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Meaningful Gamification: a new way of improving intrinsic motivation

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Content

Abstract.....	1
Introduction	2
Theoretical Concepts	2
Gamification.....	2
Criticism	4
Self-Determination Theory	6
Motivation.....	6
Intrinsic Motivation	7
Extrinsic Motivation	8
Why Points, Badges, and Leaderboards could be harmful to motivation	9
Meaningful Gamification.....	13
Theoretical Concepts	13
Meaningful Gamification Applied.....	22
Limitations of Meaningful Gamification.....	24
Discussion.....	25

Declaration of scientific integrity

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Abstract

Gamification has sparked a lot of interest in science and marketing as a way of enhancing user experience and engagement. However, the widespread use of points, badges, and leaderboards, also called pointsification (Kifetew et al., 2017) has been criticized since it struggles to promote intrinsic motivation. In this thesis, I lay out the possible reasons why it fails to do so, mainly based on self-determination theory by Deci and Ryan (1985). In order to give a new perspective on gamification, I present the theory of meaningful gamification by Nicholson (2015) and its perks of fostering intrinsic motivation. This is followed by a concise overview of present research and propositions for future researches.

Introduction

Gamification, defined as the use of game elements in non-game contexts (Deterding, Dixon, Khaled, & Nacke, 2011) has seen some critique, mainly for its reward-based usage in the broad media. It has been used as a marketing tool aiming to increase the engagement in users by many companies, but it could also be helpful for systems which aim to change the user's behavior in a certain real-world aspect. This could be useful in schools or for systems which aim to improve the ecological behavior of its users. Gamification in that sense needs to have a long-term impact, desirably making the new behavior meaningful to the users. This thesis will be looking at a possible alternative route of gamification looking to do just that. Meaningful gamification is presented as a new concept of gamification, which works without external rewards (Nicholson, 2015). These circumstances and the criticism around gamification give raise to the questions of how meaningful gamification stands in relation to pointsification and if it is a viable alternative to points, badges, and leaderboards, which will be discussed in this thesis. But first, it is important to understand how human motivation and gamification work.

Theoretical Concepts

Gamification

Recent research brought up gamification, which is the new wonder pill for interaction design, aiming to improve the experience and engagement of the users. It is commonly defined as "...the use of game elements in non-game contexts to improve user experience and user engagement"(Deterding et al., 2011). Deterding et al's definition concentrates on using only design elements of games instead of game technologies or practices. There is a clear distinction between play and game. Game

is a more specific category than play because of the mandatory rules, competition between players and defined outcomes or goals which are characteristic to it. However, this does not exclude play as an element of gamification (Deterding et al., 2011). The quasi-experiment of Kifetew et al. (2017) shows how important it is to make the rules very clear to the users because a misunderstanding could “impair the players’ perception and eventually weaken the intended effect of the gamification” (Kifetew et al., 2017). They developed a decision-making game in which the participants had to decide between two alternatives. In the quasi-experiment, they implemented a system of points, badges, and leaderboards aiming to improve the time consumption and the quality of the results, meaning to what extent the participant’s decisions matched up. The gamified system only achieved marginal improvements in activity flow and agreement among the participants, which can partly be explained by it being an early research prototype lacking refinement. The lack of refinement lead to the participants not understanding the rules and purpose of the gamification elements, which had a negative impact on their effect (Kifetew et al., 2017). Deterding et al. (2011) further explain that the game elements should be restricted to elements which are characteristic of games. The non-game contexts are deliberately undefined, to prevent gamification from being bound to one specific context, purpose, or scenario. Also, gamification is not limited to digital technologies. For example, Hanus and Fox (2015) used game elements to gamify a classroom. In a literature research, Hamari, Koivisto and Sarsa (2014) examined 24 empirical studies for their results on the effects of gamification. Most of the studies examined behavioral outcomes of gamification, while a few investigated psychological outcomes such as motivation, attitude, and enjoyment. The most commonly used gamification elements were points, badges, and leaderboards. The experiments were conducted in a wide variety of contexts, with work and school environments being the

most common. It is interesting how none of the examined studies were conducted in a marketing context, as this stands in contrast to gamification being presented as a potential marketing strategy (Hamari et al., 2014). The majority of the reviewed studies found positive effects of gamification, with only a few resulting in exclusively positive results. Also, it was shown that the effects of gamification are very sensitive to the context it is applied to. Effects varied depending on the users and settings (Hamari et al., 2014). For example, Hamari (2013) reported that there were insufficient effects found in a utilitarian service setting. This could be because the utilitarian setting promotes a high cognitive, instead of an affective, involvement (Zaichowsky, 1994). A high cognitive involvement could lead to gamification being ignored because it seems less important to the users than the other elements. Hamari et al. (2014) also stated that some studies show how gamification may not be of long-term effect. Instead, it has a novelty effect and could wear off over time. They also show how gamification is experienced differently by each individual, and the same aspects can be liked or disliked, depending on the person. In their meta-synthesis, Hamari and Tuunanen (2014) propose how players can be described along five key dimensions concerning the players' motivations to act: "Achievement, Exploration, Sociability, Domination, and Immersion.". And while gamified systems are not games themselves, these player types can be applied to users of a gamified system, too. Concluding these findings and theories, it can be said that gamification works, but it is quite sensitive to a variety of aspects, which must be taken into consideration.

