao, Lin and Sun, 2008)*

1.1.4 feedback: *The points are a measure of feedback similar to marks on a test. Points are a measure of value and competence -> intrinsic motivation (Xie & Ke, 2011), (Xie, 2013); points are feedback (Mekler et al., 2013); demonstrates community expertise (DeLiddo & Concilio, 2010) Feedback between peers is most important assessment ?????*

1.1.5 Interaction: *Peer intrinsic motivation (Kong, et al, 2012); exchange in support (Blanchard Markus 2002) Relatedness reinforces security and belonging (Xie & Ke, 2011)*

1.1.6 Competitive: *Members enjoy performing better than others at gaining karma*

Appendix E: Coded Data (Sample)

accessibility	Reese: In a way it makes me feel connected, but not directly. I seen a lot of the same com
anonymity/b:anonymity puts focus on content over poster	Parker: No, anonymity makes it easier for Reddit users to focus on the posts content vs the
anonymity/b:courage to speak	Charlie: Definitely. Being anonymous gives you a bit of courage to speak your opinions cle
anonymity/know users personally	Cameron: No. I take part in many small subs where I know many of the users personally. I
anonymity/no effect	Cameron: No. I take part in many small subs where I know many of the users personally. I
anonymity/no effect	Riley: No. Although my account is under a username and not my real name, I still identify p
anonymity/not personal	Logan: Yes. I take it less personally.
anonymity/positive	Logan: Yes. I take it less personally.
anonymity/positive	Charlie: Definitely. Being anonymous gives you a bit of courage to speak your opinions cle
anonymity/safety	Reese: The barrier of the internet is enough to make me feel safe even if I'm not anonymo
belonging	Logan: I always look at the karma score for my post. A high score has made me feel smart
belonging	Riley: Yes. It provided some validation and personal accomplishment. It did give me some
caring less	Reese: Maybe when I first started out and cared about karma more I could tell you why it a
caring less	Reese: I look at all the comment score of all my replies, because I use my reddit userpage
caring less	Blake: Not really, the longer I've been on reddit, the less I believe in the wisdom of the crow
caring less	Blake: To a certain extent it is validation that you are on the right track, but I'm past that po
caring less/not from attaining sense of belonging	Casey: I think the first time you post you are a little apprehensive about how your post will
caring less/objectivity	Bailey: I think it depends on the type of subreddit. If you are posting in subreddits that are b
caring less/subjectivity	Bailey: I think it depends on the type of subreddit. If you are posting in subreddits that are b
checking profiles	Parker: No.
checking profiles	Charlie: I've actually never looked at other user's karma, even after visiting their profiles. I
checking profiles	Casey: When i downvote i do not check the newness of a user. I just downvote if I see som
checking profiles	Riley: No.
checking profiles	Logan: I have not looked at the karma of a another member of a learning community subre
checking profiles	Ashton: Maybe? Everyone likes to be complemented on their work, but karma is a terrible
checking profiles	Blake: No. It generally means they post more often/post more accessible information. If I w
checking profiles	Cameron: Only compare to trolls, but karma counts are still something I do not view much.
code-name	paragraph

Appendix F: Second Cycle Coding (Sample)

Categories/Themes

Belonging

- Not as much as comment 21
- & encouraging participation 22
- Slightly improved by karma 145, 146
- Not impacted by karma 133

Being downvoted

- Learning experience 50, 51, 52, 59, 66, 75, 82-88, 320, 342
- Nothing against downvoter 115
- Not worried 76-78
- Doesn't impact belonging 75, 112
- Judgement 63, 65, 323, 124-126, 189-193
 - Less over time 124
 - Reduces participation 332, 350, 193, 332
 - Exclusion 350
 - Rejection 144, 193
 - Rejection/exclusion 38, 47, 48, 60, 61, 116, 324
- Reduces participation 101, 324, 338, 350
- Fear of losing karma 62, 117
- Feel safe despite 137-143
- Vulnerability 147

Being upvoted

- Creates connection 293
- On individual posts 365
- Being helpful 297
- Content 298, 304
- Neutrality 298
- Opinion 300
- Increases participation 301

