Gamification in Higher Education: Teachers' Drivers and Barriers

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Abstract

Gamification is receiving an increasing attention as a teaching methodology because the potential to motivate and to engage students in their learning process. Nevertheless despite this increasing interest in the use of gamification in education little is known about the reasons why teachers use (or not) gamification in their classes. By analyzing the main drivers and barriers that encourage or prevent teachers to use gamification in their courses managers in higher education institutions can both motivate and help teachers in the adoption of gamification as a teaching methodology. To answer these questions a phenomenology approach was used. A total of 26 teachers serving in higher education institutions were interviewed using online structured interviews. Results suggest four main drivers that we named attention-motivation, entertainment, interactivity, and easiness to learn that act as drivers to use gamification. Results also suggest four main barriers –lack of resources, students, subjects, and classroom dynamics– that prevent teachers to use gamification in their courses. Results suggest that teachers might perceive the use of gamification both as a benefit but also as a potential harm. Managerial recommendations for managers of higher education institutions, limitations of the study, and future research lines are addressed.

1. Introduction

Gamification is 'the use of game design elements in non-game contexts' [1] and represents a challenge for all type of managers as is gaining momentum in a wide range of everyday life activities including business, training, and education. Consistent with Deterding et al. (2011) definition of gamification, the gamification of education has been defined as 'the use of game elements in a learning environment' [2]. Video games can also motivate digital natives [3] who make an intense use of technology and digital interactivity and for whom traditional learning methodologies do not appeal or motivate them anymore. As a consequence they have become disengaged with school and this disengagement has affected their learning outcomes [2]. It has been stated that the fun and excitement provided by video games can highly motivate players [4] providing a huge potential for educational application [5]. Despite an increasing interest in the use of gamification in education [6] little is known about the reasons why teachers use (or not) gamification in their classes. This study seeks to help managers' decisions based on the experiencies of a key agent when implementing new teaching methodologies in the classroom: the teacher. To do so we analyse teachers' main drivers and barriers to use gamification in their courses.

2. The gamification of education

Although a game-based approach to education can be traced back to the sixties [7] and the potential of using video games in learning was highlighted more than a decade ago [3,8] a real interest in game-based learning is much more recent. The rationale to applying game design elements to non-game contexts (e.g. education) is that key psychological states elicited by games (e.g. immersion, flow, involvement) can help to increase individuals' motivation, engagement, and performance in non-gaming activities. It has been stated that through gamification 'students could be motivated to learn in new ways or enjoy otherwise tedious tasks' [9] It is assumed that the elements that make games fun along with the nature of games themselves are intrinsically motivating [10] so applying game elements and mechanics to the classroom may increase students' intrinsic motivation to learn [9]. Nevertheless a game-based learning approach to education has been criticized because using games and game dynamics often concerns repetition of cyclic content that provokes persistent re-engagement which tends to address lower level learning goals rather than higher level goals [11].This process can also elicit adverse effects in social interaction in team-based conditions [12]. In light of this mixed results teachers can be challenged on the decision of whether implement gamification or not in their courses. Because teachers play a key role in introducing pedagogical innovations in the classroom we approach the main drivers of barriers to gamification implementation in the classroom from a teachers'

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perspective. Therefore it is this study's main goal to analyze the key drivers which encourage teachers to use gamification and the main barriers which prevent teachers to use gamification in their courses.

3. Research questions

As teachers play a key role in introducing pedagogical innovations in the classroom, especially technology-related innovations [13,14] teachers will play a key role in adopting the use of gamification in their courses based on their previous experiences with gamification. We address as primary research questions teachers' previous experience with gamification in order to explore the main drivers and barriers teachers found when using gamification in their courses. In doing so the following research questions (RQs) are posited:

RQ1: which are the main drivers' teachers serving in higher education institutions find to use gamification in their courses?

RQ2: which are the main barriers teachers serving in higher education institutions find to use gamification in their courses?

4. Method

A phenomenology approach was used in this research. Phenomenology aims to understand the meaning that daily events and experiences have for individuals [15] and allow researchers to understand how invididuals build up their own reality of the world. Data was gathered through online structured interviews on a sample of teachers serving in higher education institutions. Snowball sampling was used for selection of participants [16] in this study.

