Advances in Gamification in Education

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Reza Hajari

- Reza completed his Bachelor’s degree in Software Engineering in 2017. He started his Master’s degree in Computer Science (CO-OP and Thesis) in University of Ottawa in 2018. He worked at BlackBerry QNX from May 2019 to December 2019 as a Core OS Software Developer for his CO-OP program. From 2014 to 2016, while studying, he also worked on video game development using Unity3D and Unreal Engine 4 with C# and C++ programming languages. He is currently finishing his master’s thesis with the title of “Application Programming Interface for Gamification in Education”.

Introduction

- Online education and COVID-19 pandemic.
- Gamification as a tool to improve class engagement.
Usage of Gamification

• Gamification has been around for a long time.
• Rewards, ranks, achievements and labels.
• Gamification market share in 2020 is US$ 9.1 billion and is set to grow up to US$ 30.7 billion by 2025.
Design of Gamification

• Strictly reward based gamification problems:
  – System should always give more and new rewards.
  – The users might get tired and be less motivated toward achieving more rewards.

• A video game design view could help gamification designers.

• The idea of adaptive gamification.
Adaptive Approach in Gamification in Education

- Static adaptation in gamification in education
  - User categorization into learner profiles.
  - Changing game elements according to the learner profile.

- Dynamic adaptation in gamification in education
  - User categorization into learner profiles.
  - Adapts to user’s behavior and activities.
  - Customizing gamification game element pool.
  - Changing the functionality of a game element.
  - Can be done beside the static adaptation.
Adaptive Approach in Gamification in Education

- Results of different studies that employed adaptive gamification in education:

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<th>Type</th>
<th>Profile</th>
<th>Activity</th>
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1. Paper names are corresponding the references in the paper.
Adaptive Gamification Model in E-Learning

- Adaptive Gamification model for E-learning adapted from [1]

Effectiveness of Gamification

• Gamification in Higher Education Institutions.
• Massively Multiplayer Online (MMO) game as a gamification tool.
• 24 Business students participated.
• Feedback was mostly positive.
• Some students were not sure about the system assessment.
• A comprehensive explanation of how the system works is needed.
Narrative for Gamification in Education

- Gamification systems and video games are comparable.
- Following features are needed for a gamification narrative:
  - Actor: learner or student.
  - Choice: options for progression.
  - Interactivity: system should response to users’ actions.
  - A sequence of events.
  - Space, time and date of interactions.
Conclusion

• Gamification in education has gained more attention and has improved over the years.

• Problems that still remain unresolved:
  – Not enough real life evaluations of the systems.
  – Size of the test audience.
  – Duration of the tests.
  – Lack of proper assessment.
  – Inability to scale previous results for different cases.
Future Work

• Comparing the gathered data from different literature reviews in adaptive gamification in education.
• Correlating previous results to different and new contexts.
• Analysing all the other aspects of gamification that have not been discussed in this paper.
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Thank you!

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