

Physical Examination of the Canine Patient

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Web Site Created by Dr. Molgaard and Dr. Sage for Clinical Skills course:
http://www.cvm.umn.edu/academics/course_web/current/cvm5501/

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Background: Physical Examination of the Canine Patient would be used in two yearlong courses taught in the veterinary medical curriculum: Freshman Clinical Skills and Sophomore Clinical Skills. These courses are taught by the principal investigators and are part of the new curriculum instituted in the fall of 1997. They are required courses with a typical enrollment of 76 students each year. As stated in our college's Compact, the purpose of Clinical Skills is to teach the students some of the skills that were under-emphasized in the previous curriculum. One of the most important and challenging skills to teach is physical examination of animals. Conventional methods such as lecture, demonstration and laboratory provide the student with an introduction, but do not allow the student to review a confusing area or fully understand the purpose of each part of the examination. A CD-ROM with step by step instructions on physical examination would allow the student to practice and review physical examination skills with feedback.

In accordance with the 1998 Compact of the College of Veterinary Medicine, all incoming freshmen are required to use a computer for technology-assisted education in the execution of the new curriculum. The Clinical Skills Web Site was implemented in the fall of 1998 to provide information to the students and to get them used to using the computer for this course. Both principle investigators took the CD-ROM Camp offered through ADCS last summer with the intention of creating a CD-ROM for this course.

Project description: We plan to create a CD-ROM using Macromedia Authorware that covers the purpose, techniques, normal findings and abnormal findings of physical examination of the dog. A student would be shown a schematic diagram of the dog with the various organ systems highlighted. The student could direct the learning by either clicking on a part of the dog diagram (nose to tail approach), or clicking on the name of the organ system from a list on the side of the screen (organ systems approach). This choice of learning style is one big advantage of using this technology to teach physical examination.

For example, if the student clicked on the heart, s/he would be given the following choices:

- **How to examine** → text, photos, video, audio illustrating process of examination of the organ system
- **Normal Findings** → text, photos, video, audio describing normal heart rate, rhythm, sounds etc. → **Abnormals** → examples of abnormalities that may be encountered
- **Equipment** → photo of stethoscope w/ text describing it's use
- **Rest of the Organ System** ("heart" symbol for the CV system) → takes student to information about the blood vessels etc. Student could also go to "blood vessels" first and then is given information about the heart when s/he clicks on the "rest of organ system" button
- **Related Organ Systems** (symbols for each of the related organ systems or one symbol that takes you to choice of related organ systems) → Information about the relationship between the organ systems.

We plan to start by creating individual organ system modules (for example Cardiovascular Examination of the Dog) that will be stored on an FTP server. A link from the Clinical Skills Web Site would provide easy access to the FTP site. These

modules could be viewed using the Ethernet connection at the docking stations in their classroom, or downloaded to be accessed at the student's convenience. When all of the organ system modules are completed, they would be packaged on a CD-ROM.

The main benefits of using a CD-ROM over a web site or traditional teaching aids are that audio and video clips can be incorporated and the student can direct the learning. For example, teaching abnormal heart sounds is impossible using a book and difficult using audiotapes (little control over sequence). By using our product, the student can go back and forth between normal and various abnormal sounds to compare them.

Evaluation: The effectiveness of the product will be evaluated through student testing and feedback. Students will be surveyed for their evaluation of the product. Part of the final examination for Freshman Clinical Skills is to perform a physical examination while being evaluated by a clinician. These clinicians can also give feedback as to whether they feel classes that have used the CD-ROM demonstrate more proficiency than previous classes. We plan to survey this year's freshman class to establish a baseline about their comfort level in performing a physical examination after learning by traditional teaching methods. Future freshmen would be surveyed after they learned physical examination by using the CD-ROM and the results would be compared with the baseline.

Timetable:

Design: The design process has been started and we plan to finish by summer of 1999.

Development: Development will occur during the spring, summer, and fall of 1999.

Testing: Student and content expert testing will occur in winter of 1999.

Implementation: The completed CD-ROM is scheduled for completion by February 2000.

Budget:

Resources to be provided for by TEL Grant

Videography	10 hours @ \$100/hour	\$1000
Work Study Student	100 hours @ \$10/hour	\$1000
Programming	130 hours @ \$60/hour	\$7800
Miscellaneous	Parking, incidentals	\$100
Total		\$9900

Resources to be provided by our Departments and College

Software	Macromedia Authorware, Adobe Photoshop Cardiogram Software (for digital stethoscope)	On network \$700
Hardware	Sound card, speakers, 64 MB RAM, 2 Video cards Digital Stethoscope (Cardiogram)	\$700 \$1000
Photography	12 hours @ \$25/hour (Veterinary Graphics)	\$300
Total		\$2700

Funding from Departments and College (Academic Affairs \$1000, SACS Dept. \$500, CAPS Dept. \$500, Ross University Funds \$700 **Total: \$2700**)