



# PROMOTING PARTICIPATION AND LEARNING IN HIGHER EDUCATION THROUGH GAMIFICATION

Dylon McChesney  
dmcchesn@uwaterloo.ca

# PRESENTATION OUTLINE

1. Background on gamification
2. My experience incorporating gamification in class
3. Reflection

# GAMIFICATION & POINTIFICATION DEFINED

Gamification = applying the mechanics of games (role playing, points, achievements, etc.) to non-game activities



Pointification = awarding successful goal completion or participation with (arbitrary) numerical feedback



# RESEARCH ON BENEFITS IS INCONCLUSIVE

Increased motivation for participation (Westfall et al. 2014)

Improved learning, lower rates of failure (Charles et al. 2011)

Improved skill acquisition in e-learning (DeMarcos et al. 2014)

---

Less motivation, satisfaction, empowerment (Hanus & Fox 2015)

Benefits due to novelty effect, engagement and interest decrease over time (Hamari, Koivisto, Sarsa 2014)



# OBSERVATION

In the literature, gamification is sometimes reduced to awarding *badges* (graphical representations of achievements)

But collecting badges is extrinsic motivation for learning, diverting focus from what's really important: learning itself



# MOTIVATION

“It is also important to note that the use of games in education is **not about injecting fun that is missing from traditional learning processes** but rather it is about trying to enhance the fun that is inherent in most learning”

(Charles et al. 2011)



# CAUTIOUS OPTIMISM

Gamification shouldn't be viewed as a **solution**, but rather just another **pedagogical tool**

Although it has limitations and potential problems, some of this might come down to **non-ideal implementation** (task-completion badges are not enough!)

The rewards in a gamified class do not have to be so **arbitrary** and **abstracted** from the student's natural goals (learn, perform well, etc.)

# MY EXPERIENCE

- Instructed Introduction to Business Ethics to ~130 first year students
  - Participation tends not to be great in this class
  - Despite the efforts of great teachers, subject has a reputation for being boring
- Incorporated gamification by:
  - Pointifying participation inside and outside of class
  - Giving continuous feedback through a leaderboard
  - Making the points *count* – students with enough points could opt-out of an extra assignment I added to take the place of a participation grade
  - Adding new rewards for class-wide milestones



# GAMIFYING A UNIVERSITY CLASS

Pointify participation inside the classroom

Student #	iClicker	TIL	Total	Opt-out progress
20570223	1650	1275	2925	
20563265	500	225	725	
20574923	2700	2000	4700	
20578879	950	100	1050	
20577337	2000	800	2800	
20574945	2400	2125	4525	
20561680	2700	1750	4450	
20554095	1500	1450	2950	
20584321	2350	150	2500	
20569826	2400	1200	3600	
20559431	500	150	650	
20576706	1500	1000	2500	
20558404	2400	2000	4400	

XP (Whole Class)

Students

# GAMIFYING THE UNIVERSITY CLASSROOM

Pointify learning outside the classroom:

## Course Discussions ▾

Participation in the discussion board is entirely voluntary. Posts will be monitored, so be respectful toward each other and mindful of what you

▾ [Hide Topics for Course Discussions](#)

Topic	Threads	Posts
<b>TIL (Today I Learned)</b> ▾	1,091	1,434 (52)

**Reflect on material from lecture for the chance to earn experience points (XP)!** Posts must be relevant, original, and made within 24 hours of the respective lecture to maintain eligibility. *Please include your student number in your post.* XP will be awarded solely at the instructor's discretion.

