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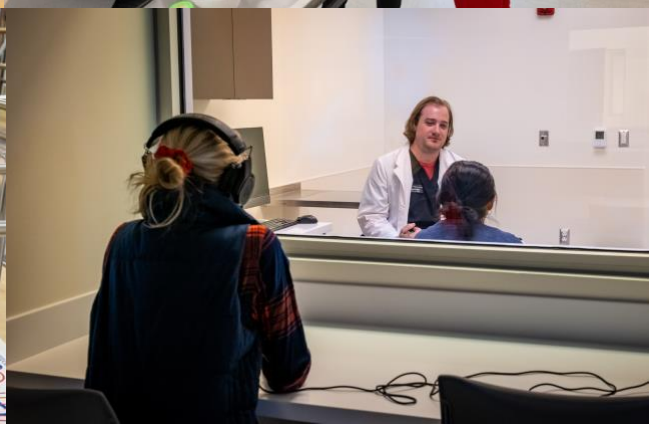
2025 InVeST Conference Abstracts

October 17-19, 2025, Amarillo, Texas



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Short Communications – Saturday October 18 – 9:30-10:30 am

Oral Posters – Saturday October 18 – 10:45-11:45 am

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Short Communications – Sunday October 19 – 10:45-11:15 am

Poster Presentations October 17, 2025

Can a simple model have value without validation? A study to develop and (attempt to) validate a bovine caudal epidural model and rubric

Natalie Trantham, Christopher Kelly, Hannah Bonnema, Julie Hunt, Lynda Miller
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Background
Bovine practitioners expect new graduates to be able to place a caudal epidural (1). Teaching this task on models facilitates scheduled training and sufficient practice to reach competency. This study sought to create and validate a bovine caudal epidural model and rubric using a framework of content evidence, internal structure evidence, and relationship with other variables evidence.

Summary
Veterinarians (n=11) and students (n=40) were video recorded placing a caudal epidural on the model (Figure 1). Recordings were scored by a blinded rater. Participants completed a survey evaluating the model's features, ease of use, and anticipated best use. Veterinarians reported that the model was helpful for students to practice the task and that the model had sufficient landmark features and realism (content evidence). Rubric scores achieved acceptable internal consistency (α=.736; internal structure evidence). There was no significant difference between veterinarians' and students' performance scores on the model (relationship with other variables evidence). Survey feedback indicated the task on the model was simple, allowing students to achieve similar scores as veterinarians.

Take home message

The model and rubric were not validated because of a lack of difference between expert and novice performance. However, there are simple clinical skills models used in veterinary education and other healthcare fields, and research suggests that learning does take place on these models. Educators must consider whether simple models that are helpful for students to practice their skills may still have value, even if they are not able to be validated.

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Development and evaluation of an ovine laparoscopic artificial insemination model

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Background & Aim

Laparoscopic artificial insemination (LAI) is becoming common in small ruminant practice, maximizing superior genetics and bypassing the cervix, improving pregnancy rates (1). Proficiency requires hands-on training, which can be challenging due to animal availability and concern for patient safety. Models allow repetitive practice until competence is reached. This study sought to create an ovine LAI model, to collect experts' feedback on the model, and to collect students' user experiences.

Summary

A silicone model was created that allowed students to practice introducing the trochar, cannula, and scope; visualizing the reproductive tract; puncturing the uterine horn with the insemination gun; injecting semen; and removing the equipment. Expert veterinarians (n=13) were enrolled to test the model. Ninety-two percent of veterinarians agreed or strongly agreed that the model was easy to use, looked and felt realistic, had adequate landmarks, was suitable to teach the steps to perform the skill, gave an accurate tactile experience, would be helpful to teach learners, and was adequate for assessing learners. Novice veterinary students (n=30) who had never performed LAI were also enrolled. One hundred percent of the students strongly agreed that the model was easy to use, had adequate landmarks, and increased their confidence to perform the procedure.

Take home message

The LAI model was deemed suitable for teaching and assessment by the experts and easy to use by students, offering support for its use in clinical skills training. A full validation study is planned to further evaluate the model.

References

1. Sathe SR. Laparoscopic artificial insemination technique in small ruminants--A procedure review. Front Vet Sci. 2018;5:266.

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Development of a simple model to demonstrate the principles of retrograde urohydropropulsion

Sarah Wheat
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Background:

Retrograde urohydropropulsion is a skill frequently used in practice, but challenging to teach due to a lack of validated models. Our goal was to develop and create a model for students to learn the principles of this skill and practice in a low-risk environment.

Summary of work:
The model is constructed using a 500ml wash bottle, ¼ inch penrose drain, pearl or bead of adequate diameter to occlude the penrose drain, luer lock adapter, 12 cc syringe, pipe cleaners, water-based lubricant, and water.

Results:
In the lab, the students were provided with the model, visual aide, and instructions on how to perform the skill with an instructor present. The students learned the principles and process of retrograde urohydropropulsion and practiced this skill. An unplanned learning opportunity arose as students applied pressure from both sides of the model and observed the effects that pressure had on the "urethra" or penrose drain. Independently, the students made connections as to how the pressure applied to the system might have a potentially negative outcome or cause iatrogenic injuries.
Take home message: Based on preliminary subjective observations, students successfully practiced using retrograde urohydropropulsion with the model created as well as reinforced the mechanism behind potential iatrogenic injuries.

Take home message

Based on preliminary subjective observations, students successfully practiced using retrograde urohydropropulsion with the model created as well as reinforced the mechanism behind potential iatrogenic injuries.

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1. Sanderson S. Urethral Obstruction: Techniques to Relieve Obstruction and Management of the Patient. WSAVA World Congress Proceedings, 2005.

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Development of Two Equine Limb Simulators using the Elnady Technique of Tissue Preservation for Instruction of Veterinary Students in Joint and Nerve Blocks

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Background:

Performance of local blocks (perineural and intra-articular anesthesia) is an essential skill for diagnosis of lameness in horses and is typically taught using cadaver limbs and clinical patients. Simulators are useful tools for students to practice clinical skills while minimizing cadaver use and mitigating risks of live animal use. Others have developed simulators incorporating synthetic materials for practice of nerve blocks (1) and joint injections (2). However, students may prefer using highly realistic models. The Elnady technique allows preservation of realistic anatomic specimens with improved pliability of soft tissues (3). Preservation of tactile tissue properties and anatomic structure with this technique may be advantageous for veterinary students using models for learning lameness diagnosis skills.

Summary of work and results:
Two equine distal thoracic limbs were fixed using 10% formalin. Skin was bisected and reflected. Limbs were preserved using the Elnady method (3). Fine stainless steel wool was inserted into synovial joint cavities and at locations of nerves relevant to commonly performed perineural analgesia blocks. Electric wires were welded to steel wool and connected to an electrical circuit (9-volt battery and LED Light) for real-time feedback. Skin was closed with zippers to allow access to deep anatomic structures. Veterinary Students used the models to practice arthrocentesis and perineural analgesia. Informal feedback indicated models were useful for learning these techniques; future iterations could incorporate additional anatomic locations for local block practice.

Take home message

Use of realistic anatomic models is useful to veterinary students for practice of nerve and joint blocks.

References

1. Gunning P, Smith A, Fox V, Bolt DM, Lowe J, Sinclair C, Wittenberg TH, Weller R. Development and validation of an equine nerve block simulator to supplement practical skills training in undergraduate veterinary students. Vet Rec 2013;172:450. doi: 10.1136/vr.101335.

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2. Fox V, Sinclair C, Bolt DM, Lowe J, Weller R. Design and validation of a simulator for equine joint injections. J Vet Med Educ 2013;40:152-157. doi: 10.3138/jvme.0912-083R1.
3. Elnady FA. The Elnady technique: an innovative, new method for tissue preservation. ALTEX 2016;33:237-42. doi: 10.14573/altex.1511091.

Learning through Escape Games in Veterinary clinical skills labs: An Immersive and Engaging Approach

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Escape games have seen significant growth in recent years, with an increasing number of scenarios and gameplay possibilities emerging. This innovation has quickly found its place in education, leading to the development of educational escape games.

