

Does Gamification Increase Learner Motivation?

Amy Kidder

University of North Texas

Abstract

Gamification has been considered as a potential solution for engagement and motivation problems in learning (Aldemir, Celik and Kaplan, 2017). Many researchers believe that gamification has the potential to motivate and activate targeted behaviors (Kapp, 2012). Other researchers, however, have found that engagement and motivation decrease over time for individuals participating in learning courses with gamification or game-like elements (Hanus and Fox, 2015). Those who are motivated by rewards and recognition enjoy game-like elements and are motivated to progress to the top of leaderboards, and collect rewards. Others are demotivated by game-like elements in environments where they want to learn for fun or elective learning. In a corporate environment, are adult learners motivated by game-like elements in their learning courses? And if so, does the motivation to learn increase over time? This study will look at the relationship between motivation through gamification in a corporate learning environment, and whether or not it increases over time.

Keywords: gamification, game-based learning, motivation, engagement, badges, leaderboard

Does Gamification Increase Learner Motivation?

We experience gamification everyday through our technology applications without much effort or even seeking it out. On a daily basis, one might get rewards and achieve certain status for purchases or participation in games, mapping apps (such as Waze), applications where you are placed on a leaderboard, or collecting points and rewards. In this context, gamification is “the process of enhancing a service with affordances for gameful experiences in order to support user's overall value creation” (Aldemir, Celik and Kaplan, 2017). So why shouldn't learning opportunities take advantage of gamification techniques? Gamification is one of the latest trends in learning, but the jury is still out on whether or not it motivates learning. Gamification uses “game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems” (Kapp, 2012). The question is does gamification really motivate learning? Do learners stay motivated in game-like settings over time within a learning environment?

In different studies, the opinions on the effectiveness of gamification are varied, and it is not clear how gamification should be used to motivate within learning environments. Some research suggests that leaderboards may be a particularly useful form of gamification to increase motivation (Looyestyn, Kernot, Boshoff, Ryan, Edney, & Maher, 2017). However, the positive effects of gamification in relation to motivation appear to decrease over time. This is not surprising, as the novelty of rewards such as badges and points tends to diminish after a short time.

When designing gamification, it should always add value to the learning solution. Consideration should be taken on who your learners are, what motivates them, and how you present the learning material. The same considerations should be accounted for in a corporate learning environment. If gamification and game-like elements are a novelty, over time does the

motivation for the learner decrease as the novelty wears off? Are we overusing game-like elements within learning environments? This paper will review gamification and how it effects motivation in a corporate learning environment.

Review of Literature

Hanus and Fox (2015), conducted a gamification study where the results suggest that a combination of leaderboards, badges, and competition game-elements do not improve educational outcomes and can harm motivation and satisfaction within learners. In the study, the game mechanics were aligned with learning objectives, and the badges were designed to promote additional learning and engagement. However, students in the gamified classroom were less motivated, and had lower exam scores than those in the non-gamified classroom. This suggests that giving rewards in the form of badges and coins, as well as encouraging competition via a leaderboard, might not be motivating to all learners. Sometimes, when a reward is perceived as controlling, it can cause one to feel less competent and in control; this decreases motivation.

In other research, it was shown that the benefits of gamification are short-lived (Koivisto & Hamari, 2014). Koivisto and Hamari (2014) found that engagement and interest decrease over time for individuals participating in learning through gamification. This may be due to the relative novelty of gamification; introducing some game elements may feel more exciting at first, but over time the novelty expires and excitement decreases. If all a student's classes were gamified, the appeal may decrease even quicker. The study showed that being forced to do something can decrease motivation. Gamification may be more effective for individuals who have the option to engage with badges and leaderboards, and when individuals can choose whether to participate.

Adding game elements to learning can lead to several benefits. Some research has proven that badges positively affected student motivation. Digital badges tend to have an influence on

the motivation for learning as they indicate achievement level; this means badges can be powerful motivators in educational environments (Shields & Chugh, 2016). However, providing game-like elements or allowing learners to collect more points than others does not mean that people will be motivated (Smith-Robbins, 2011). Also, the presence of game-like elements does not directly bring about engagement (Lee & Hammer, 2011). What is important in a learning environment is that gamification is positively driving learning. Gamification should not be used in an environment where badges and leaderboards might negatively affect learning outcomes. All considerations of the learners and their motivators should be well thought out before implementing game-like elements into the learning solution.

