Thesis Project Portfolio

The Design And Analysis Of The Educational Multiplayer Outlet (EMO)

The Importance Of Actor Value Translation For Success In Game Based Learning

An Undergraduate Thesis

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Sociotechnical Synthesis

The Educational Multiplayer Outlet (EMO) is a game based learning device designed to help elementary school students improve their literacy and social skills. Our team's technical project uses a game to immerse students within a story. The story follows two main characters and an antagonist, as the journey progresses the main characters face different challenges in each new level. When students complete a level they are questioned on current events in the story, these questions are designed after past SOL questions which is the standardized testing metric for Virginia public schools. Our team focused specifically on 3rd grade elementary students so that the story material, questions, and experience can be best suited for the user and have a higher success rate.

Our team's technical project required a number of skills within the disciplines of computer and electrical engineering. The game required a proficiency in software skills and the hardware required electrical knowledge. Furthermore, our design served to meet the cross sectional need of stakeholders. Our team utilized hardware and software practices that ensure an easy way to update our game and provide teachers with material that best tackle weak points in the classroom. The success of our model was tested at our showcase and used by undergraduate students, some elementary students, and faculty. Our team determined our project to be a success based on the feedback we received and the enjoyment from the elementary students.

While our team determined our small scale project to be a success, for products at a larger scale frameworks are needed to truly analyze the success of a technology. Thus I formed and wrote an STS research paper to identify the importance of actor translation in game based learning. My research paper follows two main cases: the LeapPad by LeapFrog Enterprises and

Minecraft Education Edition by Mojang now owned by Microsoft. With the two cases my research paper uses Actor-Network Theory (ANT) to identify actors, network builders, and ‘punctualized’ actors. By identifying these key actors I use the principles of ‘translation’ to showcase success and failures within the company's products. In doing so I illustrate the uprise or downfall of the company product. In my research I provide evidence that displays the magnitude of failure or success of the technology but I argue in my paper that the failure lies more in the lack of translation and that success derives from a homogeneous network.

Furthermore, I provided an analysis on the modern day market to showcase the upcoming technologies, market demand, and direction game based learning is taking. At the end of my research paper are my conclusions which state my findings as well as reiterations of the importance of translation in game based learning.

I believe that my STS research is important for the development and success of EMO and other products like it. In my paper I framed my research question to improve the educational learning outcomes, support educators and developers, and help engagement in game based learning. The technical project provides real insight into design and applications from the perspective of engineers. Furthermore, with the usage of ANT to analyze other game based learning products, it provides an opportunity for reflection and improvement.

In my research paper I found that there are no real guidelines for developers on game based learning, therefore, my STS paper contributes greatly to the need for guidance and research. In conclusion, I believe that my research work adequately argues the importance and need for actor translation for game based learning tools and that this analysis is needed for new technologies entering the growing market.