

Chapter 12

Collaboratively Designing and Building a Digital Entomology Lab at K-State

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“Forty years after those early initiatives—and in spite of the example of the Open University, which has not only shown that science can be taught at a distance, but has become a world center of high quality science—the prejudice that science can only be taught face-to-face is still widespread, especially in the United States. Indeed innovative course and program proposals frequently fail to get off the ground because of very ill-informed assertions by classroom teachers that distance teaching of science is not possible.” (Michael Grahame Moore in Dietmar, Kennepohl, & Lawton Shaw, 2010, p. x)

EXECUTIVE SUMMARY

With the creation of ENTOM 312, General Entomology, as an online class, the question arose about whether to pursue development of a Digital Entomology Lab to support student learning of insect morphology (structures and forms) and functions. The early conceptualization described how this lab could benefit learners from a variety of academic fields—horticulture, agriculture, engineering (robotics) and others—to benefit the larger campus and even those from off-campus. In the first iteration, no real considerations were made for broader nonformal or informal

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learning. This endeavor was funded in early 2011, and Phase 1 (the capture of insect imagery from five major angles, the metadata labeling, and the uploading of the contents onto a static site) was completed. To spark conversations about digital labs and online learning and to get creative design ideas for Phase 2, a participatory design article was created and published through the peer-reviewed online journal Educause Quarterly. This interactive article was “The Participatory Design of a (Today and) Future Digital Entomology Lab” (Hai-Jew, 2011). The commentary of participants was collected on an open-source MediaWiki™ page for possible inclusion in Phase 2 of the Digital Entomology Lab. This participatory design endeavor involved design questions about how to brand the site, set it up for a variety of use cases, replenish digital contents, design for nonformal learning, design for informal learning, anticipate possible K-12 uses and users, and to possibly pursue integration with other digital repositories. This chapter summarizes the learning from this participatory design “thought experiment” put into practice and what was learned about evolving a Digital Entomology Lab to accommodate the needs of formal, nonformal, and informal learning.

INTRODUCTION

Many empirical science courses have not transferred well to online spaces in part because of the lack of substantive online laboratory learning activities, which should optimally mirror the learning objectives, experiential learning aspects, social co-learning and collaboration, and directedness (and feedback) of the live face-to-face laboratory experiences. Such science lab learning has been simulated through use-at-home kits; others offer access to Web-based remote labs; still others use simulations that are Web-delivered to offer the laboratory learning experiences. K-State is starting to move into the direction of building some digital lab infrastructure for learners through the funding of a Digital Entomology Lab (to accompany the newly online ENTOM 312 or “General Entomology,” which offers opportunities for distance students to study insects’ physical structures (morphology) through sophisticated macro-lens photography and both structured and unstructured learning opportunities.

BACKGROUND

The study of foundational general entomology generally involves the study of the role of insects in the biosphere. Their wide proliferation (with some 10 quintillion individual insects on earth at any given moment, with some 200,000,000 insects to

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