UNIVERSITY *of* WISCONSIN GREEN BAY

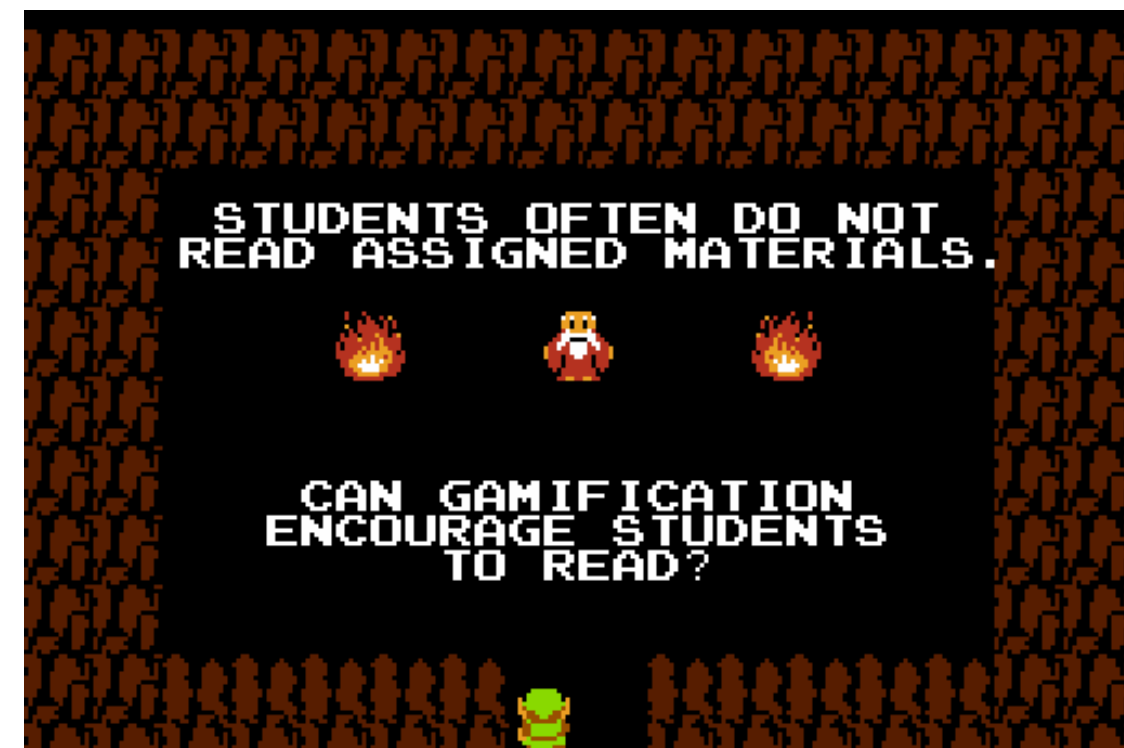## Bryan J. Carr, Ph.D. – Communication & Information Science

Questing for Engagement: The Potential and Limits of Gamification for Encouraging Student Reading

Introduction

Research suggests that most undergraduate students do not read assigned materials (Berry et al., 2011). In order to address this concern, I developed a rudimentary gamification system for a senior-level Communication/Information Science course, inspired by literature suggesting positive if somewhat qualified value for gamification in the classroom (Buckley & Doyle, 2016; Hamari et al., 2014). Following the guidelines of prominent texts and researchers in the field, I decided to explore whether gamification could be useful to encourage student reading and retention by assigning meaningful rewards and progress to reading (Kapp et al., 2014; Chou, 2014).