Although educational escape games are already being used in some teaching institutions, their use remains marginal and relatively underexplored in the context of veterinary clinical skills labs. This work therefore adopts an exploratory approach aimed at examining the integration of this ludopedagogical tool within a veterinary clinical skills labs.
With the goal of strengthening theoretical knowledge, technical skills, and team communication, the chosen scenario focuses on a clinical case of gastric dilatation-volvulus (GDV) in dogs. This combines consultation, surgery, and the immersive environment of an escape game that replicates the stress conditions typical of emergency situations. Furthermore, the 2022 study by Pernilla Zaug (1) highlights the need for a balance between hands-on practice and theoretical questions, making the choice of GDV particularly relevant.
Since an escape game requires significant planning, especially to ensure pedagogical coherence and a smooth progression, it is still under development. However, the expected outcomes include strong student engagement, improved performance compared to preliminary assessments, and especially gains in transversal skills, as demonstrated in the 2024 study by Ife MacKenzie, Kiran Parsons, and Ya Ping Lee, "Escape rooms in pharmacy education: More than just a game."(2)

Take home message

In this study, we will focus on the use of escape games as a pedagogical tool, using gastric dilatation-volvulus (GDV) in dogs as the scenario

References

1. Pernilla Zaug, Catherine-Isabelle Gros, Delphine Wagner, Elise Pilavyan, Florent Meyer, Damien Offner, Marion Strub. Development of an innovative educational escape game to promote teamwork in dentistry. 2022 Feb
2. Ife MacKenzie, Kiran Parsons, Ya Ping Lee. Escape rooms in pharmacy education: More than just a game. Epub 2024 Sep 17.

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Comparing effectiveness of peer-assisted learning (PAL) and traditional teaching methods for two separate veterinary clinical skills

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Veterinary medical education is facing a shortage of educators as private practice opportunities abound and may be more appealing for a variety of reasons among veterinary specialists, according to a recent study (1). An additional stressor on the academy of instructors is the expansion of veterinary medical colleges in North America. Peer-assisted learning (PAL) is an effective learning tool for some clinical skills in veterinary medicine, but evidence is sparse (2,3). This study used PAL for teaching two basic clinical skills, surgical hand ties and blood smears, to first-year veterinary students by second-year veterinary students.
The hand ties were taught using a block and cord model, while the blood smears were taught using typical lab slides and dog blood. It was hypothesized that basic clinical skills could be effectively mastered through PAL, while conserving teaching resources. Students were allocated into two laboratory groups, one receiving traditional hands-on instruction and one receiving hands-on peer instruction. Scores on submitted hand-tie videos or blood smears were not significantly different between the two groups. Additionally, for the hand ties alone, medium-term retention scores, long-term retention scores, and time spent practicing were not significantly different between the two groups. When surveyed, students in the PAL group appeared to enjoy learning from their peers. PAL appears to be an effective method compared to traditional instructor-feedback methods when learning surgical hand ties on a model and learning to create diagnostic blood smears.

Take home message

Peer-assisted learning (PAL) in the basic clinical skills of surgical hand ties using models and blood smears appears to be an effective instructional method. Students respond favorably to peer instruction. Students' perception of learning indicated they were confident they had learned the skills and would be able to repeat them in the future. PAL is likely a viable adjunct or alternative to traditional laboratory instruction for these basic skills. Self-reported time to master hand ties in a novice population was variable, with a mean of 4.5 hours over 4 weeks. Adequate time should be allowed for students to practice hand-tying skills.

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Development and evaluation of a low-fidelity foal umbilical ultrasound training model

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Background:
Foal umbilical ultrasound (FUU) is a routine procedure in equine practice used to assess umbilical infections and structural abnormalities.(1-3) Despite its clinical importance, students have limited opportunities to practice FUU on live foals. This study aimed to develop and evaluate a low-fidelity FUU model for veterinary student training and assessment.

Summary of work and results:
A FUU model was created using ballistic gel, latex tubing, a bulb syringe, a metal mold box, and a stuffed animal horse with a supportive frame. Instructional materials and a scoring rubric accompanied the model. Ten equine practitioners (experts) and twenty veterinary students (novices) were recruited and surveyed after scanning the model. Experts were asked to evaluate the model's realism, relevance, representativeness, and suitability for training and assessment. Novices were queried about the ease of use and the impact on their confidence in performing this procedure after model practice. Both groups were invited to leave comments about the model.
Experts rated the model highly for anatomical realism (4.2/5), probe handling similarity to clinical practice (4.5/5), training utility (4.5/5), and suitability for assessment (4.8/5). Comments included "Model shows likeness to real-life anatomy and has all the landmarks I use to assess umbilical health." Novices also reported favorably, highlighting the model's realistic anatomy and ease of use.

Take home message
The foal umbilical ultrasound model had realistic features and appeared valuable in preparing veterinary students to perform this task in equine practice.

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Can you see it now? The quest for realistic ultrasound models

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Background
Point of care ultrasound is becoming increasingly common in general practices for the rapid assessment of patients. Models can provide students with hands-on practice with this imaging modality. The aim of this short communication is to describe the process of developing multiple low-fidelity ultrasound models for training veterinary students.

Material and Methods
Ultrasound models were created by layering ballistic gel-based substrates and everyday objects at varied depths to simulate anatomical structures to create scanning challenges. The speaker will discuss how realistic echogenicity can be achieved, and how echogenicity can be manipulated using various additives. The speaker will discuss challenges encountered during the model creation process and how these were overcome.

Results
Students responded positively to the models, noting that they closely mimicked the tactile and visual experience of scanning real tissue. Faculty observed increased student engagement and technical improvement. The models allowed students to practice probe positioning, depth adjustment, fine needle aspiration, and target identification repeatedly, contributing to skill acquisition and confidence.

Discussion/Conclusions
Low-fidelity ultrasound models created using ballistic gel offered a low-cost, practical alternative to live animal use for early ultrasound training. Incorporating ultrasound training early in the curriculum can support anatomy learning and improve clinical skills training while preparing students to learn more advanced imaging modalities and treatment of critical cases.

Take home message
Veterinary educators and their team can build effective ultrasound training models using easily accessible, reusable, classroom-safe materials, enabling early and repeated student practice without relying on live animals or expensive simulators.

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Short Communications October 17, 2025

Exploring the use of Mixed Reality for Equine Radiography Training: A Qualitative Study with Expert Users

Antonella Puggioni, Torres Sweeney, Abey Campbell, Diane Cashman, Xuanhui Xu
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Background
Competence in equine radiography is a "day-one" skill expected of newly graduated veterinarians. However, practical training is constrained by ethical considerations, radiation safety regulations, and inconsistent caseloads, limiting students' opportunities for hands-on experience. To address these challenges, this study explores innovative technologies as educational tools by evaluating a Mixed Reality (MR) training system featuring a virtual horse, portable radiographic machine and image detector.

Materials and methods
Twenty professionals with expertise in equine radiography, including diagnostic imaging specialists, equine surgeons, residents, radiographers, interns and veterinary nurses, participated in the evaluation.
Working in pairs, participants engaged in 30-minute guided sessions using the MR system to simulate distal limb radiographic positioning and image acquisition.
Post-session interviews gathered participants' feedback on the system's realism, educational value, limitations, and potential enhancements.

Results
Preliminary results indicate that the MR system was well received by participants, who found it realistic and user-friendly, noting the high potential of MR simulation to reinforce anatomical understanding, positioning technique, and confidence in a safe, repeatable learning environment. Participants provided valuable suggestions for improving the system to facilitate the acquisition of students' practical skills.
MR was recognised as a promising educational tool with significant potential to support and enhance teaching of equine radiography.
This presentation will share findings from this qualitative evaluation, offering insights into how MR simulation can support competency-based veterinary education by enabling immersive, risk-free training. The MR system shows strong potential to supplement clinical training, reduce reliance on live animals, and deliver radiation-free practice in equine radiography; a promising advancement in veterinary education.