Cognizant of Karma

Karma is a “meaningless number” 364, 195, 234, 236-239, 363, 364

Cognizant 206

Not taken too seriously 148, 149, 150

“Nice to see go up” 365, 195

Superficial feedback

Not checked by other members 196, 209-216

Only look at individual posts 208

Indicates quantity over quality 228

High number = karmawhore = not useful to community 30, 209, 229-231

Low number = lurker enjoying themselves

Not connected to quality 150, 203, 358

Poor measurement of a compliment 207

Evaluation of participation 317

Not related to belonging 6

“Mostly timing” 202, 355

Time Zone diminishes karma 244

Gaming gamification

Methods of posting 169, 170, 225, 226

Karma whores 229-231

Knowing community 232

Motivational if you care 5

Filter, not acceptance 218, 246, 251

Comments over Karma 194, 240

Comments more value than karma 21, 39, 136, 148, 210

Engaging other member 39

Karma = accessibility 39

Comments from respected members 40

Feedback is superficial 246, 247

Interest in Karma

Expectation 152-162, 325-327

Threshold: 1 or 2 325-327, 249, 250

Not achieving diminishes belonging 152

Hard to put a number on 153, 155

Caring Less about karma over time 4, 9, 23, 347, 111

Don’t need validation 25

Less confidence in members 26

New members need more validation 27

Function of subjectivity 28

Being downvoted - positive

Learning experience 50, 51, 52, 59, 66, 75, 82-88, 320, 342

Nothing against downvoter 115

Not worried 76-78

Doesn’t impact belonging 75, 112

Feel safe despite 137-143

Community Size

- Easy to get lost 345, 258, 286, 366
- Top comments get more karma 276
- More karma 346, 285
- Larger community = More low skill members rewarding low skill 2, 271, 272, 289, 359
- Larger communities allow for fringe upvotes 344, 284
- Large can feel small 253, 322
- No difference 348-349, 287, 288
- More active community better 361

Downvoting

- Rudeness/trolling 54, 67, 68, 69, 71, 91-95, 98-100
- Clarity 54, 67, 69, 70
- Wrong/ lack content 54, 67, 68, 69, 70, 71, 89, 102 - 110
- disagree/opinion 55, 69, 70, 79, 90,
- Self Promotion 70, 96, 97
- Sinking comments
- Don't bother 56-58

Feedback 219

- Getting a compliment 233
- Good feelings: smart, helped 122, 151, 167
- Establishes connection: 165
- Proves you understand community 166, 234, 329
- Addictive quality, 220, 223
- Saying thanks, 220, 221
- Encourages belonging 118-120, 362
- Doesn't encourage belonging 121
- Validates you 168, 328, 311-318
 - Comes from karma 252, 357
 - Helps feeling of belonging a little 312
 - Helps feeling of belonging 328
 - Feelings of accomplishment, smart, happy 312, 314, 316

- Encourages participation 314
- Approval 200, 243, 328
- Superficial 246, 247
- Expectation 152-162, 325-327
 - Threshold: 1 or 2 325-327, 249, 250
 - Not achieving diminishes belonging 152
 - Hard to put a number on 153, 155

Fun

- Positive 222-224, 337
- From interaction 351
- In being approved 328
- In consumption 331
- Negative 241,242, 333-335, 337

Helping

- Receiving help 180
- Helping community 123, 179, 180
- Providing value 268,269
- Happy to help 177, 178
- Sorting comments for community 174, 175, 176

Interaction

- Act of upvoting or downvoting moves attention to the user's name 353
- Comment better than karma 186, 187, 219
- Small amount of interaction in large communities 189
- Develops feeling of belonging 321
- Is fun 351
- Connection 42, 113, 114
 - Only from upvotes 49 seals a bond 354
 - Developing Identity 43
 - Compliment
 - Agreeing
 - Not checking other profiles
 - Fun in interaction 44 351
 - From upvotes 129, 131
 - Diminished from downvotes 131
 - Does not from karma 127,128
 - Identity
 - Members don't check others' profiles

- Not done 30-33, 36, 37, 196, 210, 21-216
- Checking for karmawhores/trolls 35
- Check own post's karma 267
- Less identity puts focus on the content 183
- Other members don't check your karma 196
- Posting is personal 336
- Anonymity
 - Puts focus on content 12, 342
 - Makes exchange less personal 17
 - Gives courage 13, 340
 - Not a factor on belonging 14, 341, 199, 204 318

Types of users

- Lurkers 254, 247

- Moderator 254-257

- New Members 261-266

- Rules 46

- Etiquette 265

- Limiting downvoting 47, 360

- Rules are complicated and restrictive 7

Participation 22, 197, 204, 227, 245, 339

- Encourages interaction and connection 353

- Karma measures participation 356

- Accessibility

- Builds connection 11

- Downvoting not worth effort 10

Upvoting 273 - 309

- Process

- Correct content 273, 277, 279, 292, 298

- Neutral 259, 260, 277, 279, 298

- Well crafted 274, 276, 277, 291, 306-309

- Helpful 280, 290, 297

- Opinion 278, 302, 303

- Humour 296

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Downvoting -> reflection on post -> encouraging proper conduct (See being downvoted)

Larger communities -> comments get lost -> less likely to be replied to, only upvoted

-> abundance of low skill users -> upvote more accessible projects

-> high variability of collected karma (See Community Size)

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