

## Dis-Engaging with Gamification in Higher Education (0143)

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### Abstract

The landscape of British Higher Education (hereinafter HE) is changing rapidly and student engagement has been central in most HE institutions. The HE institutions have come forth with suggested pedagogies for engaging with disengaged students. This paper utilises an in-depth case study to provide a critical look at gamification and the factors behind dis-engagement of students with a gamified curriculum. A single cohort of approximately 900 students was invited to opt-in to a competition that would assist them in their first year statistics unit; in addition monetary rewards were offered. The results show that a. most students did not engage and b. according to the results the online gamification did not seem to have a significant impact on students' performance as the students who participated performed as well as the students who did not. The post-gamification evaluation challenged the assumption that the millennial generation would engage more readily with gamification.

Key words: Gamification, Higher Education, Student engagement, Student Performance.

### Introduction

Student engagement has become an overriding concern in British HE (Soilemetzidis, Bennett, Buckley, Hillman, & Stoakes, 2014). A vast array of pedagogical methods and approaches has been suggested as a means to enhance student engagement and consequently student performance: Blended Learning (Erdem & Kibar, 2014; McCarthy, 2010), Flipped Classrooms (Kurtz, Tsimerman, & Steiner-Lavi, 2014), Problem-based learning (Hew & Cheung, 2013) and last but not least gamification (de Sousa Borges, Durelli, Reis, & Isotani, 2014) and game-based learning (Mead, 2010; Prensky, 2001) have been suggested as pedagogies and methods for engaging with students in this new HE context. The literature suggests that each of the approaches has its advantages and forthcoming (de Sousa Borges et al., 2014; Hamari, Koivisto, & Sarsa, 2014; McClarty et al., 2012).

There is a subtle difference between game-based learning and gamification with the former seen as learning through playing while the latter is often defined as incorporating certain game mechanics in an activity that is not intended to be a game (Deterding, Dixon, Khaled, & Nacke, 2011; Osheim, 2013). In this paper gamification takes the guise of a competition among students with prizes for the winners.

This article focuses on an attempt to engage students using gamification and examines the factors that may enhance engagement as well as the factors that enhance disengagement of the students.

### Methodology

The context is a UK-based HE institution with extensive TNE operations: the focal unit is statistics Level 4 and it is delivered in 11 sites of which only 2 are UK-based. The cohort examined had 897 students enrolled. It was thought that a web-based competition would enhance delivery across all sites and deepen the learning in the classroom especially considering that the current students are part of the millennial or digital natives generation (Dennis & Al-Obaidi, 2010; Margaryan, Littlejohn, & Vojt, 2011). This online competition when introduced; was 100% voluntary and the main motivations for participation provided were twofold: financial rewards in the form of vouchers and of course practice with material that would prepare the students for the end of semester exam. The characteristics of the gamified intervention were as follows:

<b>Discipline</b>	<b>Statistics Module</b>
<b>Cohort size:</b>	897
<b>Cohort Year:</b>	First Year Students
<b>Cohort Diversity</b>	11 sites (only 2 UK-based); majority of students overseas
<b>Integral to the unit delivery process</b>	No
<b>Continuous communications</b>	Yes (6 reinforcement points)
<b>Offline &amp; Online activities?</b>	Online Only
<b>Explicit Narrative communicated</b>	Yes

**Table 1: Characteristics of the Gamification Intervention**

This competition adopted the following elements from games: a scaffolded range of activities within a coherent narrative, performance was awarded points, and students by joining alliances had the opportunity to socialize. A very small proportion of the students responded to this initiative. The breakdown is as follows:

<b>Discipline</b>	<b>Statistics Module</b>
<b>Enrolment to the Competition:</b>	90 (10%)
<b>Engagement to the Competition (more than 5 points)</b>	40 (4.5%)
<b>Joining an Alliance</b>	12 (1%)

**Table 2: Engagement with the online Competition**

4.5% of the total number of students actually engaged with the activity. Interestingly there were only 4 out of 11 sites that actually engaged with the game; i.e. had more than one player active in the game. The top two sites in terms of participation the first one (UK1) had the educator who actually introduced the gamified intervention teaching all lectures and tutorials offline while the second site in terms of absolute participation (UK2) had the second educator who was part of the gamification intervention teaching approximately half the lectures and tutorials offline.