Criticism

Games have a vast variety of elements and facets, but there are companies which offer to gamify interfaces using simple points, badges, levels and leaderboards

(Deterding, Dixon, Khaled, & Nacke, 2011). This is a very superficial attempt on using game elements, as it “gets games wrong, mistaking incidental properties like points and levels for primary features like interactions with behavioral complexity.” (Bogost, 2011). Bogost states that gamification has become a means for brand managers and such to amplify the success of their product. He suggests a new name for this type of gamification which is exploitationware: “a grifter’s game, pursued to capitalize on a cultural moment, through services about which they have questionable expertise, to bring about results meant to last only long enough to pad their bank accounts before the next bullshit trend comes along.” (Bogost, 2011). And this is quite accurately what Gamification has been used as in the broad media. Kifetew et al., (2017) use the word pointsification for this type of gamification, as it only makes use of point-based game elements. Points are given out to players after completing a task, badges are given for certain achievements and the leaderboards define the ranking of players. One could say gamification is in a critical state, when the research behind has been dimmed down to only using points, badges, and leaderboards for users to be more motivated. While these practices seem to have an impact on user engagement (Hamari et al., 2014; Kifetew et al., 2017), gamification in that sense operates with external rewards, which creates extrinsic motivation. According to Nicholson (2015), these reward based gamifications are effective in a limited set of situations, for example when learning a real-world skill like using a hammer which, once learned, is useful in itself and without reward, or in a context where there is no chance for the subject to develop intrinsic motivation. In such a situation, external rewards can give a reason to engage in an activity. Another situation which benefits from external rewards is one wherein the tasks at hand do not require creative thinking. The criticism aimed at gamification does not particularly criticize the theory, but how it has been applied to technology. This criticism is well

placed, since pointsification deteriorates the general view on gamification, although it could be a very useful tool to improve many processes in daily life. In order to truly understand the criticism of gamification, it is important to know how motivation works and how it can be affected.

Self-Determination Theory

Deci and Ryan (1985) described motivation as dependent upon three basic needs, which are autonomy, competence, and interpersonal relatedness. The need for autonomy encompasses the human's capacity and need for choice. There is an innate tendency to be autonomous in humans which make us take part in a variety of interesting behaviors. Those behaviors are almost always chosen without an external stimulus and are mostly beneficial in terms of "developing competencies, and working toward adequate modulation with the social environment" (Deci & Ryan, 1985, p. 38.). The feeling of competence is also very important and strongly connected to autonomy. It is important to know that one's feeling of competence is very sensitive to the challenge a task brings. If it is too easy, there will be a lack of motivation. To be optimally challenging, a task should not be too simple nor too difficult and frustrating (Harter, 1974). If a task is too challenging, a person might get a feeling of incompetence, which is bad for motivation (Deci, Cascio, & Krusell, 1973). Lastly, the need for interpersonal relatedness is our need to feel connected to the people around us in a meaningful way (Deci & Ryan, 1985).

Motivation

Being motivated is defined as being moved to do something. So, anyone who is doing anything is motivated to do so, no matter how or why. But motivation is not always the same. People show different levels and different orientations of motivation, depending on the task, environment, person and disposition (Ryan & Deci,

2000). Orientation meaning the attitudes and goals in the person taking action (Ryan & Deci, 2000). For example, one person can be motivated to get a driver's license to get around quicker, while another person wants to drive because of the velocity and fun it brings. In their book about motivation and self-determination theory, Deci and Ryan (1985) describe two distinct forms of motivation depending on the reasons or goals of the person in action. They describe intrinsic motivation, which comes from within the person because of interest or enjoyment, and extrinsic motivation, which comes from an outside stimulus, mostly through rewards. These two different motivations have a big impact on performance and the quality of experience. Overall, intrinsic motivation is stronger, as it produces better performance, creativity and lasts longer than extrinsic motivation. Also, in a learning environment, intrinsic motivation is responsible for a better quality of the learning process (Deci & Ryan, 1985).

Intrinsic Motivation

An intrinsically motivated person is doing an activity for the sole purpose of doing the activity (Deci & Ryan, 1985). Deci and Ryan (1985) describe that there are social and environmental factors, which can either facilitate or undermine intrinsic motivation. The intrinsic motivation must exist within the person, and furthermore, there are different factors which have an influence on this innate motivation. Deci and Ryan (1985) describe the feeling of competence as very important for intrinsic motivation. But these feelings of competence are only beneficial to the motivation when combined with a sense of autonomy. In other words, the action must make a person feel competent and able to act according to his or her own will. These feelings can be undermined with an external reward, which shifts the motivation from being intrinsic to extrinsic. And since intrinsic motivation is the more effective one, this could harm productivity (Deci, 1971). So, an environment which aims to foster good intrinsic

motivation should give a person the feeling of competence while leaving space for exploration and creativity, supporting the need for autonomy (Ryan and Deci, 2000).

Extrinsic Motivation

It is now clear that intrinsic motivation generally leads to better outcomes than extrinsic motivation, however, this does not go without saying that extrinsic motivation is also very important. Most of our actions are extrinsically motivated, such as going to school or buying groceries. Also, extrinsically motivated tasks are not always fully nonautonomous, people often do things autonomously with an external motivator in mind. Ryan and Deci (1985) introduced the organismic integration theory which defined different qualities of motivation along a scale of how deeply people integrate the externally motivated actions into their self-concept.

