

Technology and the Revolution in Veterinary Education

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A New Order of Things

The American educational system has collided with the economic realities of our times and signs of massive changes in a system that was created during the industrial era in this country are now visible. The current system is based on many outdated principles and techniques of teaching/learning that are at best ineffective and at worst counterproductive. Fortunately, significant improvements in information management and communications technology have occurred that can substantially improve the teaching/learning environment in pharmacology and other disciplines.

Veterinary medicine, while a small profession, is substantially involved in the rapidly changing economic, political and social conditions of the country, and, consequently, the profession will be expected to adapt to these changing times and diverse expectations. Nowhere will there be greater pressure than in the colleges of veterinary medicine. While some believe the Pew process represents an insignificant experiment in the history of veterinary medicine in this country, I would suggest it is just that beginning of what will be a revolution in the profession and result in the emergence of a new, dynamic era in veterinary education that will carry well into the 21st century. Unfortunately, many of our colleges are steeped in tradition and vested interests that can effectively block the reforms that are so badly needed. But time will certainly change all of that and out of much conflict and turmoil will arise a new order of things - assisted to a large extent by the enormous information handling capacity of computers and related technologies.

What will the veterinary colleges of the 21st century look like? They will be vastly different in terms of organizational structure, role of administration, the interface with the external environment, faculty management, funding and interinstitutional relationships. However, no area will be more heavily impacted by technology than the instructional program, and the implications for students and faculty are substantial.

Time as a Variable

The "time as a variable" concept promoted by Dr. Lawrence Weed, the founder of the problem oriented medical record, has enormous potential to change the face of all medical education. Our present system operates on the basis of time being fixed with tasks and achievement being variables. Indeed, the present system operates contrary to what educators know is true - students learn in different ways and at different rates. Since time is fixed, educators compensate by having a sliding scale of achievement. In some courses, a student can "learn" as little as 60% of the material and still be viewed as someone who has mastered enough of the content to be competent.

Why do we do it the way we do? Because to make time a variable without a mechanism to deal with the consequences is unmanageable. The number of students in a veterinary class and the scheduling complexities for students and faculty would bring any college to its knees. But all of this can change by supporting faculty and students with modern information systems. In the future, it will be possible to have each student on his/her unique curriculum with time being a variable and mastery being the goal. What we lack at the present time is a curriculum format that supports a time variable/mastery system.

New initiatives in veterinary education frequently result in demands by faculty and administrators for new resources in terms of operating budget enhancements, increased faculty positions and a concomitant increase in staff. The economic realities at the federal and state levels suggests that for the foreseeable future this approach will not be productive. Veterinary colleges will have to adopt a more business-like approach to management so that productivity is maximized, accountability is emphasized and mechanisms for constantly monitoring and reordering internal priorities based on the needs of the constituencies we serve become a hallmark of the institutions. Being able to adapt to these leaner times will depend

heavily on an organization's ability to reap the benefits of modern technology. The technology can be used effectively to not only support faculty but to magnify their efforts in instructional activities as well as in research and public service.

The use of satellites and cable networks for broadcasting instructional material has enormous potential. There are some interesting options that arise once you realize that this type of information distribution removes the need for students to be gathered in a particular location to receive the information. Will we see the day that portions of pre-clinical courses will be broadcast to numerous locations in North America? For example, if a course called "Principles of Medicine" were broadcast from one veterinary college in the United States to any location in North America, how would this shift the dynamics of veterinary education? Would students elect to take this course while working at a private practice during a summer break? Would other schools honor the credits awarded to a student who successfully completed a course broadcast from another college? Would CE credits be awarded to graduate veterinarians who received this and other courses via satellite at their practice location?

Computers, videocameras, videodiscs, videotapes, cable networks, satellites and a host of other tools offer us a wide variety of options for developing highly effective instructional modules and delivery systems for professional and continuing education. Interactivity and a multimedia format will be prominent features of these systems, and one of the major payoffs will be the opportunity for teachers to become true facilitators of the learning process rather than knowledge brokers.

It is going to take time to develop the technical support and faculty skills to effectively utilize the technology. Because of the investment of time required to produce quality modules, sharing of many forms of instructional material will be commonplace in the 21st century. To some extent, there will be a shift to a national curriculum and faculty, whereby, we will utilize various configurations of multimedia offerings, satellite programming and videotapes to educate professional veterinary students and graduate veterinarians throughout North America and perhaps the world.

One of the major stumbling blocks to progress is the rewards system within the colleges of veterinary medicine. Genuine incentives for creatively applying modern technology to the

teaching/learning environment will have to be identified and the tenure process will have to be restructured. Failure to address these issues will invite forces external to the colleges to mandate changes.

It will take most of the 1990's to create an environment conducive to the kind of changes that are needed. Of course, a major unknown is what role the private sector might play in the veterinary education market. If a profit could be realized by developing instructional modules and/or broadcasting veterinary education, there are a variety of scenarios that could develop.

There is no doubt that the technology will continue to improve and the options for educators and students will expand. In spite of the current fears about the unprecedented change in our profession, the end result will be an educational system that provides students and faculty with more effective interaction using much improved learning tools, and at the same time, places more responsibility on students for managing their education (Herron et al., 1990a; Herron et al., 1990b). This approach will foster maturity, a commitment to life-long learning and the ability to adapt to change that will be critical for veterinarians who will spend the bulk of their professional careers in the next century.

Change creates opportunities for those individuals or groups willing to step forward. If the profession is willing to seize these opportunities in education as well as other aspects of the profession, our future looks bright, our role in society will expand and our biggest problem will be a lack of qualified graduates. Are we up to the challenge? Only time will tell, but, if we can let go of the past and grab the future, we are on our way to correcting what is wrong with the patient.

References

- Herron, M.A., Wolf, A. and DeBrito, W. (1990). Faculty and student attitudes toward problem solving and independent learning in the veterinary medical curriculum. *J Vet Med Educ* 17: 19-21.
- Herron, M.A., Alexander, P.A. and DeBrito, W. (1990). A proposal for problem-solving instruction in veterinary education programs. *J Vet Med Educ* 17: 21-24.