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Outline

* Introduction
* Background into gamification
  + Gamification of Science
  + Taking scientific ideas and gamifying practice
  + Integration with teaching
* Summary

There are two forms of gamification, structural with no subject matter changes, and the altered content method that adds subject matter.[[5]](https://en.wikipedia.org/wiki/Gamification_of_learning#cite_note-5)

In educational contexts, examples of desired student behaviour which gamification can potentially influence include attending class, focusing on meaningful learning tasks, and taking the initiative.[[7]](https://en.wikipedia.org/wiki/Gamification_of_learning#cite_note-B&L2013-7) [These are in most schools, but not acknowledged as a game like in schools]

The gamified music learning platform, Rise of the Rhythm

Distinguishable from [game-based learning](https://en.wikipedia.org/wiki/Game_Based_Learning), gamification of learning does not involve students in designing and creating their own games, or in playing commercially produced [video games](https://en.wikipedia.org/wiki/Video_games). Within game-based learning initiatives, students might use [Gamestar Mechanic](https://en.wikipedia.org/wiki/Gamestar_Mechanic" \t "_blank) or [GameMaker](https://en.wikipedia.org/wiki/GameMaker" \t "_blank) to create their own video game, or play [Minecraft](https://en.wikipedia.org/wiki/Minecraft), for example, where they explore and create 3D worlds. In these examples, along with games such as Surge for [PlayStation](https://en.wikipedia.org/wiki/PlayStation) and [Angry Birds](https://en.wikipedia.org/wiki/Angry_Birds), the learning agenda is encompassed within the game itself.[[original research?](https://en.wikipedia.org/wiki/Wikipedia:No_original_research)]

Since [gamification](https://www.growthengineering.co.uk/gamification/) has been recognised as a powerful engagement tool, it has almost become a standard feature of software design.

Though the term "gamification" first appeared online in the context of computer software in 2008,[[94]](https://en.wikipedia.org/wiki/Gamification#cite_note-94)[[a]](https://en.wikipedia.org/wiki/Gamification#cite_note-98) it did not gain popularity until 2010.[[98]](https://en.wikipedia.org/wiki/Gamification#cite_note-99)[[99]](https://en.wikipedia.org/wiki/Gamification#cite_note-100) Even prior to the term coming into use, other fields borrowing elements from [videogames](https://en.wikipedia.org/wiki/Video_game) was common; for example, some work in [learning disabilities](https://en.wikipedia.org/wiki/Learning_disabilities)[[100]](https://en.wikipedia.org/wiki/Gamification#cite_note-101) and [scientific visualisation](https://en.wikipedia.org/wiki/Scientific_visualization) adapted elements from videogames.[[101]](https://en.wikipedia.org/wiki/Gamification#cite_note-102)

The term "gamification" first gained widespread usage in 2010, in a more specific sense referring to incorporation of social/reward aspects of games into software.[[102]](https://en.wikipedia.org/wiki/Gamification#cite_note-103) The technique captured the attention of venture capitalists, one of whom said he considered gamification the most promising area in gaming.[[103]](https://en.wikipedia.org/wiki/Gamification#cite_note-fun-104) Another observed that half of all companies seeking funding for consumer software applications mentioned game design in their presentations.[[24]](https://en.wikipedia.org/wiki/Gamification#cite_note-sjmn-24)

Several researchers consider gamification closely related to earlier work on adapting game-design elements and techniques to non-game contexts. Deterding et al.[[3]](https://en.wikipedia.org/wiki/Gamification#cite_note-deterdingdefinition-3) survey research in [human–computer interaction](https://en.wikipedia.org/wiki/Human%E2%80%93computer_interaction) that uses game-derived elements for motivation and interface design, and Nelson[[104]](https://en.wikipedia.org/wiki/Gamification#cite_note-105) argues for a connection to both the [Soviet](https://en.wikipedia.org/wiki/Soviet_Union) concept of [socialist competition](https://en.wikipedia.org/wiki/Socialist_competition), and the American management trend of "fun at work". Fuchs[[105]](https://en.wikipedia.org/wiki/Gamification#cite_note-106) points out that gamification might be driven by new forms of [ludic interfaces](https://en.wikipedia.org/wiki/Ludic_Interfaces). Gamification conferences have also retroactively incorporated simulation; e.g. [Will Wright](https://en.wikipedia.org/wiki/Will_Wright_(game_designer)), designer of the 1989 [video game](https://en.wikipedia.org/wiki/Video_game) [SimCity](https://en.wikipedia.org/wiki/SimCity_(1989_video_game)), was the keynote speaker at the gamification conference Gsummit 2013.[[106]](https://en.wikipedia.org/wiki/Gamification#cite_note-107)