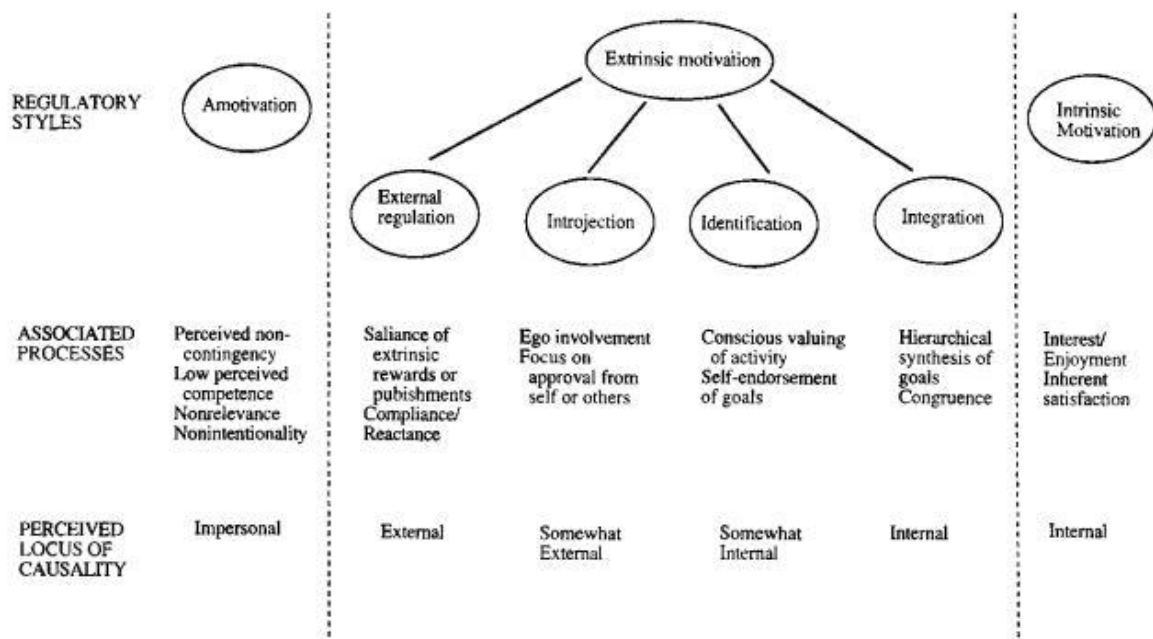


Figure 1. Organismic Integration Theory (Ryan & Deci, 2000)

At the left hand of the scale is *amotivation*, which means that the person is not motivated at all. Right next to it is *external regulation*, meaning an action which is done for the sole purpose of an external demand or reward. This type of motivation

has been described by Skinner (1953), who described operational conditioning as the motivation and learning capability of humans and animals. From left to right, the autonomy of the person in action is increased, and the second type of extrinsic motivation is called *introjected regulation*. This means that an action is still seen with an *external locus of causality* (DeCharms, 1968) and not as part of the self-concept. The next stage is *identification*. The person identifies with the importance of the action and sees it as his or her own choice. The most autonomous way of extrinsic motivation is *integrated regulation*, where the person fully embedded the once externally motivated action to his or her self-concept. These actions are very similar to the ones with intrinsic motivation, except for the presence of an external purpose (Ryan & Deci, 2000). In the next section, I will show how points, badges, and leaderboards could be harmful to intrinsic motivation.

Why Points, Badges, and Leaderboards could be harmful to motivation

Deci (1971) set up experiments to find out if external rewards in form of payment decrease intrinsic motivation and if verbal feedbacks had a different, better impact. The subjects were given the task of solving puzzles in three separate sessions, and the only difference between the conditional and control group was payment per solved puzzle in the second session. In the middle of the experiment, the supervisor left the room and told the student that he is free to do as he wishes. The experimenters also put magazines beside the subjects, so they really had a choice to engage in another activity. During this period, they observed for how long the students worked on the puzzles without external pressure. As expected, the conditional group was highly motivated during the second session with the prospect of payment, and they worked longer on them during the free choice period. In the third session, rewards were removed and the students who expected payment were

considerably lower in motivation than in session one, resulting in less time spent puzzling during the free choice period. In a second experiment, Deci (1971) used the same structure but changed the monetary rewards for verbal ones. The subjects in the conditional group received verbal reinforcement and positive feedback. If a subject did not finish a puzzle, the supervisor lied to them, saying that this specific puzzle was especially hard to do to prevent the feeling of insufficiency. The results show that students reacted differently to verbal rewards compared to monetary rewards, especially regarding the third session, where the students in the pay condition had less motivation. Students in this experiment had no decrease in motivation even when the external rewards were removed, which is to be explained by the verbal rewards not being perceived as a control mechanism, which would impair the feeling of autonomy. These findings show that it is important to know what kind of rewards gamification contains and when to use which. Consequent to these findings, Zichermann and Cunningham (2011, p. 27) conclude that once given a reward, a person must be kept in this loop of extrinsic motivation forever, since the intrinsic motivation is not going to come back.

Shapira (1976) gave students the task to choose between seven puzzles of different difficulties ranging from very easy to very difficult. These difficulties were stated in percentages of students who could solve the puzzle in under 15 minutes. The students were then asked to choose a puzzle to solve within 15 minutes and the test group was told that they will receive 2.50 \$ for each successful completion of a puzzle within the given time. Further, they were asked to rank the other puzzles in an order they would choose to work on them.

