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Trauma Informed Classrooms

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The Journal of the Association of Veterinary Technician Educators (JAVTE), a peer-reviewed, scholarly journal, is the official publication of the Association of Veterinary Technician Educators (AVTE). Its purpose is to act as a publication for disseminating evidence-based research to people working as educators in the field of veterinary technology. The journal's emphasis is on encouraging collaboration among veterinary technology educators through scholarly inquiry relating to the understanding and/ or improvement of educational processes and outcomes, organizational issues in education, concepts of teaching and learning, and student engagement based upon research, observations, and experience relevant to the field.

Submission Process and Deadlines
Papers will be reviewed using the JAVTE double-blind peer-review process and should be prepared using the JAVTE author guidelines (see Editorial Policies and Peer Review Process). Submission of papers is the author's acknowledgment of and agreement to JAVTE's ethical duties of the author policy.

Cover photo submitted by
April Lehmann, BS, FVTE, LVT, RVT
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Contents

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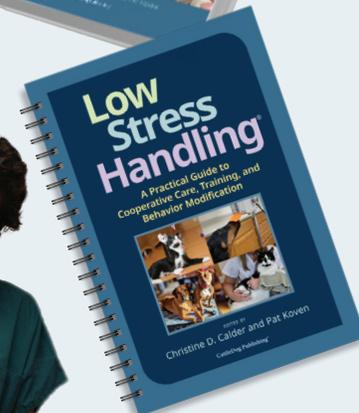to exclusive instructor-only resources when you require the 2nd Edition textbook.

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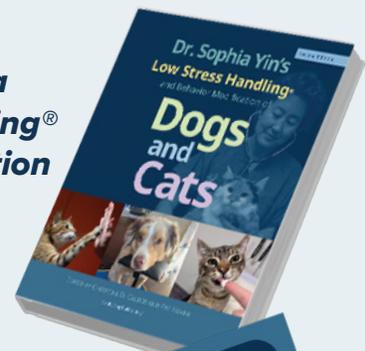
Letter from the President of the Association of Veterinary Technician Educators

Tricia Gorham, MA, CVT
AVTE President

I hope this message finds you well and energized as we begin 2026. I remain deeply grateful for your continued support of the Association of Veterinary Technician Educators (AVTE). Your engagement and dedication are the foundation of our success, and we look forward to another year of growth, collaboration, and shared achievement.

As I reflect on 2025, there are many highlights that demonstrate AVTE's ongoing commitment to "One Community":

- **Engagement at the AVMA Veterinary Leadership Conference (VLC):** In January, we met with delegates of the AVMA House of Delegates to discuss the education of credentialed veterinary technicians, key legislative matters, and the importance of utilizing educated and credentialed technicians to the full scope of their training.

- **CVTEA–VTNE Alignment Working Group:** We established a working group to explore alignment between the CVTEA Essential Skills List and the VTNE Domains and Knowledge Statements. The group convened at VLC in Chicago and will continue its work in the coming months, reconvening in person at the AVMA Annual Convention in July.

- **VTNE Research Book Club:** We hosted a book club session focused on the VTNE research project, facilitating open and thoughtful discussion around key findings outlined in the executive summary.

- **Launch of the AVTE Resource Exchange:** We proudly launched our Resource Exchange platform, providing a centralized space for the entire AVTE community to share ideas, materials, and best practices.

- **Advocacy Efforts:** Our Advocacy Committee continues to actively support members in states where educational requirements for credentialing are being challenged, reinforcing our commitment to maintaining high standards in veterinary technician education.

We are especially excited about our upcoming Annual Conference, scheduled for July 31–August 2 in Portland, Oregon. With the theme "Trailblazing Together: Every Path Leads to Better Care," this event promises exceptional opportunities for networking, professional development, and meaningful dialogue. Attendees can look forward to engaging sessions, interactive workshops, and inspiring keynote presentations. Whether you are joining us for the first time or returning once again, we are confident the conference will offer valuable insights and connections that help shape the future of our profession.

I would like to extend sincere appreciation to our AVTE Board of Directors, committee volunteers, and Executive Team. Your dedication, leadership, and countless hours of service in 2025 have been instrumental in advancing AVTE's mission and strengthening our community.

2025 was an extraordinary year. Together, we will make 2026 even more impactful.

Wishing you a year filled with success, inspiration, and meaningful collaboration.

