



Gamification, Education and Behavioural Economics

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Gamification of Life

Jack Schofield in a recent article for PC-PRO notes that “the techniques developed in computer games are finding their way into shopping, education and the workplace ... Gamification is one of this year’s big technology buzzwords, and some people think it’s going to go global.”

The article doesn’t explicitly state it, but much of ideas about games and changing behaviours are based on nudging individuals to make one decision rather than another. And by nudge, think of the title of a recent book by Thaler and Sunstein that considered the issue of behavioural economics and how it can improve decisions about health, wealth, and happiness.

Behavioural Economics and Education

Behavioural Economics

Behavioural economics considers the weaknesses in the standard economic model which assumes that individuals are rational and behave in a way to maximise their individual self-interest. Writers such as Thaler and Mullainathan suggest that “the standard economic model of human behaviour includes three unrealistic traits—unbounded rationality, unbounded willpower, and unbounded selfishness—all of which behavioural economics modifies”.

Irrationality: We are not robots and our decisions can be swayed by factors such as overconfidence, optimism, recent events, unlikely events and extrapolation. We are loss averse (a bird in the hand may not be worth more than two in the bush). And we can fall foul of mental accounting (where individuals frame value relative to their income, another product or a suggested number).

Lack of willpower: Drug dealers know it, gym owners know it, fast food restaurants know it, but do we know it? If we only had the will power we would stop doing things that are bad for us and start doing things that are beneficial for us. Unfortunately, we are habitual in our nature and our herding mentality means we tend to go with the flow when making decisions.

Selflessness: As Thaler and Mullainathan state, “Although economic theory does not rule out altruism, as a practical matter economists stress self-interest as people’s primary motive.” But this approach does not explain the huge numbers of people that give to charity and volunteer. But, as the New Economics Foundation put it, “People are motivated to do the right thing”.

Behavioural Impacts in Education

In a rational world students would put the least amount of effort in to gain the necessary qualifications to enter the professional world. The market for skills would drive students’ efforts and individuals would be magically allocated to the perfect job. But markets don’t always run smoothly in the short term and as already stated individuals don’t always behave rationally.

Quite the opposite, like everyone else, students behave irrationally. They are overly influenced by short term results rather than long term goals. Their expectations can be framed by the students that they study alongside and the subjects they study rather than the wider world. Presentation of information, specifically grades, can lead to optimism and an unrealistic view of the future.

Will power has a huge impact on success in education. Handing in that course work on time, doing revision and (for some students) even attending classes require a huge amount of will power. And herding is ever present in education, as pupils are influenced by their peers. Creating a short-term reward system rather than a long-term hope system might generate improvements.

As in the real world, selfishness is a limited educational strategy and collaboration plays a huge role in success. Students need to work in groups; sharing knowledge and giving encouragement. Encouraging these behaviours improves performance and develops employability skills.

As Dan Ariely notes, individuals behave irrationally but in predictable ways. Gamification in education can utilise this fact both in terms of design and achieving behavioural change. Instead of engaging students as though they will make the rational choice (study hard, get the highest grades they can and develop the life they want) educators need to delve further into the psychology of their students.

Gamification in Education

Overview

Gamification can be used to shift behaviours / nudge students in the right direction. Games based learning can have a direct impact on performance in terms of subject understanding. games-ED products have shown this in classroom see [Proof of the Pudding](#) and [Proof of the Pudding Part 2](#).

In addition, by providing virtual worlds, games based learning such as simulations improve personal, learning and thinking skills and can also be used to tackle specific behaviours. So how do we design games and game-like interventions to modify behaviours? And what behaviours do we want to change?

Gamification Design and B J Fogg's Behaviour Model

If we want to achieve behavioural change then we need to design accordingly. B J Fogg's Behaviour Model provides a method of understanding how we can change behaviour and specifically how we can design to increase the chance of achieving a likely outcome. The model states that an individual needs to be motivated, have ability and be triggered into action.