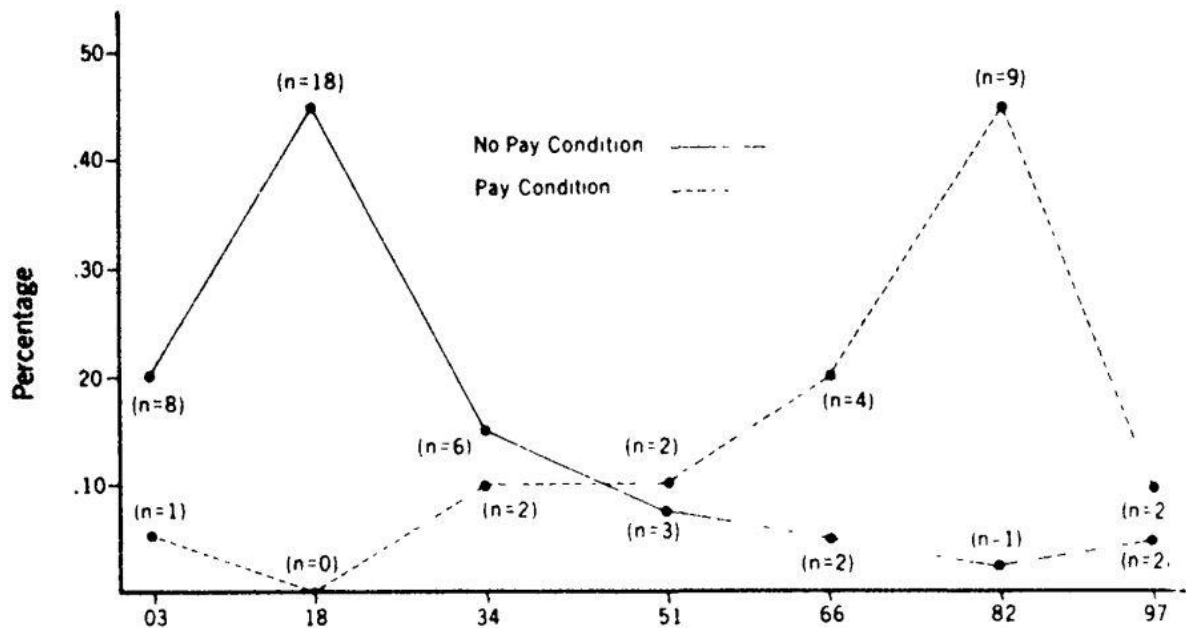


Figure 2. Distribution of the subjects first choices (Shapira, 1976)

Figure 2. shows how the participants chose different puzzles depending on the two conditions. To the left are the very difficult puzzles, and on the right are the easy ones, which can be solved by 97% in under 15 minutes. It shows very clearly that the decisions made in the pay condition were almost contrary to the no pay condition. Shapira (1976) could prove that people choose an easier task if they are motivated by an external reward. On the other hand, intrinsically motivated people choose an intermediately hard puzzle. This phenomenon could be explained with the theory by Deci and Ryan (1985), saying that intrinsically motivated people will choose a task which is challenging, but not too hard, in order to feel competent.

Hanus and Fox, (2015) followed the hypothesis that intrinsic motivation is harmed with external rewards and adapted it to gamification with their study in a classroom setting. Intrinsic motivation is especially important in a learning environment (Deci & Ryan, 2000). They monitored the motivation, satisfaction, effort, social comparison and exam scores of two classes over the time of one semester. The classes both had the same curriculum, with the conditional group being

introduced to an added system of points, badges, and leaderboard. Badges had to be achieved, making it a controlling incentive, while points were easier to achieve but were not necessary for completing the class. The leaderboard was expected to boost social comparison, which did not come out to be effective in this situation. Over the three surveys, there was a significant loss of motivation in the experimental condition, while the control group showed an increase in motivation, confirming their hypothesis that gamification will harm intrinsic motivation. Same with the group's satisfaction with the class, where the conditional group declined, while the control group's satisfaction stayed consistent over time. Lastly, they tested if the gamified system had an impact on intrinsic motivation leading to lower test results. The results show that the conditional group had lower intrinsic motivation, which was related to worse performance on the final exam. Coming back to self-determination theory by Deci and Ryan (1985) it is evident that points, badges, and leaderboards are too controlling and do not provide the necessary feeling of competence, autonomy and social relatedness in order to promote intrinsic motivation. The promotion of these feelings is crucial to any gamified structure aiming to foster motivation for a real-world activity which might not always give an instant reward, such as learning for school. In contrast to these studies, Mekler, Brühlmann, Opwis, and Tuch (2013) could not find a negative effect of gamification on intrinsic motivation. They have concluded that pointsification does not have an impact on intrinsic motivation, which contradicts the theories shown in this section. In terms of gamification, the impact of rewards on intrinsic motivation is a subject which received only little research. It is also unclear if all external rewards have a similar impact on motivation, or if monetary rewards as used in the studies shown here have a different impact than points, badges, and leaderboards. However, there is a clear need for alternatives to pointsification due to the significant criticism of gamification and its applications. In order to regain trust in

gamification and its research, it must be differed from the marketing tool it has been transformed to by brands and online shops.