Trish

Teaching Tips & Tricks

Bethany Buck, MSML
Instructional Designer
Fort Valley State University

Vet Tech Education for Online Educators

Developing online instruction can be daunting for anyone, but the stakes are even higher for fields like Veterinary Science, where hands-on, experiential learning is so vital. We've encountered this specific challenge on our FVSU campus in our VetTech program. Our solution: a thoughtful partnership between Veterinary Educators and Instructional Designers (IDs). The most effective collaboration begins with storytelling - Veterinary Educators simply sharing the experiences their students have in labs or internships before diving into files, forms, and content. This narrative approach allows IDs to apply their creativity and technical expertise from the start.

Instructional Designers bring specialized knowledge to build and present your content in ways that:

- Reduce cognitive load through intuitive navigation
- Create engaging learning experiences
- Develop scalable solutions for departmental needs
- Translate hands-on experiences into effective online activities

At FVSU, our students can complete the Veterinary Front Office Simulation fully online to prepare for the ACTA-CVTEA certification. This online module provides content, examples, forms, receipts, and other necessary documents that students can access repeatedly as needed. The course also offers seamless grading options for instructors and provides students with timely feedback.

Simply telling the story of your Vet Tech students' experiences to your Instructional Designer will initiate a fruitful online instruction journey that maintains the quality and effectiveness of your program while expanding its reach.

Evaluating Graduate Preparedness in Veterinary Technology: Perspectives from Clinical Mentors and Recent Graduates

Tara Joiner, EdD, LVT, Alyx Schultz, EdD, Kristie Guffey, EdD, Laura Hoffman, DVM
Murray State University

INTRODUCTION

Veterinary technology education programs are vital in preparing credentialed veterinary technicians and technologists to meet workforce demands. As the field evolves, veterinary technology educators face growing expectations to ensure that graduates possess technical skill competencies and professional readiness. According to the American Veterinary Medical Association (AVMA), there are more than 200 CVTEA-accredited programs in the United States, and these institutions are responsible for upholding rigorous clinical and educational standards[1].

Although veterinary technology programs strive to prepare students for success, the national VTNE pass rates and mentor feedback indicate that students may still graduate with gaps in core skill competencies. Skill areas that are more difficult to reinforce in the educational setting, such as client communication, emergent anesthetic protocols, and other skills are most troublesome. Feedback from recent graduates and clinical mentors is essential in closing this gap and guiding curriculum improvement. This study evaluated the perceived preparedness of veterinary technology graduates from an accredited four-year veterinary technology program by comparing student internship mentor evaluations and graduate surveys (3-month post-graduation) over a three-year period[2]. The findings offer valuable insights for improving clinical training, soft skills instruction, and continued alignment with VTNE competencies.

METHODS

A mixed-methods, descriptive study assessed how well students were prepared to enter the workforce. Participants included 110 clinical mentors and 37 recent graduates, 3 months post-graduation from the 2022–2024 cohorts. Both groups were surveyed using Google Forms instruments developed and distributed by the veterinary technology program.

Quantitative questions asked respondents to rate student competence on Likert-scales across 16 selected essential skill areas, including animal handling, injections, laboratory procedures, client communication, large animal restraint, and IV catheter placement. The mentor survey included an open-ended prompt for qualitative insights.

RESULTS

Mentors reported high confidence in students' performance in injections (median = 10) and post-operative care (10). Lower scores were observed for IV catheter placement (9) and large animal restraint (9). Student post-graduation surveys mirrored these patterns but overall trended lower, most notably in large animal handling (8) and admitting and discharging patients (8), with the largest discrepancy (mentor-student) noted within admitting and discharging patients. The mentor and graduate survey questions reflected the same quantitative items. Table 1 represents the Likert-scale survey questions examined, the median values, and discrepancy results from the study[2].

Thematic analysis was utilized to determine themes within the qualitative portion of the study. There were four dominant themes that emerged: hard skills, soft skills, curriculum and practicum design, and positive feedback. While mentors suggest that students excelled in small animal hands-on skills, they noted that students struggled to perform more difficult hands-on skills like: venipuncture, anesthesia, and intravenous catheter placement. Mentors emphasized the value of structure pre-clinical labs and client communication experiences. Mentors suggest students may need more practice in these soft-skill areas before their clinical internships. Thematic results from this study are represented in Table 2[2].

DISCUSSION

The data revealed a general agreement between mentors and graduates regarding students' strengths in basic clinical skills and gaps in more advanced essential skill areas. While the perception of routine procedures reflects the program's solid foundation, the confidence gap in large animal restraint and IV catheter placement indicates areas where curriculum enhancements could better prepare students for a broader range of clinical environments[2].

Veterinary technology programs may benefit from incorporating more standardized self-evaluation tools and

clinical learning simulations within the program, along with structured feedback sessions from mentors to students during their internship to aid in student preparedness for the workforce.

