QUEST ID Flash Modules

Christopher Funada

Physics and Astronomy Department

University of Hawaii at Hilo

Abstract

The development of an implementation of a new series of species identification flash modules to aid students in their studies for the QUEST species identification exam has come to fruition. The modules appear to have garnered student support with the visuals provided though the Adobe Flash platform. Unanimous student feedback has shown that these new modules are superior to the older series. Most notable improvements from the older modules are the new photos, functionality, and etymology of the scientific names. Although the project is now completed, additional modules could be developed to aid in student learning. A module that shows the minute differences between similar species and an exam module that combines all three quiz modules.

Introduction

The QUEST or Quantitative Underwater Ecological Surveying Techniques field course offered thought the University of Hawaii at Hilo. This program offers the unique opportunity for students who want to become employed by NOAA or DAR. QUEST is a comprehensive course that teaches students aquatic surveying techniques used by NOAA and DAR. However to enter this program you must pass a comprehensive species identification exam with an 80% or better. This exam is the first hurdle for the class and it may denture otherwise passionate students to enter the program. To ease the rigors of the ID exam a superior study tool has been developed to help students learn the scientific names of the local flora and fauna, in the form of an online program.

Electronic assisted learning, or e-learning has become part of mainstream education in the past decade. Young students intuitively use new software and gain a mastery of the interface in a short time. Due to their growing popularity, classes and computer assisted lectures have become the norm in many parts of the country. Online classes provide students the opportunity to manage their time and education. E-learning has been shown to produce comparable results to in-class teaching (Worm 2013). However, the 2010 report published by the U.S. Department of Education found that online instruction produced better performance in students than conventional classroom settings. Moreover, e-learning utilized in the classrooms has been shown to be the most effective means of education (Jaschik 2009).

The utilization of e-learning to effectively teach people at their own pace is vitally important for those who want to study when time is a limiting factor. An online Flash program is now such a resource that students can access at anytime. This program has the ability to stimulate the student's memory though visual association. Adobe Flash is an excellent program for graphics and movie clips. Such a program already existed and it helped students; however the application has several problems which include inaccurate species identifications, missing species, and has several bugs in the existing code making the application temperamental. Hence the updated modules are online and available for student use. Additionally, three practice test modules have been created to insure that students will be prepared for the real exam.

Methods

Adobe Flash is a relatively simple program to code in, and it excels in graphics and animations. Flash has been incorporated in education to produce interactive programs for students. Pearson's MyLab and Mastering series of programs are all rendered using Adobe Flash. The variety and options allowed by Flash made it the prime candidate for this project. Since Flash is an intergraded plug-in for most internet browsers, the program can be used on all personal computers. It is also simple to embed the program into websites; the MOP website hosts the applications for any students to access [http://mare.hawaii.edu/QUESTID.html].

Each module needed to be functional and elegant in its interface. Hence, the modules were designed with colors, text, and buttons that reduce eye strain. Additional attention was given to color contrast, and proper font and size for best readability. All images boast higher resolution than their predecessor and will accurately portray the characteristics of each species. Since some students will have never seen these aquatic organisms, it is vitally important that each organism be represented as clear and distinguished as possible.
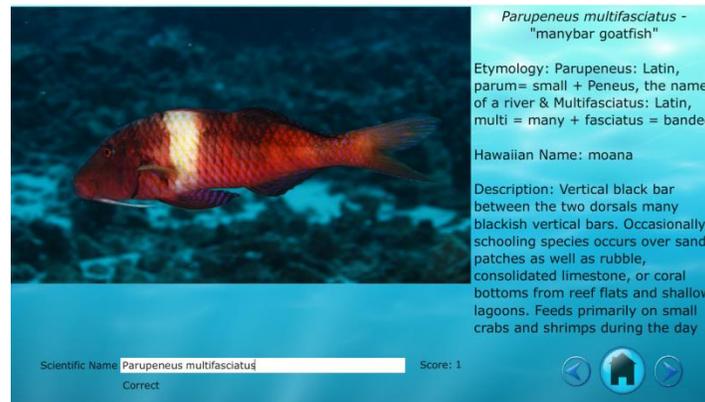
Figure 1. Species identification screen

Results

The true value and effects of the modules won't be felt until the next round of QUEST identification exams; it's clear from student feedback that the modules are something that the students are interested in. Only time will tell if the new modules are a superior or inferior to their predecessor. At this point in time, all reviews have been positive and have exceeded the bench marks laid out by the old modules. Ideally there will be a larger number of people that pass the identification exam and with a higher average score than in the previous years. The only way to really test how the modules compare is to do an experiment on the students that exposes them on only one set of modules (new or old) and then have them take the identification exam and see who scores higher. However this type of testing is very time consuming and not feasible any time in the near future; so we can only rely on student feedback.

The modules can be found at this link http://mare.hawaii.edu/QUESTID.html and are available in electronic copy on the UHH MOP computer and with Dr. Colbert. A manual in hard and electronic copy can be found in the MOP office. All photos and resources used for the modules can be found on the MOP office computer. If there are additional questions or problems please contact Christopher Funada by emailing Funada@hawaii.edu.

Discussion

These modules provided a unique challenge every step of the way. The path was riddled with mistakes, innovations, improvements and limitations. However with each challenge, there

was opportunity to improve over the existing work. By the end, it was clear there was just so much you can add to this project that could not be done in a single semester. The addition of video or a set of specialized study modules which compares similar species are some of the additional work that could be done to help students. Although all modules are competed, there will be changes in photos and information as feedback on the modules continues. The exam module was never finished due to hardware limitations; my attempted to make one would cause the program to crash.

Technology has a habit of quickly growing and progressing, while at the same time making entire software obsolete. Unfortunately this is the case for Flash; most companies are going to begin the transition to HTML 5. Flash will continue to work and be supported, however, support on mobile devices are limited. Ideally in several years, this could be someone else's MOP project. Keeping the modules relevant and up to date or creating fresh modules that suit the needs of the students will be necessary.

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References

Worm BS (2013) Learning from Simple Ebooks, Online Cases or Classroom Teaching When Acquiring Complex Knowledge. A Randomized Controlled Trial in Respiratory Physiology and Pulmonology. PLoS ONE 8(9): e73336. doi:10.1371/journal.pone.0073336

Jaschik, Scott. "The Evidence on Online Education @insidehighered." *The Evidence on Online Education*. Inside Highered, 29 June 2009. Web. 18 Feb. 2015. <https://www.insidehighered.com/news/2009/06/29/online>.

Means, Barbara, Yukie Toyama, Robert Murphy, Marianne Bakia, and Karla Jones. "Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies." *U.S. Department of Education*. U.S. Department of Education Office of Planning, Evaluation and Policy Development Policy and Program Studies Service, 1 Sept. 2010. Web. 18 Feb. 2015. <http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>.

Poynton, Charles. "Reducing Eyestrain from Video and Computer Monitors." *Charles Poynton*. Charles Poynton, 27 Sept. 1996. Web. 18 Feb. 2015. <http://www.poynton.com/PDFs/Reducing_eyestrain.pdf>.