Meaningful Gamification

Nicholson (2015) came up with an alternative to pointsification aiming to fulfill the three psychological needs defined in self-determination theory (Deci & Ryan, 1985). As stated before, games have a vast variety of elements and gamers do not only engage in games due to rewards. Players do so to explore a narrative, make decisions and play with other people. There are other design options to engage people than reward-based gamification, more so, these other design options can help increase intrinsic motivation. In order to do that, the activity must become meaningful to the person. Meaningful in this sense means that the person must connect the new experience to something in the individual's past and beliefs. This concept is taken from the transformative learning concept by Mezirow (1997). Designing an experience like this is challenging due to it being very individual from person to person. To design a meaningful gamification, one has to provide a variety of experiences and ways of engaging with the system to make it meaningful to multiple people with different beliefs. This means giving the user choices so everyone can have his or her own experience with the system.

Theoretical Concepts

To give an overview and propositions to designers, Nicholson (2015) defines six core elements of meaningful gamification.

The first element is *play*, meaning a space where players can establish and change their own restrictions and rules. This allows the players to change the game and make it more or less fun and playful according to their liking. If the users

perceive the gamified system as play, it is fun and no longer needs external rewards. Play is very important to be freely chosen by the player, as it is something which cannot be forced upon a person. The users freely choose to engage with the system and are not forced to do so. This is complicated to perform if dealing with an environment such as school or work. To ease things up a gamified system can allow exploration and free choice. An example from the real world is the Technorama Museum in Winterthur, Switzerland. This museum gives the attendees many different experiments to engage in. Each of the exhibited experimental stations shows some phenomenon of nature, giving free choice to the attendees over the way they want to explore the museum.

The second element is *exposition*, meaning the presentation of a narrative through game design elements. It is important to have a balance of developing a strong narrative and giving the player control over the game as those two ideals might be conflicting (Simons, 2007). The purpose of exposition in gamification is to create additional connections to the real-world setting. This can be achieved by mirroring the real world in the narrative of the gamified system. Another path might be creating an analogy to the real world, which gives the designer more freedom, while still being connected to the real occurrences. However, it could be dangerous to create a too engaging narrative, since it could distract from the real-world setting. Also, players could feel frustrated if they find out that the engaging narrative is designed only to engage them in a completely different non-game context, such as making them learn for school.

In order to fulfill the feeling of autonomy, a gamified system has to provide *choice* to the user. He or she must be able to choose how to engage with the system. This connects with the concept of play. A person must have many different choices to

make in order to engage in a playful manner. An often-used way of giving choice to the players is making it free to choose which task they want to work on. If this free choice might be overwhelming to the users, a way to ease the choice-making is to let the players choose a goal, and then provide a guide on how to reach that chosen goal. This is where badges can be used, not as a reward, but as signposts. This motivates users due to having set a clear goal, instead of just motivating because of the prospect of a reward. Nicholson (2015) further explains how a design could exist of a “gamification toolkit around a real-world setting.” Where the users could freely select and create own play-based and game-based elements which could be engaged with and shared with other users. To still serve a purpose in real life, these elements would need to lead the users to a real-world outcome. Such a system would allow the users to create their own experience and choose their own way of exploration, making external rewards obsolete since the meaningful engagement itself is the reward.

Following the self-determination theory by Deci and Ryan (1985) the feeling of competence is very important. To ensure this, Nicholson (2015) proposes the concept of *information*. It is important to inform the user over the gamified system in terms of “why” and “how” it is gamified, instead of just stating how many points an action is worth. Kifetew et al. (2017) attributed the low impacts of their gamified system partly to it not being refined and clear enough to the users. If they informed the users in greater detail, they might have gotten better results. For the gamified system to have an impact on the user’s behavior, it is important to inform the users over its connection to the real world. If a person receives rewards for a certain behavior, this behavior will be shown more often due to operant conditioning (Skinner, 1953). The problem is that the person does not know why it is important to show a certain behavior, he or she only shows it because of the reward. This can be

changed through sufficient information about the gamified system and why the real-world activity is a good thing, thus making the behavior meaningful. This stream of information can be given to the user through the interface, through non-player characters in the system or information tied into the narrative, linking the element of information with exposition. In an ideal system, the information would be approachable in different ways and on different levels of pre-knowledge, so every person can choose their own way of learning.

For a gamified system to work, it must be *engaging* in two ways: It has to be socially engaging, creating the feeling of social relatedness, and it has to yield an engaging gameplay. Socially engaging systems can be created with peer groups working through the same gamified system, or by connecting the users with people acting in the real-world setting which the gamified system is aimed at. To create an engaging gameplay experience, Nicholson (2015) explains the concept of Flow by Csikszentmihalyi (1997). Flow is a state where the user is fully engaged with the system. This requires that the difficulty is always adjusted to the user's skills. If the skills increase, the challenge does so, too. If the challenge is too easy, it will be boring, if it is too hard, it can be frustrating. These two concepts of social and gameplay engagement can be connected through empowering social interaction once a person is skilled enough to do so within the system. This is very sensitive because a user could be driven away if social interaction appears too early due to not yet being comfortable with the system itself. It is to distinguish if users should cooperate, compete, or do both. Creating competition can be good for some people, but it also brings the risk of discouraging other users. This was shown in a classroom experiment, where the students reflected that the leaderboards were only motivating for the few in the first ranks, the students in the lower parts were demotivated because the point-gap between them and the leaders was too big to be closed, and

they saw no chance of catching up (Nicholson, 2013). Cooperation, on the other hand, can be very positive. It can create very powerful mentorship-based relationships where experienced users introduce the inexperienced to the system and real-world setting. Combining both cooperation and competition could be done by making teams, giving the chance to cooperate within and compete with other teams. This creates a system which profits from the advantages of both systems, increasing social engagement (Nicholson, 2015).

