GOODMAN RESEARCH GROUP, INC.
Program Evaluation • Consultation • Market Research

EarthScope Panorama
Alpha Test Evaluation

Executive Summary

PREPARED BY
Marianne E. McPherson, M.S., M.A.
Laura Houseman, B.A.
Irene F. Goodman, Ed.D.

SUBMITTED TO
Harvard-Smithsonian Center for Astrophysics,
Smithsonian Astrophysical Observatory

March 2008

EXECUTIVE SUMMARY

The Harvard-Smithsonian Center for Astrophysics, Smithsonian Astrophysical Observatory (SAO) received a grant from the National Science Foundation to develop a pilot program, *EarthScope Panorama*, in 2007-2008, as part of EarthScope's Education and Outreach (E & O) program. SAO is continuing to develop an informal educational program for middle school youth, in the form of a web-based interactive Earth science game. SAO's goals for the game are that students will learn about precursors to volcanic events, seismometers and GPS as tools to measure volcano deformation, and warning decisions to help save people from getting injured or killed by a volcano.

Goodman Research Group, Inc. (GRG) was contracted by SAO to conduct formative evaluation, including front-end evaluation and Alpha testing, of *EarthScope Panorama* during the project's development year. GRG submitted a report on front-end evaluation in 2007; the current report concerns results from the Alpha test. The broad goal of GRG's evaluation has been to assess students' learning from the game as well as to gather students' general and specific suggestions for improving the game in the next phases of development. The audience was middle-school students (the target population for the final product), including some students who had participated in front-end testing and seen the prototype game idea, and some students who were new to the project.

The full evaluation report presents results that focus on the content, format, and playability of the game at its current stage of development.

METHODS

To test the game in its current phase of development, GRG conducted two focus groups with a total of 18 middle-school students. One group had 14 students (5th and 6th graders) who had not participated in front-end evaluation, and the other had four students (7th and 8th graders) who previously were participants in front-end testing. SAO had asked GRG to include students from underprivileged communities; 14 of the participants reside in lower SES communities in and around Boston (e.g., East Boston, Revere). The focus group protocol and brief surveys included demographic information and questions regarding students' knowledge of volcanoes and monitoring of volcanoes; specific questions from the game developers about various aspects of the game, e.g., graphics, music, game difficulty, and game elements such as videos. Students also played through the game. They were informed that the game developers knew the Alpha test version of the game was not yet complete. Students were asked to provide their suggestions with an eye towards how a fully-developed version of the game might look and feel.

KEY FINDINGS

Results focused on three major areas: what students learned during game play, what they liked and disliked about the game, and specific suggestions for further game development.

What Students Learned:
- Many students learned (i.e., did not know at the start of the groups) that scientists use GPS and seismometer instruments to monitor volcanoes.
- By the end of the focus groups and two opportunities to play the game, many students understood the general sequence of watch, warn, and evacuate that is necessary to win the game.
- Students understood the importance of incorporating multiple sources of data during game play; however, it was less clear whether they used all of those sources to make decisions about evacuation orders and warnings.

What Students Liked and Disliked:
- Students responded positively to the game's overall idea and were more frustrated by specific aspects of game play.
- Students were enthusiastic about playing the game when it is fully developed.

Students provided **specific suggestions for further game development** in the following areas: instructions, graphic, videos, score-keeping, game play mechanics, customizing the mayor's appearance, mayor's other duties, music, and naming the volcano.

KEY RECOMMENDATIONS

Considering the results of the Alpha test evaluation, GRG offered specific recommendations for to SAO to consider during further project development. Recommendations included retaining the game's underlying concepts while making changes to improve game play mechanics and players' understanding of the game sequence. Additional recommendations build off of students' specific suggestions for further game development (e.g., regarding videos, instructions, and score-keeping). The complete set of recommendations is described in the full report.