

# **Teaching Marine Species Identification Using Web Based Learning Modules**

**A Project Concept Paper**

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The purpose of this instructional design project is to develop an online marine species identification instructional and testing module for university students who are required to pass an exam with a score greater than 80% for acceptance into the Quantitative Underwater Ecological Surveying Techniques (QUEST) field school. Students applying to this two week coral reef field school are required to have a strong knowledge of over two hundred marine species in scientific nomenclature and correctly spelled. This is required so as to be able to correctly identify and tabulate what is found during survey training dives. Correct identification is also very important to data quality during reef survey training as limited time does not allow for on site species training. Two problems exist, consistency in how the workshops are taught across the UH system, as well as not being able to provide training for our out of state students make this an important project to our program.

Current literature supports online training modules as a way of teaching online or web based marine species identification (Pfeiffer, 2011) as well as species identification and survey methodology via web based modules (Newman 2010). Both of these methods reviewed supported various group sizes equally well. Both being able to offer online training of marine species identification and being able to offer this for a range of group sizes is important to this instructional design project.

Additionally, module size, creating a community of learners as well as getting buy in by students is important. The creation of this project will include a number of short sub modules to support the busy schedules of students is supported by Pomales-Garcia (2006) paper. In addition, difficult sub modules could be repeated as a student finds it necessary.

Methodology for this project will incorporate a number of online training and assessment modules to include invertebrates, fish, and marine algae. Ten university students from UH-Hilo will be selected and broken into two groups of five each. The workshops are not offered as a credit course at this time, although QUEST is a credit course, and considered a spring board for

other opportunities. A series of power points files exist online (KMEC 2011) for students to work from, but offers no assessment of learning.

A pretest of species identification knowledge will be given to the ten students. Once graded, groups will be equally split into two groups with five traditional f2f students and five online students in each group. Division of volunteers will be based on gender, and similar ranked scores from the pretest.

Workshops will be held over a four week span for both f2f groups and online learners with weekly meetings offered in the computer room for observation and to answer questions during the online training. On completion of these workshops, both groups will be tested using the same species ID test and scores compared to determine effectiveness of this teaching module. Additionally a post survey will be provided to both groups to solicit comments on motivation, interest, and solicit suggestions from students. The current method of evaluation is to show a picture and the have student identify and correctly spell the species scientific name on a sheet of paper. This hopefully would be replaced with an online testing method using blackboard, Laulima, or a flash module to facilitate online training. In addition a blog space will be provided to solicit feedback and student interaction.

Data analysis will be conducted in three phases, pre-test data evaluation, during workshop training through observations and post-evaluation of the workshops. Data will be collected in both numeric (Likert type scale) and open comments. Simple statistics will be used to evaluate the data. Written student comments will be reviewed as well.

In conclusion, this module will be created using Adobe Flash and dreamweaver for site hosting (Coney, site concept 2011). Final assessment (assessment of learning of ID's) still needs to be developed, but most likely through Laulima. This project is valuable to the UH Marine Option Program for the retention of students entering the QUEST program as well as supporting off site students. Additionally, use of the these teaching modules can be used by other groups to

learn marine species identification.

References:

- Coney, (2010). Learning Marine Species ID Web site. Retrieved from <http://www.uhhmop.hawaii.edu/otec-645/index.html>
- Coney, (2011). Flash example web site. Retrieved from <http://www.uhhmop.hawaii.edu/OTEC-652/Flashcards/index.html>
- Coney, (2011), Site concept in production. Retrieved from [http://uhhmop.hawaii.edu/species\\_id\\_training/index.html](http://uhhmop.hawaii.edu/species_id_training/index.html)
- KMEC (2011). QUEST URL. Retrieved from <http://www.kmec.uhh.hawaii.edu/quest.htm>
- Newman, G., Crall, A., Laituri, M., Graham, J., Stohlgren, T., Moore, J. C., & ... Holfelder, K. A. (2010). Teaching citizen science skills online: implications for invasive species training programs. *Applied Environmental Education and Communication*, 9(4), 276-286. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/1533015X.2010.530896>
- Pfeiffer, V. I., Scheiter, K., Kuhl, T., & Gemballa, S. (2011). Learning how to identify species in a situated learning scenario: using dynamic-static visualizations to prepare students for their visit to the aquarium. *EURASIA Journal of Mathematics, Science & Technology Education*, 7(2), 135-147. Retrieved from [http://www.ejmste.com/v7n2/EURASIA\\_v7n2\\_Pfeiffer.pdf](http://www.ejmste.com/v7n2/EURASIA_v7n2_Pfeiffer.pdf)
- Pomales-García, C., & Liu, Y. (2006). Web-based distance learning technology: the impacts of web module length and format. *American Journal of Distance Education*, 20(3), 163-179. doi:10.1207/s15389286ajde2003\_4
- Randler C. Teaching species identification--a prerequisite for learning biodiversity and understanding ecology. *EURASIA Journal of Mathematics, Science & Technology Education* [serial online]. January 1, 2008;4(3):223-231. Available from: ERIC, Ipswich, MA. Accessed March 29, 2011. Retrieved from [http://www.ejmste.com/v4n3/EURASIA\\_v4n3\\_Randler.pdf](http://www.ejmste.com/v4n3/EURASIA_v4n3_Randler.pdf)