Using Online Learning and Gamification to Enhance Reasoning Skills
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Objectives

Research Questions
1. Do participants who read and watch the videos related to reasoning types, learn to identify and understand reasoning types?
2. Can students determine what type of reasoning they are using while playing a version of the game Clue®?

Objectives:
- Create online content focused on enhancing reasoning skills
- Test the effectiveness of the online modules
- Evaluate the use of a Clue® game to reflect reasoning processes in real-life

Methods

OLI
- All modules were created in the Online Learning Initiative environment.
- Module creation began by outlining content including types of reasoning and modes of reasoning. The content included videos, definitions and activities.
- Examples using real-life cases were embedded so that the students could understand the importance of the content.
- Evaluated students results from the Reasoning Types and Modes of Reasoning modules using analysis tools in OLI.
- Due to difficulty with the OLI platform, all content was moved to PowerPoint and Google Forms for assessment.

Results

OLI
- Overall students’ scores improved between the pre-test and post-test for each module.
- Students were able to answer questions correctly following guided practice activities after learning content.

Clue®
- All players had an equal chance of winning the game. The modules did not influence the ability to play the game.
- Students who completed the modules were more precise when labeling their thoughts.
- Students did better differentiating between deductive and inductive, but still struggled with abductive reasoning.

Discussion/Conclusion

Online Modules
- Students completed the Types of Reasoning and Modes of Reasoning modules:
  - All students could define and identify the three types of reasoning.
  - Most students could correctly identify the modes of reasoning and their respective type.
  - Overall, the post-test scores exceeded those of the pre-tests, indicating the gain of knowledge through the course.
  - Before completing the modules, most students, did not know about abductive reasoning.
  - Students expressed the need for more videos on the modes of reasoning.
  - Since students completed the modules on PowerPoint there is a possibility they used the PowerPoint to complete the assessments. This calls for another test of the modules towards completion of the flipped-classroom curriculum.

Clue®
- Some students did not label all of their statements after gameplay. This indicates the need for better directions on the worksheet.
- Students who completed the online modules were better at labeling their thoughts during gameplay.

Future Directions

- Further research on this topic will include utilizing gamification and a flipped-classroom model to enhance ethical reasoning skills.
- This research will be used to develop a model for ethical reasoning education in forensic science.

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References