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Use of a Clinical Skills Training Center to Supplement a Distributive Model of Education in a Veterinary Technology Program

Megan Taliaferro

A distributive model of education has recently become a popular method for training veterinary technicians in the United States. Although this model has significant benefits, such as decreased cost of program infrastructure, there are significant challenges in managing students and their clinical skill acquisition using private veterinary hospitals. A clinical skills training center was implemented at Tidewater Community College to address a main shortcoming of the distributive model, namely the lack of specialized training models at outside hospitals. Based on survey findings, both students and clinical mentors found the veterinary technology clinical skill training center to be a beneficial addition for student clinical skill acquisition.

A veterinary technician is educated to be the veterinarian's nurse, laboratory technician, radiography technician, anesthetist, and surgical assistant. Veterinary technicians are graduates of a two-year educational program, typically offered at a community college, that is accredited by the American Veterinary Medical Association. Graduates must also pass a national credentialing exam to become licensed. The first veterinary technology program opened in 1961 in New York and there are now more than 200 accredited veterinary technology programs in the United States (American Veterinary Medical Association, 2022-a; American Veterinary Medical Association, 2022-b).

Historically most veterinary technology programs have utilized a traditional model of education. Students participate in lecture classes on-campus and laboratory classes where students are taught clinical skills on live animal patients that are held at the on-site veterinary teaching hospital at the college. Recently, the American Veterinary Medical Association Committee on Veterinary Technology Education and Accreditation (AVMA CVTEA) formally defined a distributive model of education for veterinary technology programs and now allow programs to use this method of education to meet accreditation standards. In a distributive model, students receive all or a substantial part of their clinical education at off-campus sites, such as private veterinary

hospitals, rather than at a traditional, on-site veterinary teaching hospital (American Veterinary Medical Association, 2022-c). Out of the more than 200 accredited veterinary technology programs in the United States, 17% currently offer a distributed model of education (American Veterinary Medical Association, 2022-b).

The primary driver for this educational model change has been economics. Cuts in state funding allocated for education have made it financially difficult for schools to build and operate large, on-site veterinary teaching hospitals. In addition, the rapid expansion of high-quality private veterinary hospitals, particularly in cities and suburban areas, have increased the availability of qualified training sites for students to develop and hone their clinical skills (Gordon-Ross et al., 2014).

Benefits of a Distributive Model of Veterinary Education

There are many benefits to utilizing a distributive model of education in veterinary training programs. This type of model offers a substantial facility cost reduction compared to the infrastructure required to support a traditional educational model. One of the largest limitations to launching a veterinary technology program is the need to construct an on-site licensed veterinary teaching hospital to support student learning. A veterinary hospital must contain an operating suite, dental suite, radiology suite, pharmacy, laboratory, treatment area, and separate canine and feline kennels. In addition, the veterinary teaching hospital must meet local, state, and federal regulations and be licensed by the state's Board of Veterinary Medicine. Of particular concern is that veterinary hospitals must store and use controlled drugs, including opioids, to perform surgical procedures. The presence of opioids on a community college campus requires additional security considerations to ensure student safety and prevent access to these controlled drugs.

Another benefit to using off-site veterinary hospitals to support student learning is the sheer number of cases students can observe and participate in. A small animal veterinary hospital in the United States averages 1,012 appointments per month (American Veterinary Medical Association, 2021). Due to the presence of this large caseload, students have more opportunities to develop and hone their clinical skills. This allows for many more repetitions, thus increasing student proficiency and confidence.

The use of private, off-site veterinary hospitals allows students to be exposed to the full spectrum of veterinary care. Veterinary professionals must provide care for the pets of an economically diverse clientele. Students need to develop the skills to be responsive to client financial limitations while still offering acceptable care to their patients. Private veterinary hospitals allow students to see diverse patient mixes, not just the pets of clients willing to travel to a college or university for care. At private veterinary hospitals, they see how medicine can be tailored to the individual pet owner which helps them understand the economic realities of veterinary medicine. (Fingland et al., 2021)

Students benefit from mentorship at these private veterinary hospitals. They work hand in hand with experienced veterinary technicians, and veterinarians and begin developing networking skills and forming relationships that will serve them after graduation. The veterinarians and veterinary technicians at the practice also benefit from this mentor-student relationship. By helping to educate veterinary students they contribute to the future of veterinary medicine. In addition, since they work so closely with the students, they help programs identify any gaps in curriculum and training.

Challenges of a Distributive Model of Veterinary Education

It is relatively straightforward to monitor the clinical training of students at a single, centralized, on-site veterinary teaching hospital. Faculty are trained to instruct and evaluate students and patients are carefully selected for ideal student clinical experiences. Since accreditation guidelines dictate that the primary purpose of the hospital must be teaching, not revenue generation, daily case load is kept low to allow students time to manage their patients at a slower pace, ideal for students learning new clinical skills (American Veterinary Medical Association, 2022-c).