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Take home message

Mixed Reality simulation has the potential to offer a powerful and safe solution for teaching equine radiographic techniques, enhancing traditional training while eliminating the risks associated with live horses and radiation exposure

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Remediation through Immersive Simulation: Supporting Struggling Learners in Surgical Skills

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Background
Adoption of CBVE requires acknowledgement that some learners may not reach a level of suitable competency within a set curricular timeline, and structured remediation practices remain underexplored limiting their effectiveness and reliability (1). High-fidelity simulation could be an important remediation tool for improving learner outcomes by enhancing psychomotor skill acquisition and confidence, especially when paired with feedback and deliberate practice (2).

Materials & Methods
We identified four students who struggled to meet foundational surgical and anesthesia competencies specific to their first live-animal surgery, a canine ovariohysterectomy (OHE). Students who performed poorly on low-fidelity skill assessments, or received a failing grade during their live-animal surgery were enrolled. Remediation included deliberate practice, feedback, standardized rubrics, debriefing, and a final simulation-based skills assessment followed by video review with an instructor. The final assessment consisted of completing a high-fidelity simulated OHE to replicate the spatial, tactile, and procedural demands of live-animal surgery.

Results
Four students have completed this process. All demonstrated improvements in confidence, technical skill, and intraoperative decision-making. Three went on to successfully complete live-animal surgery. Importantly, the process offered consistency in evaluations and increased satisfaction with the remediation process.

Discussion/Conclusion
Effective remediation should include structured support, targeted feedback, and psychological safety (3). Beyond psychomotor skills, this process also reinforced essential professional behaviors such as preparedness, problem-solving, and communication within the surgical context.

Take home message
Immersive simulation is useful tool for higher stakes remediation. It may be a scalable approach for veterinary programs seeking to enhance student support.

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The Danny Phantom Canine Ultrasound Model

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Summary of Work

Ultrasonography in veterinary medicine serves a vital role in the diagnosis and management of various medical conditions by allowing non-invasive visualization of internal structures. Veterinary students face many challenges in gaining hands-on experience with ultrasound equipment and developing competencies in ultrasonography. This is largely due to the limited access and ethical dilemmas of live animal models and the high cost of commercial phantoms. In response to these challenges, The Ohio State University College of Veterinary Medicine developed the “Danny Phantom,” a low-cost, gelatin-based ultrasound training model. This model allows students to practice essential ultrasound skills, including identifying internal organs, adjusting machine settings (gain, depth, frequency), and mastering probe handling and fanning techniques. Constructed for under $30, the model provides an economical and accessible alternative for hands-on learning.

Materials and Methods

The Danny Phantom is made using beef gelatin, Germall Plus, India ink, and ovine organs (kidneys, spleen, liver, intestines), fixed with an EMA solution (ethanol, methanol, acetic acid). A 3D-printed mold holds the organs in place using epidermal needles, which are removed before the gelatin fully sets. Crushed Pringles are added for a scattering agent before pouring the gelatin mixture. Once solidified, the model is removed from the mold.

Take-Home Message

The Danny Phantom has proven durable, the current model has lasted 300 days without deterioration. Its affordability and effectiveness make it a valuable tool for veterinary ultrasound education. Future enhancements include adding a bladder, simulated abnormalities, and rib structures to further improve realism and training value.

Take home message

The Danny Phantom has proven durable, the current model has lasted 300 days without deterioration. Its affordability and effectiveness make it a valuable tool for veterinary ultrasound education. Future enhancements include adding a bladder, simulated abnormalities, and rib structures to further improve realism and training value.

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Development of an Equine Nasogastric Intubation Model

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There is no abstract for this talk as it is a substitute for a candidate who was unable to attend the conference.

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Workshops October 17, 2025

Integrating Artificial Intelligence for Standardized Client Training: ChatGPT Dr. Wisdom

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Target Audience

Veterinary educators with interest in communication skills and the introduction of AI in teaching, learning and training SCs.

Learning Objectives

1) Gain appreciation of the use of AI in veterinary communication.
2) Use ChatGPT tools to train SCs.
3) Explore AI approaches in standardizing SC performance.

Training Standardized Clients (SCs) to deliver reliable and standardized presentations in veterinary communications can be resource-intensive when relying on traditional in-person role play and observation. Recent advancements in large language models, such as ChatGPT, provide opportunities to streamline and standardize SC training, potentially improving both efficiency and uniformity in delivering consistent simulations.
The aim of the workshop is to expose participants to training Standardized Clients (SCs) to deliver reliable and standardized presentations in veterinary communications using Artificial Intelligence (AI). Participants will be provided cases and guided to utilize a ChatGPT tool –Dr Wisdom, for training SC performance. The training will be based on the premises of the Calgary Cambridge Guide (CCG).
The structure of the workshop will include a short didactic background and introduction to utilizing AI tools, gaining skills needed to apply in utilizing “Dr. Wisdom”.
Debrief will follow experiential practice.

References

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Disaster Day: A One Health Approach to Interprofessional Mass Casualty Response for Health Professions and Veterinary Medicine

Michelle Kiser, Phillippa Gibbons, Renee Bogschutz, Schoen Kruse, Terran Krake
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Target Audience
Health and Veterinary Professionals

Learning Objectives
1. Develop an interprofessional disaster simulation framework by analyzing real-world case studies and applying a One Health approach to integrate human and animal health considerations.
2. Construct a resource map that identifies key personnel, equipment, and logistical components necessary for executing a disaster simulation within their own institutional or community setting.
3. Evaluate strategies for assessing learner outcomes in interprofessional disaster simulations.
4. Aims/Purpose: Disaster preparedness requires a collaborative response from healthcare and veterinary professionals, particularly in agribusiness communities prone to natural disasters such as wildfires, tornados, and flash floods. This workshop will explore Disaster Day: An Interprofessional Mass Casualty Simulation, which utilizes a One Health approach to train health professions and veterinary students in interprofessional disaster response.

Background:
Disaster Day is a large-scale, immersive simulation that has been conducted annually for three years, engaging 150-175 students per event. Participants rotate through four skill stations: triage station with standardized patients and animal manikins, patient transport, animal rescue, and animal/human basic life support. This simulation provides an authentic learning experience wherein interprofessional teams build teamwork and communication skills. Assessment data indicate that learners demonstrate growth in interprofessional competencies, including team functioning, role clarity, and mutual trust, while also developing practical disaster response skills.

Workshop Structure and Activities:
This interactive workshop will provide participants with hands-on experience in disaster simulation design. Following an overview of Disaster Day, attendees will engage in guided case analysis and scenario development, using real-world examples to build interprofessional response plans. Participants will then work in small groups to conduct resource mapping,

identifying the personnel, equipment, and logistical needs necessary to execute a disaster simulation in their own settings. The session will conclude with a discussion on assessment strategies and lessons learned from past events. By the end of the workshop, attendees will have a framework for designing and implementing their own interprofessional disaster simulations using a One Health Approach.

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Ping Pong Ophthalmology: Enhancing Fundoscopy Skills in Veterinary Education Through Inexpensive Eye Models

Sarah Hooper, Elsie Washburn, Erin Scott, Elpida Artemiou
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Target Audience

Clinical skills instructors, clinical skills lab technicians, model creators

Learning Objectives

1. Understand general fundoscopy principals, including the difference between direct and indirect fundoscopy.
2. Construction of an inexpensive eye model students can utilize in the lab or at home.
3. Incorporating fundoscopy models into clinical skills curriculum.
4. Assessing fundoscopy skills using the fundoscopy model and an objective structured clinical exam (OSCE).

Fundoscopy, or ophthalmoscopy, enables visualization of the ocular fundus and can be performed using either direct or indirect techniques. Both fundoscopy techniques are considered Day One Competencies for new veterinary graduates, because fundic examination is a critical component of the physical exam. Yet, fewer than 50% of general veterinary practitioners report performing fundoscopy in daily clinical practice. Approximately 90% of these surveyed veterinarians also reported low confidence in their ability to conduct fundic exams. This hands-on workshop seeks to address this underutilization and lack of confidence in fundoscopy reported by general practitioners, by having the participants construct inexpensive canine eye models veterinary students can use for practicing both direct and indirect fundoscopy. Participants will learn to create the eyeball and we will demonstrate how to incorporate them into moderate- to high-fidelity simulation models when they return to their home institutions. The workshop will also include a discussion of the time required for veterinary students train on these fundoscopy models to help inform curricular incorporation of teaching fundoscopy skills. By increasing student access to practical training tools and structured practice opportunities, veterinary educators can improve student competence and confidence in performing fundoscopic examinations.