The following section considers the three aspects (motivation, ability and triggers) in turn and highlights the design impacts for gamification in education.

Motivation

Fogg's model puts forward three core motivators (sensation, anticipation and social cohesion) each with two sides.

- **Sensation:** pleasure/pain
 - Games and gamification offer a huge potential to make learning fun and effect behavioural change without the preaching.
 - They can be used as a replacement for an existing curriculum activity or they can be used to encourage activity. In the latter the game acts as treat.
- **Anticipation:** hope/fear
 - Game's competitive elements encourage the players (learners) to get to the end of the activity. This desire to win is probably more crucial than the fun element. In a game, players (learners) will endure frustration and challenges that in other situations would cause them to give up. This is incredibly important as behavioural change is typically something that will need to be worked at.
- **Social Cohesion:** acceptance/rejection
 - Different types of games allow different students to succeed. A few years back I took a class in school, the young lad who got the highest score got an amazing reaction from his classmates. The teacher told me later that she had never seen him really engaged before and he certainly hadn't succeeded at anything.
 - At games-ED, our games are simulations of real world situations and are collaborative in nature. Groups build their understanding of the game, the wider world and each other.

Ability (Simplicity)

As Fogg states, there are two paths to increasing ability. You can train people, giving them more skills (more ability) or you make

the task simpler. Simplicity is the least risky option and is thus the most effective way to change behaviours.

Fogg outlines 6 Factors affecting simplicity: Time; Money; Physical effort; Brain Cycles (mental effort); Social Deviance (going against the norm); and Non-Routine (breaking habits). And he notes that simplicity is a function of your scarcest resource at that moment.

Questions for designers:

- Time: How much time have teachers got to learn products and what slack is there in the existing curriculum?
- Money: How much do the games costs including hidden costs such as potentially buying kit?
- Physical effort: Will the games based learning session require decamping to the IT suite?
- Brain Cycles: Can teachers and students justify the mental effort required?
- Social Deviance: games based learning is currently in its early adopter phase. By nature early adopters don't mind going against the norm (indeed they get a kick out of being the first). But, to be successful games based learning needs to recruit the majority. How can gamification in education be more widely marketed?
- Non-Routine: Isn't it just easier for teachers to do what they have always done?

These questions overlap with [Six Key Principles of Collaborative Games Based Learning](#) outlined in Games Based Situated Learning (Paul Ladley, 2010):

1. Create a sense of realism (as opposed to fantasy).
2. Deliver engaging interaction by means of authentic activities (not just playing for the sake of it).
3. Group level game play where the goal is collaborative problem solving (as opposed to single player games).
4. Provide an anchor for multiple learning conversations.
5. The technology and design needs to be appropriate.
6. The game needs to work in a learning continuum.

What is particularly worth noting is the seeming contradiction between the need for simplicity AND complexity. Specifically, complexity generates a richness to the gaming experience and provides engagement and challenge yet simplicity is key to usage in the classroom. As a designer, I have squared this circle by ensuring that the rules and interface are simple. As such, the game is quick to get into but the model and gameplay strategies are designed to be complex enough to engage and challenge within educational timeframes (hours not months). Developers, who simply reuse entertainment games, beware.

Triggers

Without a Trigger, the target behaviour will not happen. By trigger, Fogg means: cue, prompt, call to action, request, and so on.

He states there are three types of triggers (facilitator, spark and signal) which can be judged in terms of both motivation and ability requirements:

- **Facilitator (high motivation and low ability) such as trainer / walkthrough.**
 - Within the context of education the teacher has typically been responsible for triggering activity and behavioural change. Gamification can become another tool.
- **Spark (high motivation and high ability) such as inspiration from a friend.**
 - Using devices such as league tables and ideas from social networking, it could be possible to inspire learners into activity and ultimately behavioural change.
- **Signal (low motivation and high ability) – an instruction to act.**

- Providing the gamification intervention has been well designed (it is simple), then it might be possible to make actions autonomous. This maybe a medium term goal.