Lastly, Nicholson (2015) presents the concept of *reflection*. This means giving opportunities for the user to step back and reflect the experiences made in the gamified system. Thus, the learner has an opportunity to connect the new experiences to his or her own life. Reflection usually follows a cycle of experience, reflecting upon this experience, forming connections to other aspects of life, and then generalizing it in order to form concepts. These formed concepts can then be applied to new settings (Nicholson, 2015). Reflection is always better if done in groups, where different experiences can be shared, and the people involved can learn from the insights of each other. Fanning and Gaba (2007) describe three main steps of reflection. The first step is *description*, where the participant thinks about what she or he did while engaging with the activity. This will make the user not only think about the last few steps but give a sense of the experience as a whole, thinking about their process and how they felt during the experience. The second step is *analysis*, where the participant can analyze their actions and make connections to their own life. This step reaches out of the gamification system and makes individual connections, which a designer may not have come upon. The last is *application*, where the users are prompted to act based upon their past explorations. This is, in a gamified system, where long-term change can emerge since the learned actions are brought to the real world. Reflection in gamified systems can be implemented with shifting the role

of the user from doing and reacting to thoughtful reflection. For this to happen, the game must change its stage upon which it is presented. This could be done by letting the user tell his or her experiences to an in-game character. Another way would be to break the fourth wall of the gamified system and thus make a connection to the real world (Nicholson, 2012). A third possible route is showing the user snapshots of what he or she has done while engaging with the system and asking to reflect upon these.

Table 1

Listing the six core elements, their purpose and some propositions on to how they can be implemented. (Nicholson, 2015)

Element	Purpose	Implementation
Play	Autonomy	Free choice, fun
Exposition	Reason	Connection to real world
Choice	Autonomy	Give choice over tasks or goals
Information	Competence	Give information by: Interface, NPC's
Engagement	Social Relatedness	Engaging Gameplay, Connect, flow, Teams
Reflection	Meaning	Shift role from doing to reflecting, 3. Steps: Description, Analysis, application

Nicholson (2015) provides a comprehensive recipe for meaningful gamification aimed at designers who are hoping to engage people for an extended period through gamification. More so, the concept is aimed at systems which aim to have a long-term impact on the behavior of the users, like learning programs or systems aiming to promote ecological behavior. The six elements presented all work towards creating a meaningful experience for everyone, making the learned behavior desirable even after engaging with the gamified system. While each element is important, it is not

necessary to implement all of them, a designer can choose to use the elements which comply best with his or her idea of the gamified system.

Groh (2012) proceeds in a similar manner, defining possible gamification elements for each of the three needs defined by Deci and Ryan (1985). Relatedness can be achieved if the system can connect to the personal goals of the user, these goals should ideally be customizable so each person can connect to the system through passions or interests of their own life. To really feel social relatedness, it is important to have a meaningful community with shared interests. With that given, status and reputation elements like levels, badges, and leaderboards can work, because the user will be able to show these things to their friends with the same interests, making them meaningful. Another way to empower relatedness is by implementing a meaningful story, such as having to save mankind from an existential threat. Lastly, he points out that the designers must beware *of social context meanings* as some things that might be clear to certain groups can be confusing for other people.

In order to fulfill the feeling of competence, Groh (2012) explains how tasks can be sorted into the two groups of "Have to do" and "Want to do". "Have to do" are all the tasks like duties, chores and work while "Want to do" consist of fun, play, freedom, and pleasure. For a designer it is of importance to know these two concepts since the "Have to do" should be as simple as possible, the latter should not. He goes on to define how the fun in videogames consists of learning techniques and thus having the ability to master the next challenge. Concluding this, it is very important to create interesting challenges. This can be reached by both well-defined goals and rules. These goals and rules must be well presented and structured, meaning they must be taken apart into smaller pieces to provide the user with small

and doable tasks to prevent frustration. This is due to the aforementioned theory of flow by Csikszentmihaly,(1997). A next thing to improve the feeling of competence is “juicy” feedback, meaning that the feedback is always fresh and encouraging as well as accessible. Lastly, Groh (2012) warns of the unintended behaviors to try to avoid the challenges, such as cheating.

To ensure the autonomy of the users, it is important to avoid the use of extrinsic incentives. The users must feel like it is their own choice to engage with the system. If there is a reward, or if the system is too pushy, the users will feel a loss of control over their own actions resulting in decreased intrinsic motivation.

To give a positive example of gamification, (Groh, 2012) presents a “pervasive health application which trys [sic] to help people live healthier” (p.43) called *healthmonth.com*. The aim of the application is to gamify the process of getting healthier in a very individual way. First, he talks about how relatedness is fulfilled with personal goals. The users can choose their own goals from a list of “DO’s” and DON’T’s”, which can further be customized in difficulty.