# RESULTS

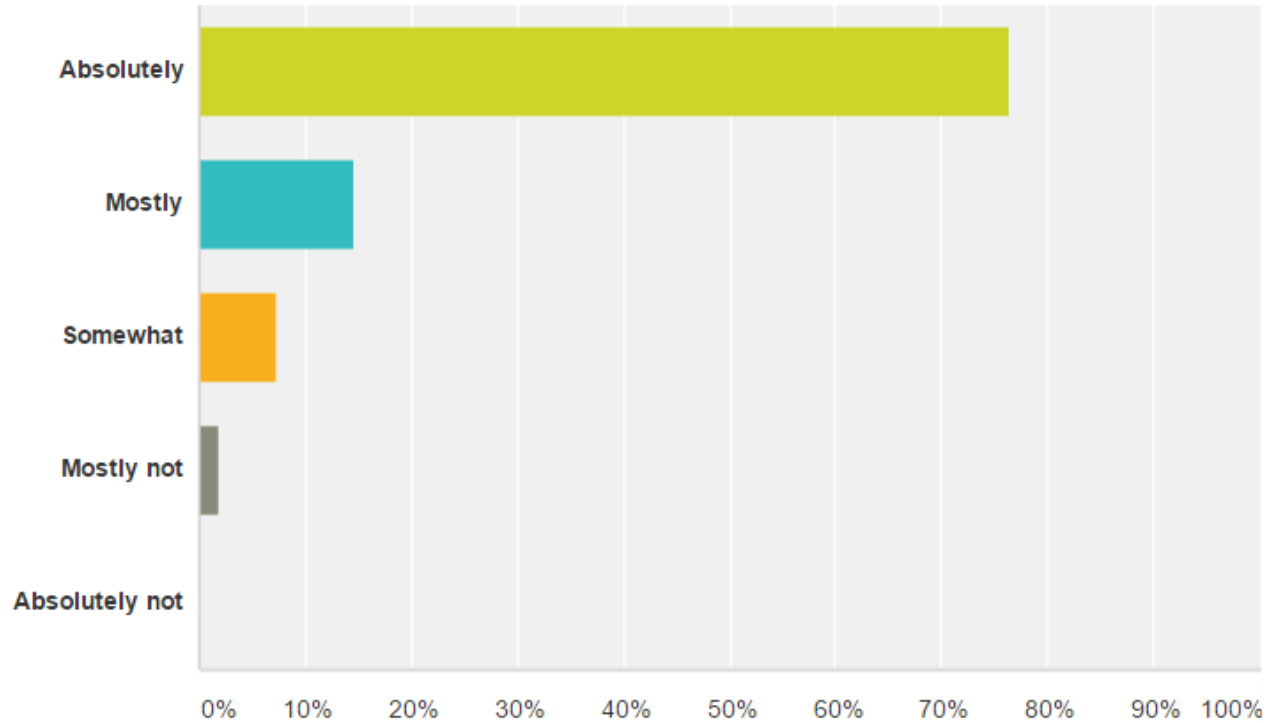
Attendance hovered around 80% for most of the class

Students reported appreciating the TILs (they appreciated doing extra work!)

Students reported that the experience points system was “motivating” and “invigorating”

# Did you feel the Experience Points system was beneficial?

Answered: 55 Skipped: 0



Results from an anonymous survey I collected at the end of the course.

Note that only **one** response out of **55** was negative.

Answer Choices	Responses
▼ <b>Absolutely</b>	76.36% 42
▼ <b>Mostly</b>	14.55% 8
▼ <b>Somewhat</b>	7.27% 4
▼ <b>Mostly not</b>	1.82% 1
▼ <b>Absolutely not</b>	0.00% 0
Total	55

# REFLECTION

Gamification appears to have potential to help with participation and learning, but there are some things to keep in mind:

- Implementation can be *very* time intensive (get TAs to help)
- Arbitrary points do matter to (some) students, but a sense of choice and control seems to be the best reward
- Technology like iClickers can be helpful, but not necessary
- Students who fall behind in points might feel demotivated, so have a backup plan

## REFERENCES

Charles, D., Charles, T., McNeill, M., Bustard, D., & Black, M. (2011). Game-based feedback for educational multi-user virtual environments. *British Journal of Educational Technology*, 42(4)

De-Marcos, L., Domínguez, A., Saenz-De-Navarrete, J., Pagés, C. (2014). *Computers and Education*, 75, pp.82-91

Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does gamification work? A literature review of empirical studies on gamification. In *System sciences (HICSS)*, 47th Hawaii International Conference (pp. 3025-3034).

Hanus, M.D., Fox, J. (2015). *Computers & Education*, 80, p.152(10)

Landers, R. N., & Callan, R. C. (2011). Casual social games as serious games: the psychology of gamification in undergraduate education and employee training. In M. Ma, A. Oikonomou, & L. C. Jain (Eds.), *Serious games and edutainment applications* (pp. 399-423). London, England: Springer-Verlag

Muntean, C. I. (2011). Raising engagement in e-learning through gamification. In *Proceedings of the 6th International Conference on virtual learning* (pp. 323-29).

Westfall, A.O., Rodriguez, J.M., Dempsey, D.M., Cherrington, A., Roy, B., Patel, M., and Willig, J.H. (2014). Gamification as a tool for enhancing graduate medical education. *Postgraduate Medical Journal*, 90(1070):685-693