References

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Case Writing Workshop: You Had me at Hello! Developing Phone-based Communication Scenarios for Students

Christina Dougherty, Beth Dronson
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Target Audience

Educators involved in creating and/or coaching communication skills curricula, particularly with more advanced students

Learning Objectives

1. Review key communication skills necessary for students to employ in phone conversations with clients (mainly non-verbal elements)
2. Incorporate communication skill requirements in construction of case scenarios specifically targeting phone conversations
3. Brainstorm ways to practice these case scenarios effectively
   Outline training of SCs and communication coaches in support of these interactions

Background:

Veterinarians must communicate with clients by means other than face to face interactions no less than 30 or 40%% of the time, delivering lab results and patient updates. They must therefore develop skills which can be used for phone conversations or Zoom interactions, in order to ensure successful patient outcomes.

Typically, communication training overlooks phone conversation preparation, which represents a missed opportunity for educators to instruct students on key factors required for such communication - involving the often-overlooked area of non-verbal cues. The same holds true for educators of early career veterinarians in practice.

Having educators understand the importance of teaching skills to support this type of communication medium will be emphasized and practiced.

Structure of Workshop:

We envision 30-45 minutes of didactic, interactive instruction/discussion and 45-60 minutes of case writing on the subject material. Examples of appropriate phone conversation scenarios will be provided. Participants will be encouraged to create their own cases involving phone exchanges with the guidance of two facilitators. Feedback will be offered on the participants' products.

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Short Communications October 18, 2025

Training Veterinary Communication Facilitators: Integrating Clinical Pedagogical Pathways in Simulated Client Encounters

Tasha Likavec
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Learning Objectives
By the end of this session, participants will be able to:
1. Identify and apply the six clinical pedagogical skills used in facilitator-led veterinary communication training.
2. Describe how the ALOBA framework supports structured, learner-centered experiential learning.
3. Analyze the impact of facilitator interventions on learner reflection and communication competency using simulated client encounters.

Background
Veterinary professionals serve a vital role in public health and risk communication. To prepare students for these challenges, communication training programs must equip both learners and facilitators with structured, evidence-based teaching strategies. This short communication presents key pedagogical skills embedded in facilitator training, drawing on the Agenda-Led Outcome-Based Analysis (ALOBA) (1)framework and clinical pedagogical pathways(2) used in a U.S.-based veterinary education setting.

Objective
To highlight the use of ALOBA and clinical pedagogical skills in facilitator training and demonstrate how these are applied during simulated veterinary-client encounters.

Methods
This study draws on video analysis of a standardized client (SC) encounter conducted in a Texas Tech University School of Veterinary Medicine, Doctor of Veterinary Medicine (DVM) program. Facilitator interventions were analyzed using six clinical pedagogical skills—noticing, ignoring, intervening, unpacking, pointing, and processing—to explore how learning objectives were supported during “reflection-in-action” and “reflection-on-action.”

Results
Facilitators used time-outs and rewinds to intervene selectively and guide student learning. Pathways such as “notice → point → unpack → process” helped learners achieve communication goals including negotiating care plans, responding to non-verbal cues, and

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aligning explanations with client perspectives. These structured interactions allowed for deeper reflection, confidence building, and enhanced skill acquisition

Conclusions

Clinical pedagogical frameworks like ALOBA, layered with structured facilitator strategies, provide a robust methodology for training veterinary communication educators. These approaches enhance both learner experience and facilitator effectiveness, ultimately improving risk communication competencies in veterinary practice.

Take home message

Training facilitators to skillfully implement pedagogical strategies during simulated encounters strengthens students' communication competence, especially in emotionally charged and high-risk scenarios. Embedding structured feedback and reflection opportunities fosters deeper learning and prepares students for real-world client interactions

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Development and Evaluation of a Perceptual Learning-Based Training Program for Enhancing Veterinary Cardiac Sound Recognition

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Background:
Cardiac auscultation is a fundamental part of the clinical examination and a widely used diagnostic tool. However, mastering it remains challenging, especially for young veterinarians who often struggle to distinguish normal heart sounds from abnormalities. (1) Several studies report a lack of confidence in this skill, highlighting the need for adapted educational solutions. We therefore developed a digital platform aligned with the principles of perceptual learning (EXACC), composed of explanatory modules and interactive exercises with feedback. (2)

Hypothesis/Objectives:
This study aimed to evaluate the effectiveness of this digital training in improving cardiac sound recognition skills among veterinary students. We hypothesized that the full training program would enhance auscultation abilities and that students with musical backgrounds or greater auscultation experience would perform better.

Methodology:
A randomized parallel-group study was conducted with voluntary fourth-year veterinary students who had no prior cardiology experience. All participants completed a pre-test including 20 heart sounds. They were then divided into two comparable groups based on pre-test results: one accessed only the explanatory modules (Group C), while the other received full access to the training (Group E). Content was available for 72 hours. A similar post-test was administered afterward.

Results:
Groups were comparable in age, gender, and pre-test scores. Group E showed significantly greater improvement than Group C ($p = 0.003$). Musical experience and estimated number of previous auscultations had no significant effect on performance.

Conclusion:
The EXAAC training program is effective in strengthening cardiac sound recognition skills in veterinary students.

Take home message
Structured digital training based on perceptual learning, using many short classification trials with immediate feedback, helps learners strengthen cardiac sound recognition skills, even in students with limited prior exposure.

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Effect Of Rescuer Team Size On Stress Level And Performance Perception In High-Fidelity Simulation Of Canine Cardiopulmonary Resuscitation

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Background:
Self-reported stress levels are associated with lower CPR performance in people(1). The effect of team size on veterinary rescuers' cognitive experience is unknown. This study assessed the effect of rescuer team size on self-reported stress, self-, and group performance in high-fidelity simulations of canine CPR.

Material and methods:
CPR-certified veterinary students conducted two high-fidelity canine CPR simulations in stable groups of 4(n=24) or 6(n=18) rescuers. Simulations took place 4-8 weeks apart, once with a poster cognitive aid and once with an interactive CPR application in randomized order. Following each simulation, participants scored their stress levels before and after the simulation on a scale from 1(not stressed at all) to 10(extremely stressed), and their perceived individual and group performance on a scale from 1(extremely poorly) to 10(extremely well). Effects of rescuer team size controlled for cognitive aids were assessed using Kruskal-Wallis tests with $P<0.05$ considered significant.

Results:
Comparing teams of 4 and 6 rescuers, stress levels (median(range)) before (4(8) vs.3(8); P=0.08) and after (4(7) vs.2(7); P=0.1) simulations were not significantly different. Perception of group (7(6) vs.8(6); P=0.0002) and individual (7(6) vs.8(6); P=0.0003) performance were significantly lower in smaller teams.

Discussion/Conclusion:
While not statistically significant, teams of 4 rescuers were more stressed and perceived individual and team performance as significantly lower. Limited veterinary studies show that teams of 4 rescuers are less effective(2) and our results may reflect awareness of diminished efficacy. Further studies are warranted to assess if stress reduction via larger CPR rescuer team size benefits veterinary CPR performance.

Take home message

Take home message: Teams of 4 rescuers potentially undergo more stress and less perceived self- and team-efficacy. Teams of 6 rescuers may be preferable for reducing rescuer stress and performance satisfaction, but further investigation is needed to evaluate if this supports improved CPR outcomes.

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AvatarZOO, an eXtended Reality (XR) platform to support spatial learning and training in veterinary education

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Background:
Acquiring spatial knowledge and competence is essential for veterinary professionals. Current learning materials range from classical textbooks to dissection specimens to life animals. Research from us and others has shown that especially individuals with lower levels of visual-spatial abilities cannot adequately mentally transform 2-dimensional theoretical information into 3-dimensional applicable knowledge and competence, rendering all flat media, e.g. books/computer/phone screens, essentially ineffective. Our learning objective was to determine the efficacy of 3D learning in a digital 3D XR-based learning environment.

Methods:
We developed AvatarZOO (1), an XR learning platform In which veterinary anatomy of various species can be learned in a fully interactive way. In addition, we are adding clinical simulation functionality to be able to train students for real-life scenarios with life patients.

