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Building Inclusive University Culture by Gameful Design of Teaching

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by

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Abstract:

Inclusive learning environments with active learning are well supported in peer reviewed research. STEM industries require graduates, but students are not engaged and stereotype threat prevents academic success. Campus cultures often reinforce silent desperation of creative minds. Gameful design can promote the building of empathy between participants, which is a start of grassroots support for inclusive culture in the classroom, online, and campus wide.

Session Objectives: (1) Analyze research in active learning and inclusive teaching. (2) Analyze the connection between gameful design and inclusive campus culture. (3) Evaluate case studies in gameful design of teaching and learning.

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Introduction

Let me open with a Viking story. As much as the medieval Europe was a culture of violence and gender inequality, the pattern of "damsel in distress" is rooted in this time, there was one group that seemed to be different. The Vikings, or the Norsemen, had a unique for the time view of women. Many of them were Shield-maiden, fighters and leaders in Viking armies. Women in the Viking culture were allowed to own land and even divorce their husbands, which was in great contrast to other people of that time (Mason, 2016).

The Vikings were violent, but not as much as some sources report. To echo the Romans, "Victors write history", and the Catholic monks, who were often victims of the Vikings, painted a dark picture of their invaders. Among some of the reports there is a story of Uma, or Aud, who was called the Deep-Minded. Think about what this lady had to do in the medieval times in order to receive this name. Other Vikings were called Ivar the Boneless, or Byorn the Iron-side, or Bluetooth (due to rotten teeth).

Uma was a Viking leader. She organized a settlement trip into Iceland. She hand-selected slaves from among children of kings, nobelty, and others. When she arrived in Iceland, she freed them and became one of the four main leaders who settled this harsh land. Later, around 1000CE, one of the descendants from her settlement had the first child in North America. In Iceland sagas were composed, which are the only written record of the Vikings. Today, Iceland has a population, where 93% read at least 1 book a year, where 50% read at least 8, and 1 in 10 are published authors (Trentacosti, 2015).

Vikings did have a pattern of inclusiveness, however now I'd like to bring your attention to a contemporary culture, STEM, which suffers in this area (Malloy, 2007; Ratcliffe, 2015). Let's take a look at a Kahoot activity in order to appreciate what has been taking place.

Kahoot Activity 1: The Challenge of Inclusive Thinking in STEM

Details of the first gameful activity:

1. In 2012 women represented what percentage of students taking the AP exam?
Answers: 56% | 47% | 33% | 28%
Correct answer: 56%

2. What percent of women took the Computer Science AP exam in 2012?
Answers: 33% | 19% | 8% | 24%
Correct answer: 19%

3. Who stated "all testing says that their (black) intelligence is not the same as ours (white)."
Answers: Albert Einstein | James Watson | Enrico Ermi | Niels Bohr
Correct answer: James Watson
http://www.independent.co.uk/news/science/fury-at-dna-pioneers-theory-africans-are-less-intelligent-than-westerners-394898.html

4.What year did James Watson make the previous statement?
Answers: 1978 | 1986 | 1998 | 2007
Correct answer: 2007

5. Who explained the gender gap as women being "worse at math and science because of genetics"

Answers: John Hennessy, president of Stanford | Laurence Summers, president of Harvard | John J. DeGioia, president of Georgetown University | Christopher L. Eisgruber, president of Princeton

Correct answer: Laurence Summers, president of Harvard

https://www.theguardian.com/science/2005/jan/18/educationsgendergap.genderissues

https://www.insidehighered.com/news/2005/02/18/summers2_18

https://www.thecrimson.com/article/2005/1/14/summers-comments-on-women-and-science/

6. 21% of parents encourage their daughters to pursue a career in which field?

Answers: Medical | Acting | Business | Biology

Correct answer: Acting

7. What percentage of Google's leadership team is male?

Answers: 83% | 66% | 59% | 76%

Correct answer: 76%

8. In a 2009 National Science Foundation survey, what percentage of engineers in the US are women?

Answers: 32% | 21% | 12% | 8%

Correct answer: 12%

9. 2008 & 14 Harvard Business Review study found that what % of women working in STEM will leave?

Answers: 10% | 15% | 20% | 50%

Correct answer: 50%

http://www.latimes.com/business/la-fi-women-tech-20150222-story.html

https://hbr.org/2016/08/why-do-so-many-women-who-study-engineering-leave-the-field

https://hbr.org/2014/03/whats-holding-women-back-in-science-and-technology-industries

https://hbr.org/2016/09/to-succeed-in-tech-women-need-more-visibility

http://www.talentinnovation.org/assets/Athena-2-ExecSummFINAL-CTI.pdf

Given the problems in STEM considered in the above activity, it would be a mistake to focus on recruiting more girls into STEM fields right now. If 50% of them, after completing college degrees, are going to leave these careers due to hostile work (Glass et al., 2013) environment, why push them in this direction? Perhaps what we need to do instead in the educational pipeline is to teach as part of the STEM curriculum emotional intelligence and inclusive thinking. When the culture of STEM industries improves, more women will stay in those careers, become role models, and attract more girls to study the subject matter (http://fortune.com/2014/10/02/women-leave-tech-culture/)

So, how to teach inclusive thinking in STEM introductory college courses considering already existing emotional barriers in STEM associated stereotype threat, negative self-talk? Teaching inclusive thinking often evokes deep emotions and may impose shame on some students (Isaac et al., 2016).

