



Gamification Strategies for Student Engagement and Motivation in Hybrid Learning Environments: A SoTL Research Brief

Mr. Mohit Kumar Bharti, Assistant Professor, Institute of Professional Excellence and Management, Ghaziabad, Uttar Pradesh, India.

Abstract

Post-Covid-19 higher education has offered mixed experiences through hybrid learning; likewise, instructors continue to find it challenging to retain engaged and motivated students, particularly for the online portion of hybrid courses. This research brief represents early findings from the classroom-based research project exploring the potential use of gamification strategies in hybrid education to address retention-related challenges associated with online learning. Using the Self-Determination Theory and Flow Theory as guides, the researchers conducted a quantitative pre-post survey investigation on the impact of gamification (using points, badges, and peer-competition style leaderboards) on student engagement and motivation; they found through collecting data from 220 students that using descriptive statistical techniques, correlational analysis, and multiple regression analyses along with paired comparison t-tests provided a method for analyzing changes in both engagement and motivation from the point of gamification introduction to the point of effect on July 31, 2024. The result of the study demonstrated statistically significant positive relationships between gamification and student engagement and motivation to perform academically, with gamification contributing a considerable amount of variance-related to student engagement outcomes. It was found that moderate pre/post gains were made in both student engagement and academic motivation to learn as a result of the study. Although the data does not support a cause-and-effect relationship between these three variables, it suggests that a thoughtfully created and implemented gamification strategy for students who are participating in hybrid learning may encourage increased involvement and interest by students. The researchers of the current study have contributed to the area of Canadian scholarship of teaching and learning by providing data-driven and practice-based information regarding how to use gamification as a means to facilitate student participation in blended postsecondary education.

Keywords: gamification, student engagement, hybrid learning, motivation, Scholarship of Teaching and Learning

Context and Teaching Problem

Since the end of the 2020 pandemic, hybrid/blended educational models have become physical/formalized in Canada (and elsewhere). Hybrid and blended models are providing increased opportunities for College/University Commuter Students, Flexible Workplace Learners, International Student Cohorts, Along with Supporting Flexible Academic Pathways to College/University. Even though they have been implemented and used successfully there still remain numerous issues for the Faculty who deliver the hybrid/blended model. Faculty are reporting issues that include decreased Student Engagement, Unequal Participation, and a Downward Trend in Student Motivation (especially in relation to Lower Achieving Students and/or Less Digitally Prepared Learners). Canadian-based research has identified problems regarding Student Engagement and Instructor Access in regard to the use of Hybrid Learning within postsecondary institutions. Similar Canadian-based studies have identified additional issues regarding so-called "Rush" Face-to-Face Classes, Decreased Interaction Between Instructors and Students, and Broken or Disconnected Learning from Online Activities regarding the overall Caged User Experience with academic life within a Hybrid Learning Environment. This creates an opportunity for the development of instructional strategies that promote student motivation and engagement between traditional/physical/instructional learning and the online component.

In this instance, the Author, as a teacher-researcher, recognized that participants were engaging less frequently in an online environment and sometimes not at all, and therefore may not be actively engaged with the material. To address this pedagogical issue, the Author incorporated gamification strategies (an instructional intervention) into the curriculum as a way for students to have a structured means of engagement as part of their instruction. The findings of the initial phase of the Scholarship of Teaching and Learning (SoTL) research presented in this paper provide valuable insights for instructors working in Canadian post-secondary hybrid learning environments.

Purpose

This study is based on the Scholarship of Teaching and Learning framework, and seeks to identify the pedagogical value of gamification, in enhancing student engagement and academic motivation in a hybrid learning context. Specifically, the study does not assume that gamification will be automatically successful, but instead seeks to demonstrate through systematic data collection and analysis, that there is a relationship between gamification, student engagement and motivation, and therefore, that gamification should be further researched.

Research Question:

What are the effects of incorporating gamification strategies into hybrid learning environments, on levels of student engagement and motivation, and what do the results mean for post-secondary educational practice?

Theoretical Framework

The level of student motivation in technology-enhanced learning environments is heavily impacted by the degree to which the instructional design supports the basic psychological needs of autonomy, competence, and relatedness (Deci & Ryan, 2000). This research is developed based on Self-Determination Theory (SDT) and Flow Theory, which have been utilized extensively in SoTL research to look at student motivation and student engagement in a technology-enhanced learning environment. According to Self-Determination Theory, when learners' basic psychological needs for autonomy, competence, and relatedness are supported in instructional environments, they are more likely to show sustained motivation. Gamification is one way to support these basic psychological needs by implementing an instructional design that gives learners choice, provides a visible way for learners to show their progress, and provides opportunities for social interaction.