Site	Students engaged with Competition	Student Population on the particular site	% of site's student population engaged with the game
UK1	21	133	16%
UK2	11	242	5%
Malaysian site	4	32	13%
Trinidad site	3	278	1%

**Table 3: Engagement with the competition per site of delivery**

The top overall students in terms of points were located in Trinidad (2 of the 3 students on table above), A1 and C1 (3 students each ). The Malaysian site had only one of the four students making an appearance in the top ten. The other three students minimally participated.

In the survey conducted after the gamified intervention 115 responses were gathered. That included 34 students who were active and 81 students who were not active participants. When the students who engaged were queried why they participated the most popular response was “I play the statistics game to help with my studies” as one can see below:

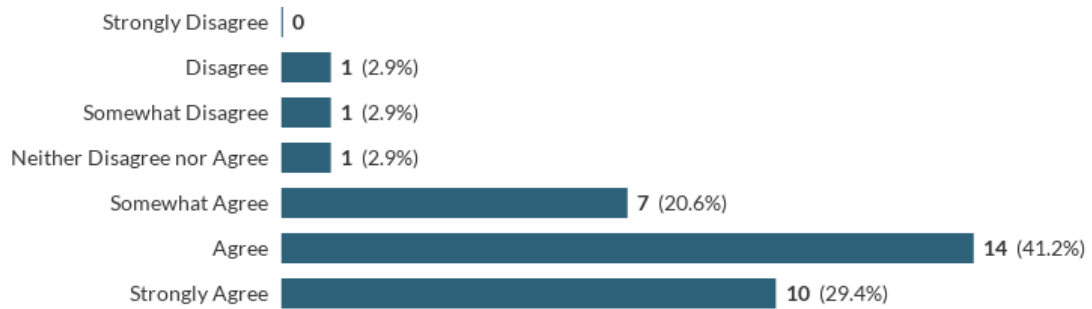


Figure 1: Response distribution to statement: “I play the statistics game to help with my studies”

Interestingly this response scored higher than responses related to prizes. Prizes were not a particularly decisive reason why students engaged and interestingly a number of prizes were never claimed.

Then the research team checked for any discernible differences between the two populations: the ones who engaged with the game and the ones who did not. The first proxy checked was general online activity vis-à-vis engagement with the game and then subsequently the online activity for education/entertainment purposes for the two populations:

	Non-competition Student		Competition Student	
	Mean (hours)	St. Dev.	Mean (hours)	St. Dev.
Time spend on the electronic devices per day	6.8	3.8	6.1	3.6
Time spent on online education	4.1	3	3.7	2.5
Time spent on online entertainment	4.4	4.1	4.6	3.7

Table 4: Comparing the online level of activity of the competition participants to the non-participants

The descriptive statistics indicated no significant difference between the two populations. The second proxy measured was the degree to which students felt that face-to-face could be substituted by other means of teaching (such as the online competition):

	Non-competition Student		Competition Student	
	Agree	Disagree	Agree	Disagree

All learning and teaching materials are provided on VLE therefore <b>attendance is not important</b>	22%	65%	21%	76%
Although all learning and teaching materials are provided on VLE. <b>It is important to attend the classes.</b>	84%	6%	88%	3%

**Table 5: Comparing the importance of offline attendance for competition participants vis-à-vis non-participants**

Interestingly the students who participated in the online competition seem to be more more keen for face-to-face interactions than the population of students who did not participate in the competition; however the difference was not statistically significant.

Overall, the students who participated in the competition exhibited the same characteristics and mentality and there were no distinguishing attributes in the two groups. They also appeared to have similar mentality with regards to offline classroom engagement. The results were not conclusive with regards to the effectiveness of the gamification activity as means to to enhance students’ learning.

### Conclusion

In contrast to much of the literature this research paper found that gamification did not enhance the engagement of students in any discernible way. In contrast, it was the highly engaged students who also engaged with the game. The majority of the students did not and the main reason appeared to be the fact that the competition was not fully integrated and tightly linked to assessment.

More interestingly one of the implicit hypotheses of this research was that the millennial students would prefer online engagement over offline and thus the online competition would be an attractive alternative. The research categorically shows two things: a. that students do value the offline contact much more than the online opportunities and b. that even when engaging with an online platform it is the offline reinforcement and contact that drives the online participation and engagement (as seen from the high levels of participation in UK1 site).

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