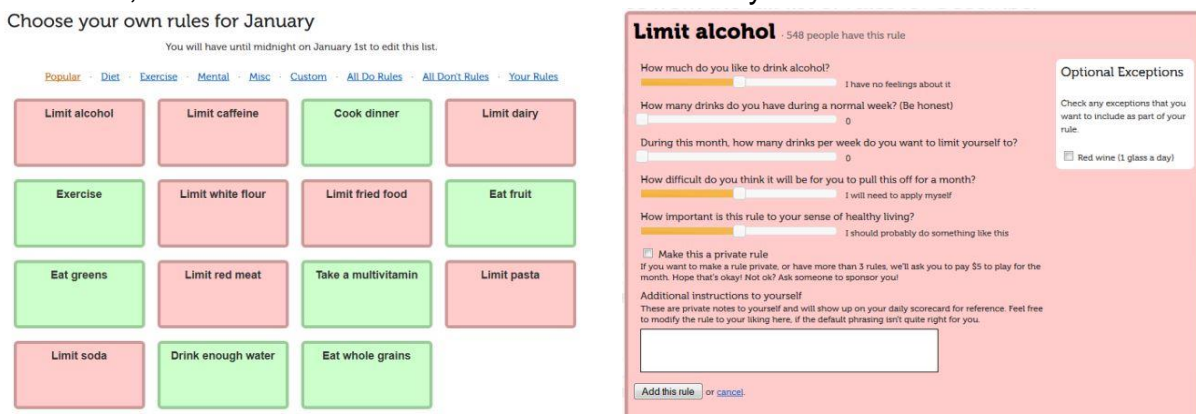


Figure 3. Two frames of the personalized goals of healthmonth.com (Groh, 2012)

These goals give the users great autonomy and choice about how they want to experience the application and how they want to get healthier, while still proposing clear rules and structure, like the Technorama Museum which was introduced earlier. According to Nicholson (2015), this would fulfill the element of *choice*. The users are

connected to each other through the application and the split up into teams depending on the difficulty of the personal goals. This procedure forms a meaningful community, where the people you play with are equally motivated to get healthier. A meaningful community is important to ensure the feeling of social relatedness and this fits into the element of *engagement* as defined by Nicholson (2015). These teammates can also help each other out by giving health if someone misses a goal, enabling cooperation. Groh (2012) further explains how the context of the game, being the goal to get healthier, is a meaningful story in itself. The reason people might want to engage in healthmont.com is very real-life related and it does not need a fictional story since each user brings his or her own story to the application. In this case, the element of *exposition* is fulfilled by the story of the user and the direct connection to the real world. The feeling of competence is constituted by giving interesting challenges, clear goals and good feedback (Groh, 2012). Healthmonth.com gives each user the chance to choose his or her own goals, making it an individual task to choose interesting challenges. These goals are then presented in a clear and visual way including some additional information such as team and extra points as seen in figure 4.



Figure 4. Feedback on goals in healthmont.com. (Groh, 2012)

In terms of feedback, the application gives a lot of feedback throughout the whole experience. Groh (2012) describes it as discreet but sufficient and well visualized. These feedback-mechanics fit into the elements of *information* and *reflection* discussed in the recipe for meaningful gamification (Nicholson, 2015). Groh (2012) warns about unintended behaviors which can come up with users, and in the case of healthmonth.com, there is no way of controlling the users, as it depends on them to act faithfully in the tasks. Lastly, Groh (2012) talks about autonomy and how the application is fully relying on intrinsic motivation, making the use of it voluntary. He also notes how there is a “superior socio-economic principle which could be denoted as extrinsic. Therefore, there is danger that people start to realize that.” (p.44). The result of this realization would be to simply stop the engagement with the application (Groh, 2012). Coming back to the elements of meaningful gamification by Nicholson (2015), the only ones which are missing are *play* and *engaging gameplay* due to its lack of playful game-elements and rather strict and descriptive interface. However, it is not necessary to incorporate every element he suggests for a meaningful gamification to work (Nicholson, 2015), so healthmonth.com does a great job of creating a meaningful experience through its community, feedback, and freedom of choice. In the next section, we will take a look at present studies on meaningful gamification and its effects.

Meaningful Gamification Applied

Stansbury and Earnest (2017) made the first study testing meaningful gamification. They gamified an industrial-organizational psychology course implementing elements of play, exposition, information, choice, and engagement. They gave out roles such as support staff, middle managers and shareholders, aiming to connect the students directly to the problems of industrial and organizational psychology. Grades were

replaced with an experience points and level system, where the roleplaying of the whole class was rated. The control group engaged in a traditional class with the same learning goals. The two groups were tested for content knowledge, perceived experience, perceived learning and perceived impact of teaching techniques. While the content knowledge did not vary between the groups, the perceived experience, learning and impact of teaching techniques did in a significant manner. Students in the conditional group experienced the class more positively, and they also had higher perceptions of their learning progress and the techniques used than the control group (Stansbury & Earnest, 2017). This stands in direct contrast to the study of Hanus and Fox (2015) which examined the effects of pointsification and resulted in a loss of intrinsic motivation in the conditional group.

In another study, a system based on Groh's (2012) proposition was tested. Sailer, Hense, Mayr, and Mandl (2017) designed a game environment where they could activate and deactivate different gamification elements to test the influence of each element. They matched game elements to the three basic needs of self-determination theory. Competence should be ensured through an extensive points, badges, and leaderboard-system enhanced with a performance graph, which should give feedback about the player's skills and progress. The need for autonomy is worked towards with choice freedom such as choosing an avatar and volitional engagement. The feeling of social relatedness is gained with a sense of relevance and a shared goal between the player and NPC's. There were three conditions: The control group only received points, while the first conditional group received additional badges, leaderboards, and the performance graph. In the second conditional group, the game was embedded in a story where the players had to work together with NPC's. The results show that the group with the badges, leaderboards and performance graph had significantly higher competence need satisfaction due to

seeing their progress and receiving more direct feedback on their efforts. While the feeling of autonomy could not be increased by the two conditional designs, the social relatedness need satisfaction was significantly increased in the condition with the narrative and NPC's. While not all of the hypotheses could be confirmed, it shows how meaningful badges and a strong narrative can improve the basic requirements of intrinsic motivation. Also, the game presented in this study is very simple and the implemented elements were given in a rather weak dose, which could have influenced the outcomes.