Results:
AvatarZOO allows for dynamic exploration, virtual dissection, and learning contextual 3D relationships from 3D animal models. Students with lower levels of visual-spatial abilities show improved contextual knowledge (2). In addition, XR technology allows for adding educational value like clinical simulations, individualized feedback, and competence measurements.

Discussion:
The use of 3D learning in veterinary education and training is important but, in many curricula, is under pressure because it costs a lot of money, time, and animals. The use of digital 3D models partially overcomes these issues, but also solves problems in acquiring spatial knowledge and competence from classical 2D learning materials. AvatarZOO allows for fully interactive, 3D exploration of clinical and anatomy models, which renders it suitable for effective basic education and advanced simulation training.

Take home message
We developed AvatarZOO, an XR platform that allows for 3D interactive exploration of contextual spatial anatomy. AvatarZOO supports effective learning for everybody, even for those with lower levels of visual-spatial abilities, and provides a platform for XR-based simulation training.

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Use of Large Language Models to Develop an Interactive Simulated Equine Colic Patient

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Background:
Traditional medical education includes structured didactic delivery of information with opportunities for development and practice of clinical decision-making skills via clinical clerkships with client-owned patients in later semesters. Case-based discussion sessions may also be incorporated to reinforce concepts and encourage development of decision-making prior to clinical experiences. Regardless, student transition from preclinical to clinical curriculum can be difficult. Simulation training can be useful to ease this transition, however logistics, availability of personnel, and cost are barriers to implementation (1). Large language model (LLM) artificial intelligence (AI) tools have been used to develop cost-effective interactive patient simulations for medical education (1,2). Although AI has recently been used in veterinary clinical care, research, and educational settings (3), there are no reports of LLM simulated veterinary patients to date. The aim of this study was to develop a simulated colic patient using LLMs and refine the model through multiple iterations.

Summary of work and results:
Two LLMs (Microsoft Copilot and ChatGPT) were used to develop interactive equine colic patient simulations. The LLMs were given general instructions regarding purpose, role, and interaction guidelines. Then, specific instructions were given to LLMs regarding case details for a horse with pelvic flexure impaction, including diagnostics and preferred treatments. After case completion, LLMs were asked to give diagnostic and treatment performance feedback. Comparison of transcripts from simulated case interactions with LLMs indicated both provided realistic simulated case interactions with important differences in handling of client/patient roles and non-programmed information. Observations were used to refine the model.

Take home message
Use of LLMs for simulated diagnosis and treatment of virtual patients may be useful for self-testing of knowledge and practice of clinical decision making. Future development of pre-programmed chatbots could enhance the user educational experience.

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Development of a canine intraocular pressure measurement model

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Background

Measuring intraocular pressure (IOP) through tonometry is important for a complete ophthalmic examination in dogs, allowing the diagnosis of eye disorders and injuries, including uveitis and glaucoma. The instrumentation for performing tonometry can be confusing for students, and they frequently have to practice this task multiple times to perform it competently. However, measuring IOP can be aversive to animals, particularly when performed multiple times. This study sought to create a low-fidelity IOP measurement model to support students' skill development while protecting animals from aversive and repetitive use. Although several models exist to teach ophthalmoscopy (1-3), the authors are aware of no veterinary IOP measurement models.

Summary

A canine IOP measurement model was created in an iterative design process by experienced clinical skills educators and model builders. The final version of the model utilized a soft, two-component platinum silicone flexible foam, platinum catalyzed silicone rubber, power mesh fabric, and nylon stockings to simulate appropriate pressure ranges that correspond with the normal eye, glaucoma and uveitis. (Figure 1) The model was informally evaluated by multiple experienced veterinarians and found to have acceptable tissue properties and features for student training.

Take home message

Models help students to participate in deliberate practice without repetitive, aversive animal use. A full validation study is planned to further evaluate the model.

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Development of an Inexpensive Low-Fidelity Model for Small Ruminant Nasogastric Intubation

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Background:
Food animal curriculum and clinical skills are often limited in veterinary education(1), which may contribute to decreased interest in graduates seeking careers in food animal medicine. One may argue that increased exposure to small ruminant classroom content and relevant clinical skills may increase student confidence with these species(2), which could ultimately improve interest in inclusion of these species in a new graduate's professional career. Additionally, as small ruminants are more commonly treated as pets among the general public, primary care companion animal veterinarians who are predominantly small animal focused may also be tasked with caring for these species. Thus, these students would also benefit from having a broader mixed-animal skillset.

Summary:
Utilizing a life-size stuffed animal goat and sheep model, a nasogastric prototype was developed with the use of inexpensive plumbing materials purchased at a local hardware store. This prototype was informally tested by large animal faculty members before being used in a 2nd-year clinical skills lab session focused on ruminant orogastric and nasogastric intubation. Informal feedback by faculty was positive regarding the realistic feel of the model.

Take home message

Take Home Message: Through the use of inexpensive materials, the ability to teach students safe and proper passage of a nasogastric tube in small ruminants can be achievable at any veterinary institution. While this prototype appears to have great potential, further development including addition of an esophagus and rumen would further enhance the learning experience. Lastly, validation of the model is warranted to ensure its usage aligns with clinical practice.

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Development of Online 3-D Models for Learning Bovine and Equine Anatomy

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Background:
Veterinary students commonly learn anatomy of large animals by use of textbooks, didactic lectures, cadaveric dissection, and palpation of live animals. However, opportunities for learning using cadavers and live animals may be limited by availability and welfare concerns. In addition, some students may have difficulty grasping concepts delivered in didactic lectures and textbooks. These limitations may be compounded for large animal anatomy instruction. Three-dimensional computer anatomic models may be valuable as a supplement to these traditional methods for veterinary student learning (1). During this study, user-manipulatable computer models of bovine and equine musculoskeletal anatomy were developed and hosted on an easily accessed online platform. The purpose was to describe development of these online anatomy models.

Summary of work and results:
Three-dimensional images of anatomic structures were acquired via computed tomography. From these, computer models of equine and bovine skeletal structures were generated. Additional soft tissue structures were built onto the computer model using CT images, veterinary anatomy resources, and large animal clinician feedback. 209 distinctly identified structures were included on the equine model and 54 on the bovine model. The equine model included skeletal structures of the head, teeth, vertebral column, ribs, forelimbs, and hind limbs. The equine model also included soft tissue structures including select muscles, nerves, arteries, veins, and laryngeal cartilages. The bovine model included skeletal structures of the head, vertebral column, ribs, forelimbs, and hind limbs. Both models could be enlarged and manipulated by users in multiple planes.

Take home message

Online 3-D models of large animal anatomy may be used to augment traditional methods for veterinary student learning.

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Enhancing Clinical Skill Acquisition Through a Veterinary Escape Room Experience

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Background:
Veterinary education relies on engaging, hands-on learning experiences to reinforce clinical competencies. This study aimed to evaluate the effectiveness of a gamified escape room experience as an educational tool in a first-year veterinary course (VCS 7339, Clinical Foundations). The primary objective was to assess whether an interactive challenge format could enhance knowledge retention, teamwork, and problem-solving in key skill areas, including dentistry, drug calculations, medication administration, and suturing techniques.

Summary of Work and Results:
Six different veterinary-themed escape room experiences were developed as an end-of-semester review for VM1 students, integrating previously taught clinical skills into a structured series of puzzles. Teams collaborated to apply learned techniques, unlocking clues to progress through the challenge. Student performance on the final OSCE-style assessment was compared to previous cohorts who prepared using self-study review sessions. The escape room cohort demonstrated improved assessment scores and confidence in skill execution, suggesting enhanced knowledge retention and application. Additionally, informal observations indicated increased engagement and collaboration among participants, further supporting the value of interactive learning strategies.

Take home message
The integration of escape-room pedagogy into veterinary education presents a promising approach for reinforcing clinical skills while fostering collaboration and problem-solving. The findings suggest that structured, gamified exercises can complement traditional teaching methods, enhancing knowledge retention and student engagement in practical learning. Further research is warranted to explore long-term impacts on competency development.