Little research exists on the effect of gamification and motivation in adult learning in a corporate environment. Most research studies are from elementary through college age participants via classroom and online learning. This will be one of the first studies to provide insight into the area of gamification in a corporate environment. For this reason, it makes sense to conduct qualitative research with a group of adult learners via an e-learning module with game-like elements. This study will focus on whether gamification drives engagement in adult learning in a corporate environment over time.

Significance of the Study

By understanding the correlation between gamification and its effect on motivation in a corporate environment with adult learners, instructors will be better equipped at selecting gamified learning solutions appropriately. This will assist instructors on who, when, where and how they should use gamification for learning. If instructors appropriately select gamification as a learning solution, they should have more motivated learners which will drive learning and performance across an organization. Instructors will have a better idea on when it is appropriate to select gamification as a learning solution.

Research Questions

This study aims to explore the relationship between motivation and gamification, in a corporate environment. It will focus on whether gamification drives motivation in learning over time in that environment. Therefore, the following research questions hold relevance:

- Does gamification motivate adults to learn in a corporate environment?
- Over time, do learners stay motivated in game-like settings?

Methods and Procedures

Strategy of Inquiry

This qualitative strategy is a case study to understand gamification motivation triggers within a corporate learning environment. The participants will be volunteers who will take a 4-hour, gamified compliance course. The compliance course will contain game-like elements with badges, a leaderboard, and assessments. The course includes 20 challenge achievements (badges, points, etc.) grouped in 10 challenges, from which participants get badges after completion. All content challenges were created using the same contents of the activities available to each participant. There are 14 modules to the course, with game-like badges and

encounters throughout each module. All participant's results will be displayed on the leaderboard for everyone to see. The participants will be observed and will take a survey after each module of the course. This should assist in determining motivation towards the gamified course over time.

Research Setting

The setting is a corporate office in Addison, Texas. A Learning Management System (LMS) will be used to deploy the course to 40 learners in four different age groups. The learners will be placed in the same conference center (in a 4-hour) period to complete the gamified compliance course. They will be split into four sections of the rooms by age group, and there will be two observers. The observers will observe two different groups at the same time, scoring participants on the same criteria. They participants will not be allowed to interact during the time of the course.

Participants

The participants will be from the same corporate office residing in Addison, Texas. They range in age from 23-55 years old, and will volunteer for the study. The only requirement is that they are full-time, in good employment standing and available the day of the study to take the course and provide feedback. They will be split into four groups by age range to monitor if age also influenced the results. They will all take the same course in the same 4-hour block.

Corporate employees (Ages 23 – 55)				
Age	23-29	30-39	40-49	50-56
# of participants	10	10	10	10
Course type	Gamification	Gamification	Gamification	Gamification

Data Generation/Collection

Three techniques were used in data collection: observations, surveys, and additional course and demographic data collected from the LMS.

Observations. Two researchers will observe and chart the age groups. The room will be split in half and each researcher will chart two of the age groups. The participants will sit with their age group. The researchers will make observations of the participants by capturing general mood in 30-minute increments. They will chart them as disinterested, frustrated, happy, or competitive. Disinterested and frustrated will place participants in a non-motivated category. Happy or competitive will place them in a motivated category. They will use a diary to record the observed behaviors.

Surveys. Attitudinal surveys (after each module) will ask participants about their feelings on the gamified elements of the course, their interest in the elements, and their level of motivation during the course when encountering that element (whether they wanted to complete the course). The surveys will ask the participants questions about their perceptions and attitude towards the gamification elements and the learning experience. The survey questions will capture data around motivational attitude as they move through the course. The surveys will have the same ten questions at the end of each course, and answers will be responded to in a five-point Likert scale (1–Strongly disagree, 2–Disagree, 3–Undecided, 4–Agree, 5–Strongly agree). The survey will be administered at the end of each module of the course. The survey responses will be categorized as an answer that is either motivated or non-motivated (and will match the observation data).