The distributive model of education poses several challenges, primarily associated with the management of many veterinary hospitals involved in the teaching of students and delivery of curriculum. Veterinary technology programs utilizing a distributive model of education must have a dedicated faculty member who oversees and monitors the progress of each student at each hospital. This involves frequent communication via phone calls and in-person visits with the student's primary mentor at their hospital. This communication is imperative to ensure that each student is learning and mastering their clinical skills at an appropriate pace and that their mentor can identify an adequate number of patients and procedures for student practice.

Veterinary hospital quality is an important part of the evaluation process prior to student placement. Veterinary hospitals must have all necessary equipment for student training on-site, must see an adequate number of daily patients of a variety of species, and must perform all clinical procedures needed for student training. For example, a specialty veterinary practice, such as a cardiology practice, would not allow a student the opportunity to practice dentistry skills, which is a required part of the veterinary technology curriculum. Programs that utilize a distributive model of education rely on informational questionnaires, species and equipment checklists, and in-person visits to ensure appropriateness of the hospital before student placement (Gordon-Ross et al., 2014).

Veterinary hospitals must have enough licensed personnel to support student learning. Veterinary technology programs require each student to have a licensed veterinarian or licensed veterinary technician as their clinical mentor. The clinical mentor is responsible for teaching the student each clinical skill in the curriculum and identifying appropriate patients for them to practice and refine their skills. A veterinary practice that is understaffed is often not able to take the time to properly instruct students on the performance of clinical skills.

One of the biggest challenges with a distributive model of education in veterinary technology programs is the lack of formal, structured hands-on laboratories. Students learn clinical skills during the flow of a regular day at the veterinary hospital. Cases are available based on the types of appointments and procedures that are scheduled by the clients of the practice. Students may participate in a dentistry case one day but may not have another opportunity to practice dentistry skills until another dental case is scheduled by a client. At a traditional on-site veterinary teaching hospital, patient procedures are scheduled based on the clinical skills students are responsible for learning that semester. For example, if students are taking a dentistry class, only dental cases are scheduled during that semester. This allows for structured, consistent clinical skill practice.

Private veterinary hospitals also lack veterinary training models for students to practice on prior to performance of the clinical skill on a live animal patient. This can cause pain and anxiety for the animal while the student masters the basic gross and fine motor skills required for the adequate performance of the skill. Practicing on a training model first allows a student to master the necessary psychomotor skills before progressing to a live animal patient.

Solution to Distributive Model of Education Challenges: Clinical Skill Training Center

Tidewater Community College began their veterinary technology program in 2018 and became accredited in 2020. Due to budgetary challenges that precluded the construction of an on-site veterinary teaching hospital, a distributive model of education was selected. Upon joining the program, students are placed at local veterinary hospitals within 45 miles of the Virginia Beach campus. Students must spend a minimum of 20 hours a week at their assigned veterinary hospital learning, practicing, and honing their clinical skills, in addition to attending lecture classes on campus.

A dedicated, full-time faculty member monitors each student's clinical progress at their individual veterinary hospital through formal evaluations by the student's clinical mentor twice a semester plus frequent communication via email and in-person visits. Veterinary hospitals are carefully chosen to support student learning. Veterinary hospitals must have all necessary equipment for student training on-site, must have adequate licensed personnel, must see an adequate number of daily patients of a variety of species, and must perform all clinical procedures needed for student training.

After a few years of operation, several challenges and shortcomings were identified with the use of this distributive model of education. Surveys indicated that the majority of students desired the ability to learn a skill on a life-like model prior to live animal use at their hospital (see survey question 1). Clinical mentors at the veterinary hospitals also requested that students have a dedicated space available for practice with training models if they identified a skill that needed additional refinement.

Survey Question #1: Do you prefer to learn a skill on a model prior to practicing on a live animal?

	Yes	No
Freshman Students	19	5
Sophomore Students	24	2

Based on this feedback from the students and clinical mentors, a Clinical Skills Training Center was launched in 2022 at the school. This 1500-square foot area is a dedicated space where veterinary technology students can learn, practice, and refine clinical skills utilized across multiple species. The goal of the center is to allow the students to supplement the didactic curriculum and clinical cases seen at their veterinary hospital with relevant, hands-on psychomotor skills training. Students can practice their skills in a safe, low-risk environment, using models that range from simple, low-fidelity models to more sophisticated, high-fidelity (i.e., life-like) models.

