

Student Engagement and Motivation in a Gamified College Physics Course

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Enhance motivation and engagement of low-performing college students taking up physics courses



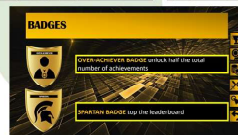
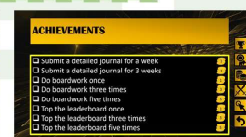
Incorporating game elements in the course can improve students' motivation and engagement

Gamify the Electromagnetics course taken up by engineering students from a state university in Manila for the second time for the duration of the entire summer term



Gather data on students' motivation and engagement using self-report instruments and through journals and interview

To gamify the Electromagnetics course, experience points (XP), quests, challenges and online events (optional), leaderboard, achievements and badges, and coins and power-ups were incorporated in the course.



The difficulties encountered during the implementation were:

- the lack of immediate feedback
- unequal opportunity to participate in the online events



Quantitative Data: IMI for motivation and SEM for engagement
Qualitative Data: journal and interview

PLAN

DO

ACT

STUDY

GAMIFICATION

Gamification is the process of incorporating game elements in non-game contexts.

In the next cycle:



Use a learning management system (LMS) to better facilitate feedback mechanism

Ensure that students have equal access to the internet



Implement the intervention to high-performing students



Explore the use of other game elements in the gamified design



To compare motivation and engagement of students before and after gamified instruction, t-test for independent samples was used. Effect sizes were also calculated.

Journal and interview transcripts were coded and analyzed to identify themes.



There was a significant difference in the motivation and engagement of students before and after the gamified instruction.



Themes

Gamification promotes active class participation and positive behavior in class.

Gamification fosters positive relationships between peers and the instructor and elicits both positive and negative emotions towards the subject, class and school.

Gamification encourages increased effort and work, mastery and use of cognitive strategies in studying.