In addition, using gamification may help facilitate optimal learning by balancing learner's skills and challenges and leading to sustained concentration and engagement with the learning task (Csikszentmihalyi, 1990). This view of gamification is supported by Flow Theory, which looks at how optimal learning occurs when task difficulty is appropriately matched to the learner's skill level. Given the challenge of hybrid learning environments, where immediate feedback and direct interaction with instructors may be absent, gamified activities can provide learners with tools to direct their focus, sustain their concentration, and persist until they complete the task.

There are different elements to student engagement that include cognitive, emotional and behavioural factors, which directly affect student learning and performance (Fredricks et al., 2004) and, hence, must be included in any definition of student engagement. However, because the literature in SoTL points out caution in adopting gamification, due to over-reliance on either extrinsic rewards or competition, it may result in a decrease in intrinsic motivation for certain groups of learners. Thus, this study will look at gamification as an additional teaching strategy that has merit and follows an empirical approach to evaluate its implementation.

The available literature has shown that elements associated with gamification, such as points, badges and progress tracking, are positively correlated with increased levels of student motivation and engagement, albeit this effect has been found to be modest (Dicheva et al., 2015; Sailer et al., 2017). Several recent empirical studies also demonstrate a positive association between gamified experiences and student engagement, but this is particularly true when learners perceive gaming elements as significant and that they have been integrated effectively into the design of the course (Allehaidan & Zainon, 2024).

While, on the one hand, the research in SoTL reports on the potential negative consequences of poorly implemented gamification—especially competitive leader boards—on intrinsic motivation and satisfaction with learning in the long term (Hanus & Fox, 2015).

Methodology

Research Design

As classroom-based scholarship of teaching and learning, the research used a pre- and post-test survey format to quantify how gamified online course module programs affect student decision and motivation in a hybrid learning environment. This was an exploratory study designed to determine if gamifying the online learning component of a hybrid course could provide a level of motivation for students to be more actively engaged with their course materials and instructors.

Participants and Learning Context

In total, 220 students enrolled in hybrid versions of on-campus courses at universities in several prominent cities across the United States participated in the study. Due to differences in the empirical data collection context (i.e., how and where), the researchers were not able to generalize population-level results. However, the underlying model closely mirrors the hybrid course structures used at many Canadian universities (through blended delivery schedules, using online course management systems, and mixed mode assessment). Therefore, the findings from this research can serve as a model for other Canadian universities developing hybrid courses or incorporating gamification elements into online courseware for student motivation and engagement.

Instructional Intervention

Gamification elements were inserted into an online component of hybrid courses over 8 weeks through the learning management system (LMS). The gamified components of the LMS included:

- Points assigned for timely completion of online learning activities
- Digital badges for reaching defined learning milestones
- Leaderboards for weekly participation and overall consistency rather than actual grades

The structure of the gamified intervention was intentionally structured as positive instructional and low stakes. The emphasis was on student progress and participation rather than competition with each other or comparisons based on performance.

Instruments

To measure academic motivation, we used the Academic Motivation Scale (AMS), which has been validated as an acceptable instrument for evaluating students' intrinsic and extrinsic motivational orientations in educational settings (Vallerand et al., 1992). To measure student engagement, we used the Gamification Engagement Scale (GES), which contains three subscales to measure behavioural, emotional, and cognitive levels of student engagement (Cronbach's $\alpha = .87$). Students' academic motivation was assessed with the AMS focused exclusively on the intrinsic and identified regulation levels of motivation (Cronbach's $\alpha = .85$). Both scales have been shown to provide reliable assessment of students engaged in blended and/or technology-enhanced learning environments.

Data Collection and Analysis

The collection and analysis of the data came from the results of two survey assessments, pre-and-post implementation of gamification activities. The data was loaded into Jamovi and analysed using descriptive statistics (e.g., means, medians, standard deviations) and Pearson's correlation coefficients

and multiple regression analyses to evaluate the relationships among the various factors as well as the pre-and-post implementation changes; paired-sample t-tests were also run on the data.

The researcher received approval for their research protocol from their institutional ethical board. Informed consent was received from all participants, and their data was de-identified in accordance with the institution's de-identification policy.