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Validation of a multi-purpose surgical model: “Popeye the Pug”

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Surgical skills and training are an integral part of veterinary medical education. Veterinary students face challenges in developing proficiency in surgical procedures due to limited training opportunities, cost, and time. This study's objective is to validate a surgical model using veterinary students and professionals with the intentions to use the model for teaching purposes. This model allows students to perform multiple small animal surgeries. The surgeries in this study include: proptosed eye replacement and tarsorrhaphy, third eyelid replacement using a pocket technique, meibomian gland adenoma removal and cosmetic repair, nasal wedge resection, and lip laceration and cosmetic repair. This study was involved videotaping students and general practice veterinarians-performing the procedures and then evaluating their ability to successfully complete the surgeries using appropriate techniques and surgical skills. Veterinarians completed a pre- and post-surgical evaluation survey, whereas the students completed only a post-surgical survey. This feedback helped assess the fidelity and surgical training capabilities of the model. Participants included twenty veterinary students in their second or third year and ten veterinarians. All figures and results were created using descriptive statistics. The results indicated that Popeye the Pug is a useful surgical model with the ability to help students improve instrument and suture handling while learning to perform multiple common small animal surgeries prior to attempting them in practice. This research gave insights on how the fidelity of this model could be improved while also being a useful educational tool for students, allowing them to practice surgical skills affordably and with low risk.

Take home message

Popeye the Pug is a validated, low-risk, and cost-effective surgical training model that helps veterinary students build essential skills in performing common small animal surgeries before entering clinical practice.

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Integrating Virtual Farm Swine Farm Visits into the Pre-Clinical Veterinary Curriculum

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Veterinary shortages in rural and food animal medicine are widespread in the United States, with the USDA designating 240 shortage areas in 47 states in 2024. Many veterinary students may not expect to work with food animals but could be their clients' only resource for production animal information. Traditional in-person farm visits are limited by biosecurity risks, safety concerns, and logistical challenges in current curriculums. Virtual farm visits offer a solution by providing exposure to farm environments without these constraints. This project aimed to enhance veterinary students' exposure to swine production and farm evaluation through virtual visits.

To meet the objectives, a virtual farm visit was conducted during the third-year production medicine course at Iowa State University. A digital connection was established between the classroom and a commercial swine production facility. The instructor on-site guided students through a site evaluation and antemortem sample collection using smart glasses, allowing students to visualize the facility and animals. The synchronous connection enabled students to actively participate. A pre- and post-visit quiz assessed student knowledge, and a survey measured student attitudes and perceived comprehension compared to traditional didactic methods.
Overall, the virtual farm visit and assessment successfully established and maintained a synchronous connection between the farm and classroom allowing for student edification. Exposure to telehealth technologies not only introduces species and environments that are otherwise difficult for students to access, but also highlights the benefits of using this technology to interact with clients.

Take home message

Integration of virtual swine farm visits provides exposure to telemedicine technologies and alternative educational opportunities to overcome challenges associated with taking large class sizes on commercial production operations.

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Employing Veterinary Students to Support Clinical Skills

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Summary of Work:
For the past eight years, the OSU College of Veterinary Medicine (CVM) has employed student workers to assist production of clinical skills training models. Students are hired in their first year and continue working until the start of their clinical rotations. Students are trained in the use a variety of materials, 3d design and printing, and other building techniques. Student responsibilities progress from simple model production in the first year to research and development in their third year. Responsibilities for all students include producing clinical skills models, 3D printing clinical cases, and researching and developing new training models.

Discussion:
This communication will discuss the pros and cons of employing student workers, including production capacity, innovation, financial advantages, program ambassadors/student buy-in, student self-study, and constraints related to student availability and workload.

Results:
The program has yielded positive results. It is cost-effective, with a low cost-to-production ratio. Student workers have significantly reduced the workload of technical staff and faculty, produced thousands of high-quality training models, and developed innovative models independently. Additionally, students have reported personal benefits such as in-depth study of skills, improved mental health, and deeper involvement in the program. The most notable challenge is the availability of students during breaks, exams and curricular schedule.
Take-Home Message:
Integrating veterinary students into the production of clinical skills training models offers numerous advantages to both the program and the students. However, it is essential to consider the limitations of student availability to ensure the success of the student worker program.

Take home message

Integrating veterinary students into the production of clinical skills training models offers numerous advantages to both the program and the students. However, it is essential to consider the limitations of student availability to ensure the success of the student worker program.

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Workshops October 18, 2025

Case Writing Workshop: How Can We Help You? Communication Scenarios to Support Clients with Disabilities

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Target Audience

Educators involved in creating and/or coaching communication skills curricula, particularly with more advanced students (nearer to graduation).

Learning Objectives

1. Review key communications skills necesary for students to when dealing with clients mainfesting some form of a physical or mental disability
2. Incorporate communication skill requirements in construction of case scenarios specifically targeting communication with disable clients
3. Brainstorm means to practice these case scenarios effectively
4. Outline training of SCs and communication coaches in support of these interactions

Background:

Veterinarians and their staff members often find themselves faced with pet owners who are not representative of the general population. Owners with a physical or mental disability (including neurodivergent individuals) who may not be able to engage in day to day conversations or activities, for whatever reason, may present a challenge for a veterinarian to find successful ways to collect histories, present diagnoses, review treatment plans, etc., thus hindering patient care.

Communication training programs generally lack practice scenarios for this potentially underserved population. Having educators understand the importance of teaching skills to support successful connections with these populations will be emphasized and practiced. The same holds true for educators of early career veterinarians in practice.

Structure of Workshop:

We envision 30-45 minutes of didactic, interactive instruction/discussion and 45-60 minutes of case writing on the subject material. Examples of appropriate approaches to pet owners with various disabilities will be provided. Participants will learn to create relevant scenarios for these conditions. They can then introduce these to students to practice appropriate support for their disabled clients, under the guidance of two facilitators. Feedback will be offered on the participants' products.

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Developing Effective Rubrics to Assess Surgical and Procedural Skills Using Surgical Models

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Target Audience

- Veterinary and medical educators involved in skills evaluation
- Educational researchers interested in skills assessment

Learning Objectives

By the end of this workshop, participants will be able to:

1. Describe key principles of effective rubric design for skills assessment.
2. Identify specific, observable and measurable behaviors related to model use.
3. Develop a structured rubric tailored to a specific model-based procedural skill.
4. Critique and refine rubrics to improve clarity, fairness, and educational alignment.
5. Plan the implementation and evaluation of rubrics within your institution.

Simulation-based instruction is an effective, affordable, and low risk method to teach fundamental surgical and procedural skills. Rubrics offer a reliable, standardized method to evaluate objectively student skill capability, provide actionable feedback, and promote consistent expectations among instructors and students.

The aim of this workshop is to guide participants through the creation of practical, skills-focused rubrics emphasizing demonstration of skills necessary to become Day-One competent veterinarians. Workshop completion gives learners tools that can be immediately applied to effectively assess student skills utilizing models.

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Teaching with AI Scribes: Real-Time Documentation & Data for Veterinary Curriculum Innovation

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Target Audience

Curriculum directors, simulation coordinators, clinical-skills faculty, instructional designers, educational researchers.

Learning Objectives

1. Align AI-scribed encounter data with institutional rubrics (e.g., Calgary–Cambridge, AVMA CBVE) and multiple feedback domains (communication, business, teamwork).
2. Design a simulation, OSCE, or lecture workflow that integrates real-time documentation, analytics, and quiz-item generation.
3. Develop an implementation plan that addresses privacy, academic integrity, and faculty workload.

Communication is arguably the most critical non-technical skill for emerging veterinarians, yet it is notoriously difficult to coach and assess at scale. Faculty witness only a fraction of learner interactions, making it challenging to deliver timely, specific feedback on essential behaviors such as rapport-building, active listening, open-ended questioning, and summarizing key points. Feedback can be provided either through actual encounters or simulated encounters.
Beginning summer 2025, Harbor.vet (students embedded in veterinary hospitals) and CoVet (and AI scribing company) will pilot an AI-powered scribing platform that records every student–client encounter and returns real-time, structured feedback mapped to the Calgary–Cambridge framework and AVMA CBVE Domain 5. Immediately after each consultation, students receive a dashboard showing the frequency of empathic statements, the ratio of open- vs. closed-ended questions, evidence of reflective listening, and whether critical information was summarized before closure. Faculty gain an aggregate view of cohort performance and searchable transcripts for targeted coaching.
Two veterinary schools will run parallel clinical pilots, and preliminary qualitative insights will be shared during the workshop; quantitative outcomes will follow pending IRB approval.
Participants will experience the workflow first-hand and leave with turnkey resources—technical checklists, orientation decks, and sample ethics language—for implementing continuous, data-driven communication feedback in their own programs.

