



Implementing Game-Based Learning Within the Classroom Can Help Students Apply Knowledge

What is this Research About?

Game-based learning is a form of active learning that involves engaging students in gameplay related to defined learning outcomes. Research indicates that game-based learning improves students' learning experience and helps increase their knowledge. The researcher surveyed students taking an introductory neuroscience course to gather their feedback after playing a neurotransmission board game called *Signal* (see Figure 1).

What did the Researchers Do?

To test the effects of game-based learning on students' perceived knowledge and understanding of neurotransmission, the researcher developed an online, collaborative board game called *Signal* for a 2nd year neuroscience course. Students worked in small groups with the goal of creating a working synapse by placing illustrated cards of proteins and molecules on specific areas on the pre- and post-synaptic neurons shown on the board game. The game was played through an online gaming platform. After playing the game, students were invited to complete a short online survey about their experiences playing the board game.

What did the Researchers Find?

Thirty-six students completed the online survey about the neurotransmission board game. The researcher found that over 70% of the students in the courses agreed or strongly agreed that the neuroscience board game assisted them in evaluating, applying, and increasing their knowledge of various topics related to neurotransmission. Most students agreed or strongly agreed that the game helped them discuss scientific concepts with their peers and helped them think critically about neuron signaling.

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A synopsis of a scholarship of teaching and learning journal article

➔ How to Implement this Research in Your Classroom

Game-based learning is known to encourage cognitive engagement, increase motivation, create positive affective changes, and promote social engagement without taking away from learning goals. In this study, neuroscience students who played an online board game to learn about neurotransmission reported that game-based learning increased their knowledge and boosted their critical thinking skills.

Tips for successful implementation of game-based learning:

- Implement games before lecture(s) on a specific topic or as way to increase student engagement
- Allow students to participate in a team to help them learn from each other and foster communication among classmates,
- Choose or create a game that's simple and content-specific to ensure that it's most impactful for students.

➔ Citation

Kaur, A. (2021). *Signal: A Neurotransmission board game. The Journal of Undergraduate Neuroscience Education*, 20 (1), <https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/35540950/>

➔ Keywords

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