The Course and Design
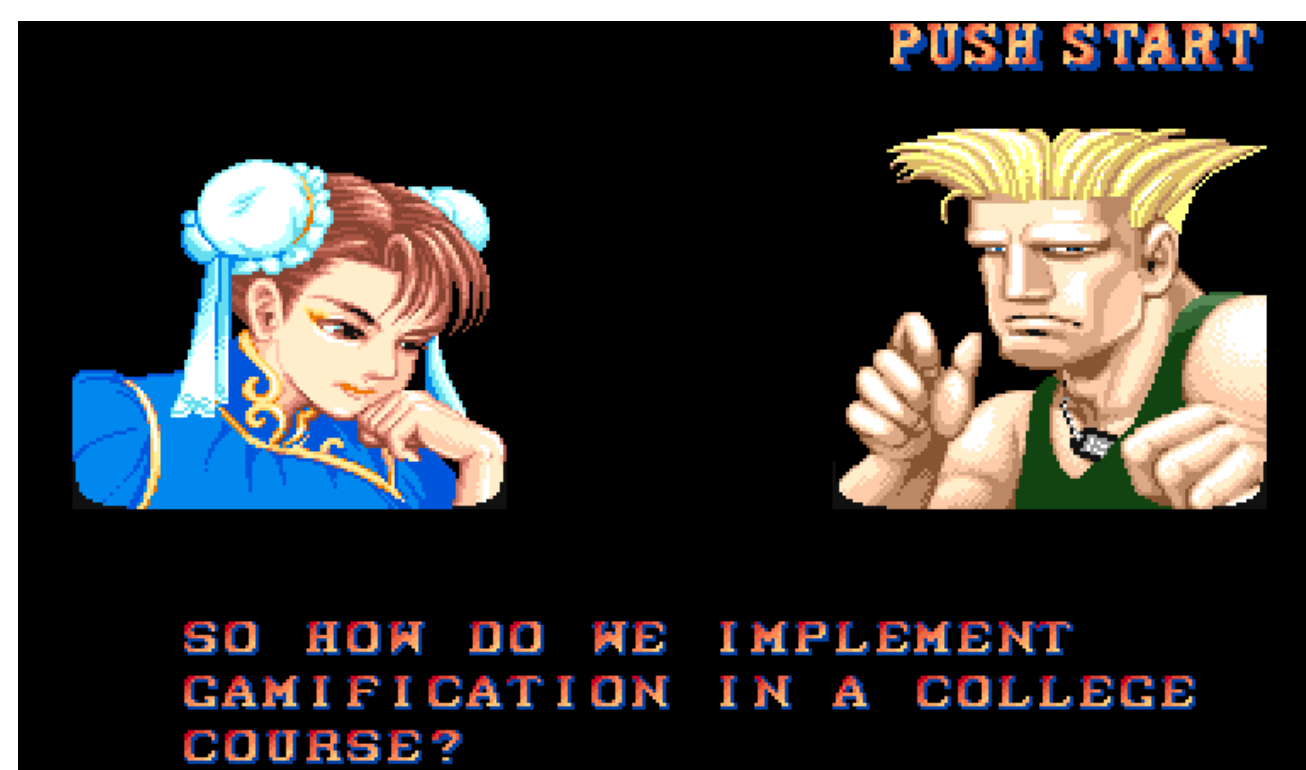
This project was conducted in COMM/INFO SCI 430: "Information, Media, and Society", an upper-level capstone course focused on critical analysis of contemporary issues in information and media systems.

For the Fall 2018 semester of the course, I developed several short exercises based on argument construction and analysis, factual retention, and other activities designed to further engage students with the assigned material. Completion of these exercises yielded **"XP"** that earned perks like extra credit, exam answers, etc. once certain "levels" were attained. This was done as an optional activity alongside required coursework (a paper, exams, in-class debates).

At the start of the semester, students were given the choice to complete a "pre-test" survey evaluating their reading habits in other classes. I presented another optional "post-test" survey toward the end of the semester. These were **anonymous, optional** surveys conducted via Qualtrics and based on the models of Baier et al. (2011) and Berry et al. (2011). The surveys asked about study habits, reading perceptions, likelihood of class success, student perception of gamification, and other questions. The pre-test survey had 10 respondents; the post-test had 5.

Questions and Results

RQ1: *Did exam scores improve once gamification was introduced?*

Semester	Exam Grades	Midterm Average	Final Average	Total Average
Fall 2017	22	73.6%**	78.7%**	76.15%
Spring 2018	26	79.8%**	81.4%	80.6%
Fall 2018*	17	85.4%	81.5%	83.45%

*First gamified semester, ** Pre-curve

The overall average exam score for the first gamified semester went up after accounting for a curve in the first two semesters, suggesting at least **some correlation** between the availability of gamified exercises and improvements in exam scores – even if moderate.

