Feast or Famine: Students Learn about the Importance of Seed Identification Related to Climate Adaption for Sub-Saharan Africa

Lori Unruh Snyder (Purdue University), Sarah Cathey (University of Florida), Tracy Irani (University of Florida), and Kenneth Quesenberry (University of Florida)

Individuals with non-agricultural backgrounds compose the majority of students interested in biology today. Most of these students fail to understand that a relatively small group of plant species compose the primary plants that supply almost all food for the world’s population and what is needed in order to achieve a sustainable farming ecosystem. One approach to create interest in subject content is through games. Games have been examined in university classrooms since the 1950s. Moreover, game-based education has been utilized as an instructional tool across disciplines ranging from international relations to biology. Not only do game-based exercises offer the potential for student to learn more; they serve to reinforce the student understanding of new content and to aid student retention. The cognitive benefits for the student include fostering higher level of interest in content and creating a way to learn material with an approach that promotes critical thinking. The purpose of this study was to develop and evaluate an internet-based learning system to complement traditional crop science classes to promote awareness of global food adaption.

CROPVIEW (http://www.purdue.edu/cropview/) consists of four learning modules followed by a game module. The four learning modules are “Introductory Module” - overview of major groups of plants, plant nutrition, photosynthesis, and biome adaptation, “Nutrition Module” - how plants provide energy and protein for human nutritional needs, “Biome Module” - characteristics that delineate biomes and where they occur in the world; and “Seed Plant Module” - descriptive information and interactive images of 20 of the world’s most important crops. The “Feast or Famine” game module evaluates identification and adaptation of the primary plants that feed our world. The game consists of scenarios with increasing difficulty where people groups are faced with natural disasters leading to possible food deficits. The game player is challenged to accept the mission to supply seeds that are adapted to the disaster biome and that will satisfy human nutritional needs. The game has three levels and reported herein are the results of the third level (most difficult level) that reflects student learning of seed and climate adaption for Sub-Saharan Africa within Ethiopia. Three universities were selected to test the game. The total student population (n=150) were surveyed with 129 respondents. The preliminary qualitative data indicated that students “enjoyed the challenge of applied learning of seed crop adaption” and “felt that it was a useful way to learn about where different plants grow best, while learning to help people not go hungry.” As part of the game play, the students could consult experts for advice, and the most selected expert was the African farmer, followed by the climatologist. Seventy-three students selected sorghum as the top adapted crop followed by millet. Depending on the students’ prior learning and awareness of famine issues and nutritional demands this game either culminated the need to learn more about the issues or created a desire to learn more about real-world food issues.