The Clinical Skills Training Center at Tidewater Community College includes the following:

- Life size horse model
- IV catheter trainers
- Restraint models
- CPR high-fidelity canine model
- Anesthesia machines
- Surgical equipment and instruments
- Canine intubation trainers
- Dental prophylaxis models
- Venipuncture models (jugular, cephalic, and lateral saphenous veins)
- Bandaging models

Students can practice clinical skills in the following areas:

- Small animal nursing
- Large animal nursing
- Dentistry
- Surgical assisting
- Anesthesia
- Restraint

Clinical skill labs are common in both medical and veterinary training programs and have been proven through studies to enhance medical and veterinary student performance (Sanchez et al., 2006; Van Sickle et al., 2006; Scalese et al., 2007; Scalese and Issenberg, 2005). Although clinical skill labs are prevalent, to my knowledge, this is the first time a clinical skill lab has been used to specifically enhance and supplement the use of a distributive model of education at a veterinary technology program.

At Tidewater Community College, students are required to spend a specified number of hours each semester in the Clinical Skills Training Center, in addition to their weekly hours at their veterinary hospital. The student must log additional hours in the Clinical Skills Training Center if a clinical mentor notifies the faculty member that a student is deficient in a particular skill. The student is then instructed to practice the skill at the Center before attempting to repeat the skill on a live animal patient at their veterinary hospital.

Students can practice 38 unique clinical skills in the training center. Students work at their own pace and can focus on the specific clinical skills they need additional repetitions with, which may vary between students. Skills may be practiced as many times as needed until a student can master the gross and fine motor skills required. Based on survey results, our veterinary technology students typically require 4-6 repetitions to master a skill, but some students reported needing up to 7-9 repetitions (see survey question 2). For students struggling to master a particular skill, this amount of repetition can be difficult to accomplish at their veterinary hospital as USDA and AVMA requirements limit the amount of practice that can be performed on a single patient (American Veterinary Medical Association, 2022-c).

Survey Question #2: How many repetitions does it typically take for you to become proficient in a clinical skill?

	1-3 times	4-6 times	7-9 times
Freshman Students	5	15	4
Sophomore Students	4	14	8

One challenge with supplementing a distributive model of education with a Clinical Skills Training Center is which days and times the center should be available to students. Although our students spend a minimum of 20 hours each week at their veterinary hospital, each student's schedule varies based on the individual veterinary hospital's staffed hours. Our veterinary technology students therefore have different days and times during the week that they are available to come to the Clinical Skill Training Center to practice skills.

A survey was submitted to Tidewater Community College's veterinary technology students to determine when the Clinical Skill Training Center should be open (see survey question 3). Based on the survey results, it was determined that to benefit the majority of students, the Clinical Skill Training Center would need to be open 12 hours a day, 7 days a week.

Survey Question #3: When are you available to practice skills in the Clinical Skill Training Center?

	Weekday 8-11 am	Weekday 12-3 pm	Weekday 4-6 pm	Weekday 7-9 pm	Saturday all day	Sunday all day
Freshman students	3	1	3	2	6	9
Sophomore students	9	2	2	2	5	6

Since budgetary constraints prohibited the staffing of the clinical center seven days a week, an alternative method of providing clinical skill training support needed to be implemented. It was determined that technology would be leveraged to replace the presence of an on-site clinical skill instructor. A training site utilizing the Canvas learning management system was developed to accompany the models, simulations, and equipment at each skill station in the Center. Each clinical skill has a dedicated page in the learning management system where students can access step-by-step directions on how to perform each skill and can also watch a video of an instructor performing the skill on the models. A high-resolution camera is available in the Center if a student would like to record themself performing a skill, either for self-critique or to share with an instructor for feedback.

Safety must be of prime consideration when students are on campus using the Clinical Skill Training Center, particularly on weekends when the campus is relatively free of other students and faculty. The center's room is locked with a keypad, which can only be opened with a code. The code is changed each semester and only given to enrolled veterinary technology students. The door to the room was also modified to close and lock automatically behind the students after they enter for additional safety. The campus is staffed with security 24 hours a day and the number for security is prominently displayed in the room.

Conclusion

The distributive model of veterinary education has become increasingly popular among newly launched veterinary technology programs. This model has many benefits including decreased cost of program infrastructure, increased caseload, exposure to diverse patient mixes, and mentorship. However, there are many challenges with this type of educational model which includes student management, hospital selection, lack of formal laboratories, and lack of training models at

the assigned veterinary hospitals. A Clinical Skills Training Center addresses the last two disadvantages of a distributive model by allowing students to practice skills in a low-stress, safe environment, using both low and high-fidelity training models proven to enhance clinical skill acquisition.

While the Tidewater Community College Clinical Skills Training Center was developed to enhance its veterinary technology program, the center has three key characteristics that can be applied to any academic program that utilizes a distributive model of education and training. The Center allows flexibility for students with varied schedules to practice skills by being open 7 days a week. The Center offsets staffing and budgetary challenges by leveraging the use of technology for skill instruction in lieu of a faculty or staff member. Finally, the Center utilizes life-like models and simulations to facilitate rapid learning of advanced skills.

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