

Harrison Middle School – IKS Highlander

Executive Summary

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Background

A unique selling point of Harrison Middle School is the IKS Highlander. The IKS Highlander is a full immersion simulator that uses fiction, storytelling, and STEM topics to simulate missions for the students. These missions are interactive and include multiple roles and positions (such as captain, doctor, engineer, etc.) that students will need to take within the simulation. Working together in a team, students must combine their different responsibilities to successfully pass the mission. An important aspect of the simulator is the feasibility of failure - staff at the school believe that the possibility and experience of failure is an important learning process for students. Through the IKS Highlander, students can develop both soft and hard skills.

Project Description

Project Opportunity

The organization is facing a two-part problem at the moment. First, it needs an information system to collect survey information about the student experience with the simulation. Second, once this information is collected and aggregated, Harrison Middle School has no way of knowing if the missions are helping the students learn important 21st century skills of communication, teamwork, and other competencies that faculty, the school district, and future employers need them to know. The idea is that we can generate detailed reports that can provide feedback for how the simulations and Mission Ops are run, and as a result, improve the experience for future students. Second, by demonstrating the importance of experiential learning through collected survey data, Harrison Middle School can increase the funding provided to the IKS Highlander and run more missions and develop more mission content.

Project Vision

We will be developing a two-part information system to collect data about student experience and learning for Harrison Middle School students and the IKS Highlander mission director. This information system will consist of collecting student metrics about both soft and hard skills and generating reports for funding petitions and simulation/Mission Ops improvements. This is the first solution to be developed for the school, and there are currently no alternative technological

solutions. Instead, feedback is sparingly collected in the form of written essays completed at the end of each simulation.

Project Outcomes

To help the teachers at Harrison Middle School and the district understand what the students are learning through the use of the IKS Highlander missions, we helped shape surveys for the students to fill out, a web application to display the data that comes from those surveys, and a published page on the IKS Highlander Weebly website that shows the best visualizations and statistics to the public. The display of the data on the web application helps teachers and the district see the many skills the students are exercising in the simulator missions and the Weebly page shows potential donors that the missions of the IKS Highlander teach students career skills as well as soft skills. Great care was given into the development of the questions so that valuable conclusions could be made from the students' responses. Those responses would show if the students are learning the skills the teachers and district want them to learn.

Project Deliverables

There are two main project deliverables. The first deliverable is a web application that will have all of the raw data collected from student surveys, show sentiment analysis, word frequencies, word clouds, and graphical visualizations that show the benefit of IKS Highlander on the students. The second deliverable is a published page on the IKS Highlander Weebly website that shows the best visualizations and statistics from the web application.

Recommendations

We recommend that the client continue to gather data using the survey questions that were developed, so that different patterns can be seen to help them improve and increase the learning done by the students in the IKS Highlander. Changing questions may lead to incorrect conclusions coming from the data. We designed this project so that the managers of the IKS Highlander at Harrison Middle School would be able to work with the data, and the school's IT team would be able to work on the web application with the help of the documentation we will provide.

Student Development Team

Renhao Hu served as developer and client liaison. He is a hybrid undergraduate and graduate studying Information Systems with a minor in Computer Science and pursuing his Master's in Information Systems Management. He will be at Intuit this summer.

Isha Laad served as project manager. She is a third-year student majoring in Information Systems with a minor in Business Administration. She will be interning at Microsoft this summer and is looking toward a career in project management.

Sydney Bauer served as designer. She is a third-year student majoring in Information Systems with a minor and concentration in Animation and Special Effects.

Fletcher Marsh served as developer along with Renhao. He is also a third-year student majoring in Information Systems and Computer Science. He will be interning at Uber Advanced Technologies Group this summer working on the self-driving car.