LMS course data. The LMS will collect data on the leaderboard scores which populate from the badges, and challenges. The LMS will also collect data on course completion time and

assessment scores. The course time will be evaluated against the surveys answers. The researchers will also collect data on completion time per module, age, and assessment scores at the end of each module. The participants receive extra points on the leaderboard when modules are completed in a shorter time.

Data Analysis

All survey data will be transformed into codes that will correlate to the observation data specifically around motivation. Researchers will transcribe observations of disinterested, happy, frustrated, or competitive. They will use a kappa inter-rater agreement calculation. They will create a code book for this observed data. One researcher will apply these codes to each observed 30-minute segment. The second researcher will apply the codes to one half of the interviews, and compare the results to ensure a high-level of coding agreement using the kappa inter-rater agreement calculation.

Researchers will analyze all elements to create a qualitative appraisal of the participant's perceptions and motivations. Logistic regression models will test the effects of participation, measured by the number of courses completed, badges, leaderboard scoring, and attitude towards motivation. Analysis of Variance (ANOVA) will analyze the difference between age groups, course time duration, assessment scores, and participation attitude.

Study Report Type (how will the results be organized)

The researchers will use tables to provide data summaries from the observations, survey, and LMS course data. The data will be ranked by combined leaderboard scores, course completion time, attitude towards the course, and then categorized by age group. This will include combined data from "observed attitude" and the "attitudinal survey" as the "attitude towards the gamified course" score.

Rigor and Trustworthiness (how will it be attained and maintained)

Survey data and categories were determined by the research author who assisted in category refinement, before coding was carried out independently by the two researchers. A kappa inter-rater agreement calculation was performed on data that both raters identified in the observation. This will ensure the data was calculated the same way by both observers.

Anticipated Results

The survey and observed data results will reveal the participants had a higher motivation early in the course, and will stay motivated if they are at the top of the leaderboard. As time progresses, students that fall to the end of the leaderboard will lose interest, and possibly multi-task (showing disinterest or frustration). Since the leaderboard will be ranked entirely on badges collected and other opportunities to get points and awards, this will show the correlation between gamification and motivation. Those who seems happy and competitive (motivated) will most likely have higher assessment and/or leaderboard scores throughout the duration of the course. Age will not be a factor for motivation over the duration of the course, if the participant is at the top of the leaderboard.

References

- Aldemir, T., Celik, B., & Kaplan, G. (2017, October). A qualitative investigation of student perceptions of game elements in a gamified course. *Computers in Human Behavior*, 78(2018), 235-254. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0747563217305745>
- Domínguez, A., Saenz-de-Navarrete, J., de-Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J.J. (2013). Gamifying learning experiences: Practical implications and outcomes. *Computers & Education*, 63, 380-392. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0360131513000031?via%3Dihub>
- Hanus, M. D. & Fox, J. (2015). Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance. *Computers & Education*, 80(2015), 152-161. Retrieved by: <http://www.sciencedirect.com/science/article/pii/S0360131514002000>
- Kapp, K. M. (2012). *The gamification of learning and instruction: Game-based methods and strategies for training and education*. San Francisco, CA: Pfeiffer.
- Koivisto, J., & Hamari, J. (2014). Demographic differences in perceived benefits from gamification. *Computers in Human Behavior*, 35, 179-188. Retrieved from <https://doi.org/10.1016/j.chb.2014.03.007>
- Lee, J. J., & Hammer, J. (2011). Gamification in education: what, how, why bother? Definitions and uses. *Exchange Organizational Behavior Teaching Journal*, 15(2), 1–5.

Looyestyn, J., Kernot, J., Boshoff, K., Ryan, J., Edney, S., & Maher, C. (2017). Does gamification increase engagement with online programs? A systematic review. *PLoS ONE*, 12(3): e0173403. Retrieved from <https://doi.org/10.1371/journal.pone.0173403>

Shields, R., & Chugh, R. (2016). Digital badges - rewards for learning? *Education and Information Technologies*, 1-8. Retrieved from <https://doi.org/10.1007/s10639-016-9521-x>

Smith-Robbins, S. (2011). This game sucks: How to improve the gamification of education. *EDUCAUSE Review*, 46(1), 58-59. Retrieved from <https://er.educause.edu/articles/2011/2/this-game-sucks-how-to-improve-the-gamification-of-education>