

**PREPARING THE VIRTUAL CLASSROOM FOR  
DISTANCE DELIVERY:  
MEDICAL-VETERINARY ENTOMOLOGY CLINICS FOR  
UNDERGRADUATES**

Florence V. Dunkel, Associate Professor, Department of Entomology  
Sara Young, Director MSU American Indian Research Opportunities (AIRO)  
MSU-Bozeman

Final Report 17 October 2001

Across disciplines, undergraduates are fascinated by medical-veterinary topics. This fascination often is squelched by requirements for memorization of scientific names, life cycles, and reservoirs. Eight years ago, we designed a series of "real-life" diagnostic situations that could occur at 5 primary care clinics "located" at 5 sites on 4 continents. We tested this learning environment in classroom format with 450 students over these 8 years. We have now adapted these dramatic medical-veterinary entomology clinic simulations to computer format (digital compact disk [CD]) for distance delivery. We have also transformed into electronic format the "resource laboratory," library materials, conventional lectures and the 43 virtual patients in the clinics-throughout-the-world. We designed the electronic version so that undergraduate students from any major would find it thought-provoking and can use it to assimilate key issues in this complex set of information. Learning in this distance course is self-paced and in a non-linear, web or net design. We based the clinics on the fact that insects and other arthropods can, by their actions and their associated microorganisms, threaten the lives of humans and their companion domestic animals and livestock. Students learn that there are certain "at risk" professions and "at risk" lifestyles associated with arthropod-vector diseases. They also learn that these diseases can be contracted from vectors throughout the world, although often in specific habitats or obtained from vectors that have a limited range. This course is based on making correct diagnoses and being able to triage patients in urgent care.

Within entry-level (100 or 200 level) entomology courses for undergraduates in the USA, we believe the virtual "clinic" concept to be unique. We have had numerous requests to make this course module available to a greater number of Montana students and to students outside Montana. We have designed this CD distance delivery course for undergraduates of any major. We suggest it be used as a 2-credit module with Global/Multicultural Perspectives credit.

**Accomplishments:**

- We have designed the framework (see Road Map page 2) for the course and developed computer linkages between main sections. In this framework we have retained the non-linear, self-paced learning environment that we had initially developed for classroom use.
- We have digitized all videos and slides for the resource section on specific diseases. For 9 of the 10 main diseases, we have an illustrated story on CD, an audio tape, or a video describing diagnosis, symptoms, and vector habitats.
- We have digitized all 43 virtual patient scenarios and many of the accompanying photo portraits.
- We have designed video or still photo introductions to the virtual clinics in Crow Agency Montana and Kigali, Rwanda.

- We have designed an attractive carrying case for the CD-based course and accompanying material, such as, a 55 minute video introducing 3 of the main diseases, an audio tape to accompany the resource section, course evaluation forms, and the final exam (which in this course is patient history forms, med-vet laboratory forms, and emergency room triage decisions).

**Plans for 2001-2:**

- VI. We will provide IMSD (Initiative for Minority Student Development) students, undergraduates majoring in BioMed or related fields, each with an individual course packet to test January 2002. Based on their input and a formal course evaluation, we will revise sections and provide the module to half of the Spring 2002 students in Entomology 102G to substitute for their Med Vet Course Module in the latter portion of the semester.
- We will also provide the CD packet to Tribal Colleges for testing in their Biology courses by Spring quarter 2002.