4.1. Sample

A final sample of 26 interviews of teachers serving in higher education institutions was analysed. Only interviews from teachers that reported having used gamification in their courses were analysed. Respondents' age range from 26 to 65 and the average age of participants is 43.78 years old. 57.45% of the respondents are female.

5. Results

Data was analyzed using text mining software Wordstats 7.0.11. RQ1 addressed teachers' main drivers to use gamification in their courses. A word frequency analysis revealed that the most commonly used term when teachers were asked abouth the main drivers they find for using gamification in their courses was *students* (number of cases=8) and *motivation* (n=8), followed by *creativity* (n=5), and *entertainment* (n=3). Four main themes emerged as the main drivers for teachers' use of gamification in their courses: i) *attention-motivation*, ii) *entertainment*, iii) *interactivity*, and iv) *easiness to learn*. The attention-motivation theme is expressed by a respondent as follows:

> "Gamification increases student motivation because of the entertainment provided by the game" (F1/48).

Entertainment is considered as intrinsic to games by teachers and they link the entertainment capacity of games as a main driver to motivate students and draw attention to the learning activities. Interactivity is also an important theme linked to other constructs such as empathy and dynamism:

> "Using gamification in the classroom is dynamic and interactive" (F2/55).

Easiness is also a driver for some respondents to use gamification in their courses. Nevertheless this easiness is not related to how easy is to use gamification for teachers but how gamification facilitates students' learning (easiness to learn):

> "It is easier for students to learn using this methodology" (F3/42).

RQ2 addressed teachers' main barriers to use gamification in their courses. A new word frequency analysis was run to answer this question. Results revealed that the most commonly used term when teachers were asked abouth the main barriers they find when using gamification in their courses was *time* (number of cases=9), followed by *resources* (n=5), methodology (n=4), *students* (n=4), and *activities* (n=4). Four main themes emerged as the main barriers for teachers' use of gamification in their courses: i) *lack of resources* (time, training, classroom setting, and economic support), ii) *students* (lack of interest), iii) *subjects*, and *classroom dynamics*. Perceived lack of resources (*time*) is expressed by a respondent as follows:

> "Much more time is needed in the process of designing and planning the teaching activities. Moreover you need much more resources to deliver these activities" (M1/41)

Several respondents reported physical classroom setting as a barrier for gamified classes:

> "Case room type settings or classrooms with fixed seating are not conducive for simulations I use" (M2/60)

Teachers perceived students' lack of interest in gamified courses as a consequence of students' lack of perceived usefulness of gamified courses:

> "I just used gamification once in my courses because students felt they were wasting their time" (F4/51).

Teachers referred to the subject they are teaching as another main barrier to use gamification:

> "Gamification can be useful for some subjects but not for all. For me it is difficult to use gamification in subjects in which I must teach complex maths-related elements" (M3/37)

Finally, classroom dynamics was also considered a main barrier for some respondents:

> "When I use gamification in my courses my colleagues teaching in classrooms nearby criticize the laughter and noise coming from my classroom" (M4/56)

6. Conclusions, limitations, and future research

Results suggest four main drivers that encourage teachers to use gamification in their courses and four barriers that prevent its use. Teachers assume that using gamification they can motivate students because the intrinsic entertaining nature of games. Teachers also experienced that gamification can facilitate students' learning via entertainment and a higher motivation. On the contrary a main barrier preventing teachers to use gamification is the lack of time and other resources (e.g. classroom setting) available. It seems that teachers' feeling is that gamification just does not fit their subjects suggesting that maybe some subjects are more suitable than others for being gamified. One surprising barrier is *classroom dynamics* as some teachers feel that the excitement and playful atmosphere driven by gamified classes can disturb colleagues teaching in classrooms nearby. Managers of higher education institutions should pay attention to the main barriers highlighted in this research if they are interested in the introduction of gamified courses in their universities. Resources seem to be a key barrier when using gamification in teaching. The lack of resources range from lack of time to prepare materials for gamified courses but also lack of training in gamification. A main limitation of this research is its exploratory approach that prevent us to generalize these findings. Future research should use another research approach (e.g. quantitative) to test these findings in a representative sample of the population.

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