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Changing the Game: Modernizing Veterinary Education and Continuing Education Through Games, Comics, and New Learning Formats

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Target Audience

Veterinarians and veterinary educators

Learning Objectives

1. Describe how games, comics, and narrative-driven tools can enhance engagement, comprehension, and retention in veterinary education and continuing education (CE).
2. Identify key principles for designing and implementing modern learning materials that are appropriate for veterinary students and practicing clinicians.
3. Evaluate the role of innovative educational formats in improving clinical reasoning, case management skills, and lifelong learning among veterinary professionals.

Veterinary education—both at the student and professional level—is experiencing a critical shift. Traditional methods alone are no longer sufficient to meet the demands of today's learners, who seek engagement, flexibility, and deeper connection to the material. In both veterinary school curricula and continuing education (CE) offerings, the integration of games, comics, narrative-driven tools, and interactive formats is redefining how knowledge is delivered and retained. These modern approaches leverage principles of cognitive science, gamification, and visual storytelling to enhance critical thinking, clinical decision-making, and long-term retention.

This session highlights how customized card games, board games, comics, and other innovative resources are being deployed to teach complex topics like internal medicine, surgery, financial planning, and spectrum of care. We explore their impact not only in the classroom, but also in CE spaces—where busy practitioners benefit from dynamic, case-based formats that respect their time and clinical experience. Through project examples and early outcomes, we illustrate that games and modern learning tools aren't gimmicks: they represent a necessary evolution to make veterinary education more practical, memorable, and accessible across all stages of a veterinary career.

Brave Spaces Using Communication Skills: Exposure to a New Way of Thinking

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Target Audience

Educators, clinical instructors and facilitators wanting to have new skills to improve team dynamics and effectiveness as well as apply to difficult conversations

Learning Objectives

1. Understanding the concept of Brave Spaces vs. Safe Spaces
2. Understanding the value of Creating a Brave Space for real world veterinary use
3. How to create Brave Spaces for Engagement
4. Review of communication skills needed for constructive dialogue
5. Sharing stories for connection
6. How to develop a curiosity practice

The Aim of the Workshop is to expose learners to a new way of thinking about communication within small group teaching and veterinary teams. This can be applied to both communication training and to clinical skills. Dr. Kristi Clemons' (Executive Director of the Dialog Initiatives at Dartmouth College) scholarship concerning Safe Spaces vs. Brave Spaces will be explored through the Veterinary Perspective.
The structure of the workshop will include didactic background learning, skills review that will be practiced in active exercises and two guided learning opportunities – the first is a trust building exercise, and the second is a curiosity simulation. Debrief and captured learnings will be highlighted for Take Home use.

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Designing high-quality veterinary educational research projects

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Target Audience

Early- to mid-career faculty who are planning to perform educational research projects

Learning Objectives

At the end of the session, attendees will be able to:

1. Explain why it is critically important to include educational theory in the design of educational research studies
2. Discuss whether to include a control or comparison group
3. Describe meaningful outcome measures, including performance measures, for an educational research study
4. Discuss whether an educational research study they are reading is high-quality

Veterinary educational research (VER) produces new knowledge, feeds novel initiatives, and generates innovation that advances veterinary education (1,2). However, high-quality VER is not simple, and veterinary faculty are traditionally trained in science disciplines that prioritize randomized controlled trials and quantitative study methods, rather than in social science disciplines and in qualitative and mixed methods. There is a need for training and mentorship for faculty wishing to undertake VER to ensure that they generate high-quality, generalizable data.

Structure of workshop

If advanced registration is possible, attendees will be emailed and asked to read chapter 5a(i) of the Veterinary Educational Researcher's Handbook before attending the session (3).
The workshop will include a brief introduction to orient attendees. Attendees will work in small groups of 2-4, where they will develop one or more research questions and design an educational research study to answer those questions. Attendees will work through a structured handout to guide them through the process of designing the study. The presenters will circulate through the groups to guide them in creating high-quality study designs, periodically bringing the small groups back to a large group for mini-debriefs. At the end of the workshop, the presenters will close with final thoughts about challenges in designing high-quality VER and how these can be addressed.

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Development of Integrated Simulations-how to use pain points and frustrations for good

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Target Audience
Educators or administrators

Learning Objectives
Participants in this workshop will:

1. Develop an outline of potential material to include in an integrated simulation.
2. Practice aligning simulation design with learning outcomes and briefing plans.
3. Leverage points of frustration or pain points to create enhanced learning opportunities.
4. Network with other participants in areas of interest for future collaborations in simulation creation.
5. Explore healthcare simulation design resources.

Background:
Simulation-Based Education is a highly flexible and robust educational tool, useful in a variety of contexts and purposes. Integrated simulations allow for multiple domains of learning to be combined for a realistic depiction of the complexities inherent in clinical practice in a controlled environment where experimentation and repetition is possible. Examples include house officer training where trainees are exposed to, and coached in, leadership and delegation skills as well as how to create a supportive learning environment during a medical emergency or helping veterinary students develop an understanding of collective competency within an operating room environment while also applying newly gained content knowledge.

Structure of workshop:
During this workshop, a brief discussion of different integrated simulation events will be offered as inspiration. Following a short overview of the design process used to create one of these events, including developing clear learning objectives, using those to guide key elements of the simulation, and outlining the preparation, briefing, and debriefing process, participants will be invited to work in small groups using their own pain points and frustrations as fodder for the initial design of an integrated simulation. The stepwise instructions provided to participants will be based on the best practices of simulation development. Resource material will be provided to ensure participants are able to continue to refine and enhance their simulations once back at their home institutions.

Take home message:

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Integrated simulations are a tremendously valuable tool and should be considered for a variety of learning needs in veterinary medicine.

Short Communications October 19, 2025

Importance of Training orientation on Surgical Hand Ties

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Background:
Surgical hand ties are commonly taught at a table or horizontal plane. Competence in hand ties when being taught in the horizontal plane do not seem to transfer to competence in the vertical plane. Studies have shown the importance of training in the proper orientation.1,2 The aim was to determine if training orientation was important and had an impact on skill retention.

Study design:
37 DVM students with no previous hand tie experience were recruited and randomly divided into Groups 1 (18) – Horizontal orientation or 2 (19) – Vertical orientation
Students were trained by a ACVS surgeon in either orientation for 30 minutes one week apart then recorded performing hand ties in both orientations. One month later they were recorded performing hand ties in both orientations. The videos were randomized with only the student number visible to two trained raters using a rubric with a task checklist and a Global Rating Score (GRS). Mandatory fails were assigned if the participant did not complete the task in the assigned time, completed less than 4 throws, and/or used both hands instead of one.

Statistical Analysis:
Non-parametric Wilcoxon two-sample test.

Results:
There were no statistical differences in how the students performed based upon training orientation immediately following the second training. (GRS p=0.62, Checklist p=0.41) At 1 month the Group 2 students had significantly fewer fails p=0.0003.

Discussion:
Our findings indicate that vertical training allows the students to retain the skill longer than those trained with horizontal orientation.

Take home message

Students should be trained with both the horizonal orientation and the vertical orientation regardless of what their career goals are in the future.

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Evaluation of CPR performance during surgery following initial CPR training.

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Objectives
Identify concepts and psychomotor skills that did not transfer from CPR training to implementation.
Evaluate the possible reasons for this lack of transfer.
Identify which concepts and skills are retained following CPR training.