RQ2: *How did student reading habits change (if at all) prior to and after gamified exercises?*

Generally speaking, **students did not change their attitudes or study habits much** at the start or end of the class. The decision of when to read texts or assigned materials did not vary much, for example:

When do you read texts or assigned materials? (1=Never, 2=Sometimes, 3=Half of the Time, 4=Most of the Time, 5=Always/Nearly Always)

Survey Timeframe	Before Class	After Material Covered in Class	When Studying for Exam	Generally Do Not Complete
Pre-Class*	3.30	2.67	4.22	1.89
Post-Class**	2.20	2.20	3.80	2.40

*Mean scores, n=10 (Pre-Class), **n=5 (Post-Class)

Nor did the study habits students used:

When Studying, How Often Do You Do the Following? (1=Never, 2=Sometimes, 3=Half of the Time, 4=Most of the Time, 5=Always/Nearly Always)

Survey Timeframe	Use Study Guide Instead of Text	Take Notes on Main Ideas	Underline or Highlight Key Passages	Study Charts/Diagrams/etc.	Test Self on Key Info from Assigned Readings	Read and Re-Read Text to Memorize
Pre-Class*	3.80	4.30	3.11	2.60	2.50	2.50
Post-Class**	3.80	4.0	2.0	2.20	2.20	1.80

Students reported less time spent on readings for the IMS class (bottom) than their other classes (top), suggesting further a lack of positive change in reading habits.

Questions and Results

(Continued)

RQ3: *Do students perceive gamified exercises as encouraging to their reading habits?*

Student responses indicated a **generally positive** reaction to the gamified exercises, with some indicating that the exercises were useful and encouraged them to read.

The Following Statements Pertain to the Gamified Activities in this Course. Please Signify the Degree to Which You Agree with the Below Statements (1=Strongly Disagree, 2=Somewhat Agree, 3=Neither Agree nor Disagree, 4=Somewhat Agree, 5=Strongly Agree)*

Question	Response Mean
The gamified exercises encouraged me to read.	3.60
I read more as a result of the gamified exercises.	3.40
I enjoyed the gamified exercises.	4.60
The rewards for the exercises were valuable.	4.00
The gamified exercises helped me to comprehend the reading.	3.60

*n=5

However, qualitative data indicated variation in student reaction to the exercises, serving to explain some of the standard deviation in the scores. For example:

> "Often it came down to either doing the readings for class or not doing the readings in favor of the exercises I felt would take time away from my other homework."

> "I was only able to do a few of the gamified exercises but the ones that I did made it easier to comprehend the material and made me think deeper into the articles I read."

Discussion

The current data presents key takeaways for gamification projects:

1) All-or-nothing: Gamification literature (Sheldon, 2012) suggests course design where gamification is the **core** of curricular activity. **Optional** implementation like that of the present project runs the risk of adding additional student workload. As one student put it:

> "Don't make the quests for the readings so work heavy. [. . .] If they just make you find the main points of the articles and take 5-10 minutes I would've read the articles and done them."

Hence, based on initial findings the "optional gamification" model may need tweaking.

2) Gamification alone cannot change reading habits or guarantee success: While there is evidence in the student responses that gamification exercises encouraged them to read, other responses indicated that students were motivated to read by more traditional instructor interventions – asking questions in class, identifying important concepts, etc.

3) There is potential in gamification, if you can keep up with it: Faculty wishing to offer gamified exercises either as part of their curriculum or as the backbone of their course must be able to create a constant supply of relevant activities with different learning objectives.

Limitations & Future Research

The most significant limitation of the present data set is its size. While I am currently collecting data from the Spring 2019 semester, it is not likely the final data set will be particularly large. Moreover, the inconsistent size of class enrollment may potentially skew the data. Given that the surveys were optional and did not have rewards associated with them, students who were already highly engaged may have self-selected to participate. The anonymity of the surveys may have limited more direct comparison on an individual basis, as well. Future research should be more longitudinal in nature and may benefit from other class settings.

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