Limitations of Meaningful Gamification

Due to meaningful gamification leaving many decisions to the designer and it being a rather open concept, the implementation could be much more time consuming than just implementing points and badges to a system. It is made clear that not all six elements have to be implemented, but still the designers need deep understanding of the functions and aims of them, making it a complicated procedure. Also, since a system must revolve around meaningful gamification in order to work as expected, it seems to be something which is not applicable to an already existing system. If a company is looking for a short-term behavior change or is willing to keep the external rewards up for an unlimited time, the application of points, badges and leaderboards can be much more convenient (Nicholson, 2015). Another limitation is that it needs preliminary intrinsic motivation to work. If there is no motivation at all, reward-based gamification is preferable. Also, it is to say that the effects of meaningful gamification are only scarcely researched, so there is a need for more evidence.

Discussion

Gamification is mostly used as an overlay for programs in order to improve user engagement and motivation. In recent media this is accomplished by pointsification, meaning the use of points, badges, and leaderboards (Hamari et al., 2014). While this seems to be working for short-term behavior change (Hamari et al., 2014), there are theories that describe how this reward-based gamification could undermine intrinsic motivation (Deci & Ryan, 1985). Also, there seems to be some consensus on criticism on gamification (Bogost, 2011; Kifetew et al., 2017), saying that the use of pointsification misinterprets games as only being motivating due to external rewards. To prevent gamification from being stamped off as a marketing tool, there is a need for new gamification techniques, which aim for long-term engagement and make use of more game elements than just points, badges and leaderboards. With meaningful gamification by Nicholson (2015), I presented a theory trying to do just that. Based on self-determination theory (Deci & Ryan, 1985), it aims to fulfill the three basic needs for human motivation, being the need for competence, the need for autonomy and the need for social relatedness. This is achieved by implementing the six core elements of play, exposition, choice, information, engagement, and reflection (Nicholson, 2015). Groh (2012) presents a similar concept which is also based on self-determination theory. The rather new field of meaningful gamification gives hope to designers looking for long-term change like learning environments and aiming for change in ecological behavior. Meaningful gamification is meant to promote certain behaviors in people, and once those behaviors are intrinsically motivated, the gamification system can be deactivated because the behavior itself should then be rewarding to the person (Nicholson, 2015). Other than pointsification, it is meant as a journey for the users to go through,

teaching the user about the desirable behavior. At the end of this journey, the user has developed intrinsic motivation or the action has reached a high level of integration into his or her self-concept, which would result in almost equal qualities of motivation according to the organismic integration theory by Deci and Ryan (2000). Once the user has internalized the behavior, the gamification elements can be discontinued, letting the user go his or her own path. This stands in great contrast to a reward-based system where the rewards must be sustained for as long as the behavior is desired.

If we take a look at games, meaningful gamification is making use of much more game elements than pointsification. Most games are motivating because they need a lot of practice to reach mastery (Gee, 2003), just as meaningful gamification aims to implement meaningful challenges and a system which promotes the feeling of competence (Groh, 2012; Nicholson, 2015). Pointsification, as the name says, only makes use of the direct reward-mechanics such as points, badges, and leaderboards. But video games revolve around learning a skill and perfecting it (Gee, 2003). If gamification is used as a marketing strategy, this learning progress mostly falls away since there is not much to learn while, for example, using an online store. These circumstances make it hard to motivate the users without external rewards, so the use of points, badges, and leaderboards might not be a misinterpretation of games how Bogost (2011) stated, but simply the only applicable game-elements when gamifying a platform which lacks substance. On the other hand, meaningful gamification is meant for situations where a gamified system aims to engage the users in a real-life activity such as school or improving the ecological behavior. In such cases, meaningful gamification could make the desired behavior meaningful to the users without forcing it upon them, which would ideally result in a long-lasting behavior-change (Nicholson, 2015).

Concluding this, it is important to say that pointsification does work and is sufficient in many environments, even better than meaningful gamification in some cases (Hamari et al., 2014; Nicholson, 2015). This thesis shows however that designers must pay attention to every detail of gamification, as its efficiency is depending on the game elements used, the context it is used in and the audience of the gamified system. Meaningful gamification gives new possibilities for designers. In my opinion, it may not be a direct alternative to pointsification, since both systems have different traits and advantages. However, it shows how versatile gamification can be and how different goals call for different practices. The term gamification is defined in a very broad way, which leaves a lot of space for individual interpretation and a variety of gamification-styles (Deterding et al., 2011). For the future, even more new techniques of gamification might emerge. Thus, it is extremely important that both new and already established gamification-techniques are examined in an empirical manner in order to find out which are effective in what circumstances. For now, there are only very few studies researching the effects of meaningful gamification. This must change in the future in order to make it a relevant theory. There is a need for studies testing the six core elements (Nicholson, 2015) and their impacts, similar to what Mekler, Brühlmann, Tuch and Opwis (2017) did in their study about points, badges and leaderboards.

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