Madison Engineering RLC Bio-Inspired Design Project

Understanding different learning methods to create an engaging board game for elementary school students.

Goal

To create a game for third graders, based on bio-inspired design, that would help them reinforce different subjects they would learn in school.

Process

In the beginning of our game creation we got to interview students and teachers within the JMU College of Education. We got to learn about what challenges children in the third grade might face. We also learned what interests these kids the most.

From there, Dr. Nagel instructed us briefly on the topic of bio-inspired design. This allowed us to get started on our project.

We began designing our games with the use of abstractions related to the animal kingdom. Research led members to discover how animals from different species learn from their parents and how we might include these various learning styles, such as observation, repetition, and positive reinforcement.

We then developed concept and knowledge space diagrams (pictured) so that we could connect how the different animals we researched learned into how we might reinforce students past and current learning in school.

After these steps, the prototyping process commenced. Each group developed possible games based on characteristics on other popular games such as Life, Risk, Trivial Pursuit, and Sorry.

This then led us to ask, what game elements from each of the main games should we include in our prototype? For this, we developed final game iterations that determined what elements would be included.

Physical prototyping began with game question creation, game pieces, and the game board.

After testing games with fellow students, education majors, and mentors, we established what flaws we needed to fix for the final prototype.

As a result, each team created their own games with individual game pieces, instructions, and boards.

Results

As previously stated, each team created their own games. In the upper right photograph, the team Tasseled Wobbegongs developed the game named A Path Through the Woods. In the lower right, team Sparklemuffins developed the game named Colorado Clyde and the Golden Calculator.

We then had the opportunity to present our final products to our peers, mentors, professors, and even children who were in our targeted age group.

Bio- Inspired Game Design for Madison Engineering Residence Learning Community
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