Chapter 14
Generating Data by Gamifying Education

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ABSTRACT

The main focus of this chapter is to present how data generated by gamifying education affects the grading process and student engagement. One of the challenges facing modern society is the overall lack of engagement. This is particularly the case in education when frequent tasks and assignments are not approached with a high level of commitment. A relatively new technique has been developed and is showing great potential in a wide array of fields including education. Gamification is the process of applying game mechanics and a way of thinking to real-world tasks with a goal to improve engagement. Gamifying education generates new types of data that can be used in the process of assessing a student's performance as well as effectively improving engagement. The key to implementing gamification is to understand what types of data can be generated. As the amount of data varies depending on which specific components are applied, the task of its interpretation and contextualisation is vital for a successful outcome.

INTRODUCTION

This chapter discusses gamification and the data that is generated by implementing it in education. The goal is to describe how to generate data using this technique and how it can be used to benefit the learning process. In order to achieve this, it is necessary to first analyse the current situation regarding the overall lack of engagement, as described in the "Background" section of this chapter. The main focus of the chapter is to define gamification and present it as a solution to the aforementioned lack of engagement. This section also defines three types of data generated by gamification, and discusses their use and storage.

Finally, a real-world example of implementing gamification in education is presented through an assignment. It shows how data is generated through a specific task, and also how it is stored and interpreted. As there are possibilities for further research, some are listed at the end of the chapter.

BACKGROUND

The lack of engagement is a growing concern in both professional and educational environments. Technology such as mobile and social media are experiencing an exponential growth, creating an abundance of information available at any time and enabling instant information sharing worldwide However, getting and keeping the attention of the recipients has become a difficult task. This rather bizarre scenario is believed to have occurred due to the failure of certain aspects of life to simultaneously improve at the same rate. When considering, for example, the evolution of entertainment compared to the progression of the education system over the course of the last hundred years, it is easy to come to the conclusion that the levels of engagement are vastly different. While there is a plethora of advanced entertainment options available today, the education system has not substantially progressed beyond the Prussian model of "common schools".

Research conducted by Gallup shows that seventy-one per cent of American workers are not engaged or actively disengaged, which means that they are less likely to be productive due to their emotional disconnection from their workplace. Further research shows that Americans who have some college education are significantly less likely to be engaged in their jobs, as opposed to those who have a high school diploma or less. Employees' workplace engagement has a direct impact on their company's overall performance. It is likely that organisations with engaged employees experience positive business performance. Furthermore, engaged employees are twice as likely say their employer is hiring, as opposed to those who are actively disengaged (Blacksmith & Harter, 2011).

This is particularly the case in education when frequent tasks and assignments are not approached with a high level of commitment. Student engagement is primarily about increasing achievement, positive behaviours and a sense of belonging in the classroom. (Harris, 2008; Willms, Friesen, &

Milton, 2009). However, it is not rare that students approach their assignments out of a fear of failure rather than a genuine desire to make progress. Furthermore, students who attend schools that improve their academic performance, as measured by their value added scores, are less emotionally engaged (Foliano, Meschi & Vignoles, 2010).

The issue with traditional grading is that many students worry about what grades they receive, which in turn can lead to them being disengaged from the learning process. Students have good reasons to worry about their grades because of the powerful symbolic and social roles that grades play in students' lives. It seems obvious to students to look to their grades in order to read what the world is telling them their strengths and weaknesses are. This way of thinking is often explicitly reinforced by parents, professors, and prospective employers (Rediehs, 2005).

The Gallup Student poll reveals that the number of students engaged in the classroom has been in decline each year between grades 5 and 12. While eight in ten elementary school students qualify as engaged, by middle school that number is reduced to six in ten students, with a further drop to ten in one students occurring in high school. Approximately 500,000 students from 37 states in over 1,700 public schools were surveyed in 2012. The drop in student engagement for each year students are in school is our monumental, collective national failure. Imagine what our economy would look like today if nearly eight in 10 of our high school graduates were engaged—just as they were in elementary school (Wexler, 2013).

MAIN FOCUS OF THE CHAPTER

Gamification

In order to combat the effects of a lack of engagement, a relatively new technique has been developed and is showing great potential in a wide array of fields including education. Gamification

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