Findings

Descriptive analysis revealed that students were moderately to highly exposed to gamification elements following the intervention. Pearson correlation analysis revealed a statistically significant positive correlation between student engagement and academic motivation, as well as a statistically significant positive correlation between gamification and academic motivation ($r = .47, p < .01$). Student engagement and academic motivation were highly correlated ($r = .61, p < .01$); thus, this means that students who reported higher levels of engagement tended to exhibit higher levels of motivation.

Multiple regression analysis revealed that gamification accounted for approximately 28% of the variance in students' engagement after controlling for students' attendance and prior academic performance ($R^2 = .28, p < .001$). Paired-sample t-tests revealed statistically significant pre-post gains in both engagement ($d = .56$) and motivation ($d = .49$), which represented moderate effect sizes.

Although these findings do not indicate a causal relationship, they do indicate that structured gamification strategies can help to improve the overall learning experience of students in hybrid learning environments.

Discussion and Pedagogical Implications

From a Scholarship of Teaching and Learning (SoTL) view, the initial findings suggest that gamification may effectively respond to the challenge of low levels of student engagement, reported by many instructors in hybrid learning environments. When used as gamification elements, instructor and student interactions were organized and clarified, with improved access to learning expectations and demonstrating the possibility of providing timely feedback on student work – all factors that contribute to student learning motivation in a blended learning context.

In light of this, there are numerous recommendations for Canadian Post-Secondary Institution instructors to consider in their classroom:

- The use of gamification strategies has already been incorporated into the existing framework of learning management systems and requires no significant additional financial investment from an institution.
- Low-stakes, positive-progress-type motivational rewards can be more inclusive of a wider variety of student types than traditional ranking systems.
- The use of clear orientation, scaffolding, and providing equal opportunities for equitable access to learning resources can support students with lower levels of digital confidence.

Furthermore, this study indicates that instructors must be prepared to continually assess, evaluate, and modify the use of gamification strategies, and that, due to the varying responses from different students, the use of gamification strategies is not a universal solution and should not be seen as a static solution.

Limitations and Future SoTL Directions

The limitations of this SoTL study are detailed below and are largely due to being in the early stages of this line of inquiry. The use of survey data (i.e., self-reported) creates a significant potential for bias in the responses submitted, and the lack of a control group prevents causal inferences from being made. Additionally, the secondary context of the study limits the applicability of findings beyond the context of post-secondary education. Therefore, further SoTL studies in the context of higher education in Canada may benefit from:

- Replicating the intervention across several higher education institutions.
- Collecting qualitative data such as learning artefacts, reflections from students, etc.
- Investigating longer-term effects on patterns of success, achievement and persistence.

SoTL Contribution

In order to enhance the quality of the Scholarship of Teaching and Learning (STL), this research brief is a referenceable source that provides documented and empirically-based evidence about the use of gamification in hybrid environments. It illustrates that incorporating systematic classroom inquiry into the instructional design process will help educators develop a deeper understanding of technology-enhanced methodologies by providing evidence to support their use rather than relying on assumptions.

References

1. Allehaidan, A. F., & Zainon, W. M. N. W. (2024). Gamification and student engagement in higher education. *Amazonia Investiga*, 13(79), 57–70.
<https://doi.org/10.34069/AI/2024.79.07.5>
2. Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. Harper & Row.
3. Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268.
https://doi.org/10.1207/S15327965PLI1104_01
4. Dicheva, D., Dichev, C., Agre, G., & Angelova, G. (2015). Gamification in education: A systematic mapping study. *Educational Technology & Society*, 18(3), 75–88.
5. Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109.
<https://doi.org/10.3102/00346543074001059>
6. Hanus, M. D., & Fox, J. (2015). Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance. *Computers & Education*, 80, 152–161.
<https://doi.org/10.1016/j.compedu.2014.08.019>
7. Sailer, M., Hense, J. U., Mayr, S. K., & Mandl, H. (2017). How gamification motivates: An experimental study on the effects of specific game design elements on psychological need satisfaction. *Computers in Human Behavior*, 69, 371–380.
<https://doi.org/10.1016/j.chb.2016.12.033>
8. Vallerand, R. J., Pelletier, L. G., Blais, M. R., Brière, N. M., Senécal, C., & Vallières, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in

education. *Educational and Psychological Measurement*, 52(4), 1003–1017.

<https://doi.org/10.1177/0013164492052004025>

9. Waldman, J., & Smith, C. E. (2013). *Hybrid learning in a Canadian college environment*. Higher Education Quality Council of Ontario.