My proposition for teaching inclusive thinking is to adopt gameful design. My research lens is that everything in life can be defined as a game and we have a choice of which games to play. In this context, games can be used as a metaphor in the classroom for presenting the challenges of bias and discrimination. Playing a bad game and following the rules of a poorly designed game has important impact on those involved. Considering problems as games gives us the necessary emotional perspective for managing shame, guilt, and vulnerability.

Teaching introductory college courses and teaching about inclusive thinking share a common difficulty. I would describe it as "idk and idc". In text messaging language this means "I don't know and I don't care". I would classify this as a "wicked problem", which is a very specific type of a problem that Design Thinking focuses on. Such problems do not have a single solution that can be reapplied, like engineering thinking produces. Since the audience in the classroom changes from semester to semester, the application of gameful solution must include consideration of student experience and include their collaboration on building the solution. The instructor and students as a Design Thinking team continue to fail until they reach a collaborative new solution. Games are unique environments, where people seek out failure and even enjoy it. Failing together as a team and creating success as a byproduct or side-effect of failure is a feature of games and Design Thinking. Brene Brown in her research of shame and vulnerability makes a connection between failure and learning (Brown, 2016).

So, how can games help in engaging disinterested students and in building empathy for each other? Let's do the second Kahoot activity:

Kahoot activity 2. Gameful Thinking for Schools.

Details of the second gameful activity:
1. The use of game elements and game design techniques in non-game contexts.
Answers: Leaderboard | Points | Badges | Gamification
Correct answer: Gamification

2. According to paper by Dr Bloom from 1984, good teaching can raise grades by:
Answers: .5 SD | 1 SD | 2 SD | only learning can do that
Correct answer: 2 SD (2 Standard Deviations)
http://web.mit.edu/bosworth/MacData/afs.course/5/5.95/readings/bloom-two-sigma.pdf

3.In 2015 GradeCraft project (LMS) from UofM received Transforming Learning for a Third Century:

Answers: $1.8 Million | $500k | $100k | $50k

Correct answer: $1.8 Million

https://www.si.umich.edu/news/level-gradecraft-earns-189m-transforming-learning-third-century-grant

4. Ian Bogost in 2011 suggested that gamification is:

Answers: Exploitationware | Vaporware | Malware | Virus

Correct answer: Exploitationware

5. In 2012 Gartner predicted that gamification projects will fail due to poor design at the rate of:

Answers: 20% | 40% | 60% | 80%

Correct answer: 80%

http://www.gartner.com/newsroom/id/2251015

6. What is a typical goal of a commercial gamification project?

Answers: building engagement | forming habits | improving employee performance | crowdsourcing innovation

Correct answers: any of the above

7. What do game designers call the emotional state of euphoria and winning?

Answers: fiero | goal | A+ | thumbs up

Correct answer: fiero

8. Dr. Stuart Brown stated: The opposite of play is not work, it is ...

Answers: depression | game | efficiency | productivity

Correct answer: depression

https://neuroscience.stanford.edu/news/opposite-play-not-work-%E2%80%94-it-depression

9. According to psychology professor Jeffrey Mogil from McGill University, empathy can be built by:
Answers: playing Rock Band | listening to lectures | competing for grades | inclusive training
Correct answer: playing Rock Band
https://www.mcgill.ca/channels/news/secret-empathy-241112

Applying gameful design of academic activities helps to keep emotional engagement and even the feeling of fiero in the classroom. Recognizing that stereotype threat holds students back in STEM courses and recognizing that feeling shame is a traumatic experience that prevents engagement in learning, gameful approach may provide the necessary emotional perspective to help adoption of the new knowledge.

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Appendix A

Presentation notes in Tweets:

Generate intrinsic motivation: Deci on self-determination theory. @InsideQuest
#gamification http://buff.ly/2ePm6VF #lillycon #gvsu
https://twitter.com/smProf/status/789550604364476416

Self-determination theory on learning, achievement, persistence at learning activities
http://buff.ly/2ePmvYa #gamification #lillycon #GVSU
https://twitter.com/smProf/status/789550069875957760

Gamifying the Educational Experience http://bit.ly/1im0aiZ   immersive, captivating,
micro-celebrations #lillycon #GVSU #gamification
https://twitter.com/smProf/status/789548057939570688

Play is more than just fun http://buff.ly/2eDmoje The opposite of play is not work, it's
depression. #gamification #GVSU #lillycon
https://twitter.com/smProf/status/789546312647794688

Dr Bloom 1984: Teachers are unaware of providing more favorable conditions for some
students http://buff.ly/2dm6fOa p11 #lillycon #gvsu
https://twitter.com/smProf/status/789545607681699840

Gamifying the Educational Experience http://bit.ly/1im0aiZ immersive, captivating,
micro-celebrations #lillycon #GVSU #gamification

It's time to break the taboo & get serious about play. http://buff.ly/2ej16mT Harvard
Business Review. #gamification #gvsu #lillycon

You can build empathy for strangers by playing games together. Research by Jeff Mogil.
https://www.mcgill.ca/channels/news/secret-empathy-241112 … #gamification #GVSU
#LillyCon https://twitter.com/smProf/status/789541993559064576

The Benefits of Playing Video Games https://www.apa.org/pubs/journals/releases/amp-
a0034857.pdf … #GVSU #gamification #lillyCon Most efficient means to generate
positive feelings https://twitter.com/smProf/status/789534361423151104

These notes are available at http://bit.ly/LillyGameful