Background
CPR in veterinary medicine has advanced since the development of the Reassessment Campaign on Veterinary Resuscitation (RECOVER). Despite efforts to improve guidelines and practices for CPR, there is need for additional studies as to how best train veterinary professionals. This study investigates CPR knowledge and skills acquired and retained following a single CPR training session and identifies the aspects of CPR training that should be emphasized during repetitive practice to facilitate retention during a surgical cardiopulmonary arrest (CPA).

Materials and Methods
Veterinary students completed an introductory CPR lab with prework based on RECOVER guidelines, followed by an immersive simulation scenario that had been scripted in the prework. Students received immediate performance feedback. One week later, the same students completed an unknown immersive simulation scenario involving intraoperative CPA during surgery. Videos of randomly selected groups were evaluated using performance rubric.

Results
Students demonstrated the ability to follow the basic algorithm and timing of steps as outlined in the RECOVER guidelines. Deficiencies were identified in chest compression technique, interpretation of vital signs parameters and in team dynamics.

Conclusion
Students having initial CPR training were able to perform the basic steps and timings of CPR during an unknown simulated surgical CPA. Students were unable to consistently form an organized team, provide effective compressions and assess using capnography.

Take home message

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Increased emphasis on communication, team formation, compression technique/evaluation using capnography is required.

Teaching experience, not surgical residency training, is the critical factor in optimizing student learning outcomes in performing ovariohysterectomy on a model

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Background
Veterinary students gain competency in surgical skills through deliberate practice (1), often on models. While educators are expected to be experts, research has not compared the effectiveness of veterinary specialist versus generalist instruction in teaching common surgeries. This study sought to evaluate how instructors' experience and qualifications influenced students' learning of canine ovariohysterectomy on a model (mOVH).

Methods
Students (n=105) were randomized to three groups, taught by: (1) residency-trained surgeons with over 3 years' experience teaching mOVH, (2) general practitioners with over 3 years' experience teaching mOVH (GP>3), and (3) GPs with under 3 years' experience (GP<3). Students completed four three-hour laboratories where they performed mOVH supervised by the same instructor type in each session. Students were assessed performing mOVH using a validated 22-item rubric (2) and completed a survey about their experience.

Results
GP<3 group students achieved lower total rubric scores than GP>3 group students, and GP<3 group students were more likely to require remediation than those taught by surgeons (Figure 1). Students reported similar satisfaction with their instruction.

Discussion
Instructors with over 3 years' experience teaching mOVH had better student learning outcome than instructors with under 3 years of experience. While mOVH teaching experience did influence learning, the instructor's completion of a surgical residency did not.

Take home message
This study indicates a need for more extensive training for new surgical skills instructors and demonstrates that GPs with experience teaching surgical skills are suitable instructors for teaching ovariohysterectomy on a model.

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Design and Implementation of a Safe Equine Radiation-Free Radiographic Simulator for Veterinary Skills Training in the Pre-clinical Curriculum

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The ninth standard of accreditation as outlined by the American Veterinary Medical Association (AVMA) Council on Education (COE) mandates that all accredited colleges of veterinary medicine must provide instruction in medicine and surgery, including principles of practice, hands-on experiences with diagnostic methods, and interpretation of clinical findings. In equine practice, diagnostic imaging is used as a first-line diagnostic approach and is an integral part of pre-purchase and lameness examinations. Accuracy and consistency of radiographic interpretation relies heavily upon procedural techniques to acquire diagnostic images and overcome both motion artifacts and obliquity. Because the sizes and temperaments of equine patients potentiate hazardous working conditions for the veterinary team, learners might benefit from simulations that allow them to practice holding the x-ray generator and the imaging plate for diagnostic image acquisition in the absence of live horses. This teaching tip describes the development of a novel equine radiographic simulator for skills training in the veterinary curriculum. The model allows learners to handle imaging equipment safely and without radiation exposure as they develop proficiency positioning radiographic plates and placing directional markers. Learners can also test their understanding of radiographic positioning in reverse: if given a radiograph, they can be asked to describe how the x-ray generator was positioned to obtain the diagnostic image. Future iterations will investigate the simulator's efficacy with respect to learning outcomes when the model is paired with an assessment rubric as part of an objective standardized clinical examination.

Take home message

Dynamic knowledge retention and facilitated learning is enhanced when learners are afforded the opportunity to practice hands-on clinical skills in a safe, supervised environment. Acquisition of knowledge can be enhanced via the combination of senses (vision and touch), interpretation (cognition and kinesthesia), and communication skills. These radiographic simulators represent a novel approach to the relationship between teaching and learning by stimulating multiple senses. This simulator also provides an opportunity to expose students to a variety of learning styles. Simulation-based training is a validated teaching tool in veterinary medical education and enables students to practice real-world clinical situations within safe, supportive environments. Using this model, students can practice procedural steps, transform

the mental inventory into motor behavior, and engage in reflective repetition until the procedure no longer requires cognitive input. Utilization of this method enables the learner to efficiently build a foundation that should ease the transition into their next level of radiographic acquisition in the clinical setting.

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Digitizing plastinated specimen to optimize usability in veterinary education

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Background:
Plastinated body parts increasingly find their way into veterinary education (1). They are especially useful to support basic anatomy classes, but can also serve as simulators to foster training of clinical procedures. However, these animal-derived learning materials are unique and inappropriate to use outside the classroom. Our learning objective was to generate high-quality interactive digital 3-dimensional models to extend their in and out-class usability.

Methods:
We used light scanning and photogrammetry technology to acquire high resolution geometry and texture data, and used that to generate fully interactive 3-dimensional digital models of plastinates of a dog hindleg and a horse knee.
Results: Light scanning resulted in a detailed surface geometry (~2,5 million faces), but low-resolution textures. We replaced these with high-resolution textures that were generated using photogrammetry technology from 100-120 images taken with a mobile phone. The resulting textured 3D models were annotated to identify key structures in the specimens. These models were used in our custom XR application AvatarZOO, as well as online through our webviewer. Usability studies are ongoing and will be presented.

Discussion:
The use of 3D learning materials is important to support spatial knowledge acquisition by students, especially those with lower spatial abilities (2). We have generated high-quality digital representations of in-class animal-based learning materials which renders them suitable for off-class usage. In addition, by annotating essential structures we added in-class functionality to serve as digital tutors. Students can easily solve low-order questions themselves by using this tutor in conjunction with the physical specimen.

Take home message
We developed a method, with easily accessible technologies, to make interactive 3D digital models of veterinary plastinated learning materials. They extend in-class and out-class usability, without compromising the physical specimens, and adding important educational value.

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Canine joint models for arthroscopy training

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Background:
Arthroscopic (minimally invasive) joint evaluation and treatment is a critical skill for a Diplomate Veterinary Surgeon (DACVS). Arthroscopy results in faster patient recovery, increased postoperative patient comfort, and more thorough joint evaluation and treatment than open surgery. Arthroscopy skills are currently predominantly taught during residency training through on-clinic learning on clinical patients. Non-proficient resident-learners however increase patient morbidity through longer procedure times and therefore anesthesia times, and often cause inadvertent cartilage damage from rough instrument use. Cadaver training is no longer easily accessible or financially available for many residency training centers. The aim of this study was to develop and validate canine arthroscopy simulation models.

Material and methods:
Three joint models (stifle, elbow, shoulder) were developed, with replaceable parts including portal entry sites and pathology lesions. Lesions included a bucket handle tear of the medial meniscus, humeral OCD lesion and medial coronoid process pathology. Landmarks within the joint were lettered for identification during joint exploration. All models were tested for face and construct validity within a group of 19 experts (DACVS). The hypothesis was that these models have good face and construct validity.

Results:
Results will be released after expert testing at an Arthroscopy event in August 2025.

Conclusion / Take home message:
Canine arthroscopy training is currently performed through clinic-learning, with no simulation models available. Basic box training models are currently used in canine laparoscopy and human arthroscopy training. Canine stifle, elbow and shoulder joint models are currently being developed and in the testing phase.

Take Home Message

1. Canine arthroscopy training is currently done through clinic-learning, with no simulation models available despite models being used in human arthroscopy training.
2. Canine joint models are an easily accessible, low-cost, low-maintenance and safe alternative to cadaver or in-clinic training on patients.

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3. Canine stifle, elbow and shoulder joint models are currently being developed and validated with a view to incorporate these into surgical residency training.