In addition to companies that use the technique, a number of businesses created gamification platforms. In October 2007, [Bunchball](https://en.wikipedia.org/wiki/Bunchball" \t "_blank),[[107]](https://en.wikipedia.org/wiki/Gamification#cite_note-108) backed by Adobe Systems Incorporated,[[108]](https://en.wikipedia.org/wiki/Gamification#cite_note-109) was the first company to provide game mechanics as a service,[[109]](https://en.wikipedia.org/wiki/Gamification#cite_note-110) on [Dunder Mifflin Infinity](https://en.wikipedia.org/wiki/Dunder_Mifflin_Infinity" \t "_blank), the community site for the NBC TV show [The Office](https://en.wikipedia.org/wiki/The_Office_(U.S._TV_series)). Bunchball customers have included Playboy, Chiquita, Bravo, and The USA Network.[[110]](https://en.wikipedia.org/wiki/Gamification#cite_note-111) [Badgeville](https://en.wikipedia.org/wiki/Badgeville" \t "_blank), which offers gamification services, launched in late 2010, and raised $15 million in venture-capital funding in its first year of operation.[[111]](https://en.wikipedia.org/wiki/Gamification#cite_note-112)

Among established enterprise firms, [SAP AG](https://en.wikipedia.org/wiki/SAP_AG),[[112]](https://en.wikipedia.org/wiki/Gamification#cite_note-113)[[113]](https://en.wikipedia.org/wiki/Gamification#cite_note-114) Microsoft, IBM, SAP, [LiveOps](https://en.wikipedia.org/wiki/LiveOps), Deloitte, and other companies have started using gamification in various applications and processes.[[114]](https://en.wikipedia.org/wiki/Gamification#cite_note-115)

Gamification 2013, an event exploring the future of gamification, was held at the [University of Waterloo Stratford Campus](https://en.wikipedia.org/wiki/University_of_Waterloo_Stratford_Campus) in October 2013.[[115]](https://en.wikipedia.org/wiki/Gamification#cite_note-116)

“Yes, people tend to feel good when they learn. But it can also be challenging to stay motivated all the time. Thankfully, gamification helps give you those little boosts of motivation along the way [14].”

**Conclusion / Summary**

**Why gamification works**

(At the heart of gamification is motivation, but where does our enthusiasm specifically come from? There are several theories relating to this subject, but [Scientific American believes there are three critical elements that sustain motivation](http://www.scientificamerican.com/article/three-critical-elements-sustain-motivation/).

**Autonomy** - If you’re in charge of your own destiny, you are more motivated to succeed. Being in charge means you’ll work harder and stick to your objectives for a longer periods of time. Experiments indicate that students given the opportunity and authority to select a course on their own persisted longer in problem solving activities.

**Value -**Assigning value to the activity and having an active interest in the subject also increases motivation levels. Research has found a positive correlation between valuing a subject in school and a student’s willingness to investigate a question. If you care, you’ll keep going and work harder until the task is complete.

**Competence** - If an individual develops a proficiency or skill for something, they’re more likely to continue doing it. Again, studies have proven this, showing a strong link between a student’s sense of prowess and his or her desire to pursue certain activities. What’s more, those who credit innate talents rather than hard work tend to give up more easily.

Gamification takes advantage of our extrinsic (factors like money or grades) and intrinsic (personal gain or enjoyment) motivation to enhance daily activities or specific tasks. Therefore, gamification works best if both of these motivational factors are catered for. Even though you want to feel good about yourself, some form of reward or prize is also required. -> taken from ref [14].)

**Overview**

The remainder of chapter 1 outlines the document structure. This report contains chapter 2, which, researches into the background of gamification and its history. This chapter also reflects on have gamification is used within a Science context. The chapter also looks at researching potential ways of applying gamification techniques to science concepts/ideas. An example of this is through using potential appropriate user engagement and incentivisation techniques teaching key machine learning concepts. Also on the impact gamification has had within education, the classroom and beyond. We are looking at how it can aid teaching while reinforcing learning and attainment levels. Furthermore, lastly in chapter 3, we summarise the main contributions and main concepts into gamification.