In reality, a combination of all three triggers is likely to be required, dependent on the complexity of the intervention and the magnitude of the behavioural change.

Gamification and Behavioural Change

So if students aren't rationale, they need to be nudged into making decisions that might best suit their long-term goals. Can gamification can help nudge students (and teachers) in the right direction. And what is that direction? A good starting point would be:

- Motivating students and raising attainment
- Preparing students for a changing world
- Improving the quality of teaching

Motivating students and raising attainment

AS previously stated, games based learning can have a direct impact on performance in terms – [Proof of the Pudding](#) and [Proof of the Pudding Part 2](#).

Currency (a la reward cards) could focus students on short-term. Why not take a leaf out of retailers' books? Students could earn reward points for attendance, extra-curricular activities, helping others (students and pupils) and so on. These reward points could be traded in for goodies such as tickets for the cinema – the rewards could be sponsored from local businesses.

Preparing students for a Changing World

Games like The Sims allow individuals to see the life journey of a computer generated character. How about developing a simulation that could function as a game of life / career choice game? Maybe such a game could nudge students to make long-term choices rather than being herded along by their peers and recent events.

Games based learning and more generally gamification can go beyond improving specific subject attainment to improving personal learning and thinking skills. Simulation games allow students to explore the issue of cause & effect. And, if the games are collaborative, students work with others to see the big picture and make connections. In this way, games based learning can improve collaboration plus creative and critical thinking skills. Gamification improves personal, learning and thinking skills and can also be used to tackle specific behaviours.

Improving the quality of teaching

Games as continual professional development (CPD) for teachers – I have delivered over 400 workshops using learning simulations with [pixelfountain](#) (read games based learning). I can testify that adults enjoy playing games in workshops. Also, long-term feedback from these workshops confirms that the approach accelerates the development of skills and knowledge and changes behaviours. In addition to offering CPD, data could be saved from teachers' in-game decision to form the basis of research.

Conclusion

This paper has looked at some of the issues affecting education and aligned these to the move towards gamification and the ideas presented by behavioural economics and B J Fogg's behavioural model. Education needn't be seen as a special case; the psychology and motivations of learners are not likely to differ from the broader community. So, if according to some people

gamification is going to go global, then why shouldn't education consider it impacts and how best to mobilise these ideas to improve performance in the classroom.

Further Reading

New Economics Foundation – [Behavioural Economics](#)

Dan Ariely (2008), Predictably Irrational: The Hidden Forces That Shape Our Decisions

Dan Ariely (2010), The Upside of Irrationality

B J Fogg, [Behaviour Model](#)

Paul Ladley (2010), [Games Based Situated Learning](#)

Paul Ladley (2011), <http://www.games-based-learning.com>, [Proof of the Pudding](#)

Paul Ladley (2011), <http://www.games-based-learning.com>, [Proof of the Pudding Part 2](#).

Paul Ladley (2011), <http://www.games-based-learning.com>, [Six Key Principles of Games Based Learning](#)

Jack Schofield, PC-PRO (2011) - The Gamification of Life

Richard H. Thaler and Sendhil Mullainathan, Library of Economics and Liberty, [Behavioural Economics](#)

Richard H Thaler and Cass R Sunstein (2008), Nudge: Improving Decisions About Health, Wealth, and Happiness

About the Author

This above paper is been presented as food for thought and as always I would welcome your comments.

I am a designer specialising in games based learning. I have been. I have been designing and developing learning simulations and games based learning for over a decade. I have created games that are delivered standalone (web) and games that are played collaboratively in workshops / classrooms.

With my fellow Directors I have launched games-ED (<http://www.games-ed.co.uk>) to licence games based learning based on products developed at pixelfountain (<http://www.pixelfountain.co.uk>). The games provide interactive, experiential learning that promotes collaboration and enables problem solving and accelerated learning of complex subjects.

I am passionate about games based learning and blog about it at <http://www.games-based-learning.com>.