The emphasis on soft skills and communication aligns with research highlighting client relations as a critical competency for veterinary technicians[3]. Clinical learning simulations and mentor feedback could enhance these competencies in the classroom and clinical settings.

As graduates pursue this professional pathway, it requires passing the VTNE, boosting student confidence, and implementing program updates that align with evolving student needs and AVMA competencies. These steps are essential for increasing first-time pass rates and ensuring the long-term success of veterinary technology programs.

CONCLUSION

Graduates of the accredited four-year veterinary technology program demonstrate readiness in core small animal hands-on skills; however, they may face challenges in large animal restraint, more technical hands-on tasks, and communication[2]. The alignment between mentor and student perceptions highlights the value of dual feedback mechanisms within program evaluations. Future curriculum adjustments should emphasize hands-on skill improvement, standardized internship expectations, and soft skills instruction to better prepare students for the diverse realities of clinical practice and passing the VTNE.

TABLE 1: Mentor & student median ratings (2022–2024) of veterinary technology student competence on a 10-point scale across core skill areas, with calculated discrepancy scores (Mentor − Student).

Skill	Mentor Median	Student Median (Scaled)	Discrepancy (Mentor − Student)
Admitting and discharging patients	10	8	2
Administering injections	10	10	0
Caring for & monitoring post-surgical patients	10	10	0
Collecting samples for evaluation	9	10	-1
Following safety regulations	10	10	0
Knowing normal physiologic values	10	10	0
Maintaining case records and filing appropriately	9	10	-1
Performing laboratory tests	9	10	-1
Performing routine procedures	10	10	0
Placing intravenous catheters	9	10	-1
Positioning animals for radiographs	9	8	1
Preparing patients for surgery	10	10	0
Restraining large animals	9	8	1
Restraining small animals	9	10	-1
Taking histories, observing and examining animals, and recording findings	10	10	0
Using aseptic techniques appropriately	10	10	0

Note. Student medians were scaled to a 10-point system to align with mentor ratings. Positive discrepancies indicate higher mentor assessments; negative values reflect higher student self-assessments. Data from Joiner TL (Naeem M, 2023)

REFERENCES

1. American Veterinary Medical Association. CVTEA announces policy changes, decisions. AVMA News. Published January 10, 2025. Accessed March 15, 2026. https://www.avma.org/news/cvtea-announces-policy-changes-decisions

2. Joiner T. The evolution of veterinary technology education: growth, accreditation, and the role of [State University's] Veterinary Technology Program. Murray State Theses and Dissertations. 2025;399. https://digitalcommons.murraystate.edu/etd/399

3. Clarke PM, A-A J. Client perspectives on desirable attributes and skills of veterinary technologists in Australia: considerations for curriculum design. J Vet Med Educ. 2015:217-231

TABLE 2: Frequency of qualitative themes identified in mentor and graduate feedback.

Theme	Frequency	Percentage	Description	Representative Quote
Hard Skills	22	35.5%	Technical skills like venipuncture, radiology, anesthesia, and equine procedures	"They need more hands-on experience drawing blood, placing catheters, taking X-rays, and using machines."
Soft Skills	17	27.4%	Comments on communication, professionalism, and client interactions	"They are comfortable talking to staff, but just need more experience talking to those they don't know confidently."
Curriculum & Program Design	11	17.7%	Feedback about class size, admissions, curriculum updates, and task alignment	"I think having an application process into the program similar to the RNA program would help find the students who are most qualified and dedicated to improving the field. I also think having grade requirements within the program will be beneficial."
Overall Pleased	12	19.4%	General positive remarks about student performance or the program itself	"The student was very well prepared."

Note. N = 62 coded responses. Data from Joiner TL. (Naeem M, 2023)

Trauma-Informed Classroom Environments for College Professors: Supporting Equity, Emotional Intelligence, and Student Well-Being

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CORRESPONDENCE

INTRODUCTION

Students enter college classrooms with diverse lived experiences, many shaped by chronic stress, adversity, or trauma. Trauma can affect cognitive functioning, emotional regulation, executive skills, and relational trust (Carello & Butler, 2015; Harper & Neubauer, 2021). Trauma-informed pedagogy responds to these impacts by intentionally creating learning environments grounded in safety, empowerment, transparency, and inclusion (Brunzell et al., 2019; SAMHSA, 2014). For college professors who approach teaching as both an intellectual and relational practice, trauma-informed strategies support more equitable academic participation.

This paper examines the importance of trauma-informed classroom environments in higher education and presents practical strategies for course facilitation. It also addresses emotional intelligence, the psychology of procrastination, and students' efforts to balance academic and personal responsibilities. In addition, the paper explores trauma-informed practices for adult learners across andragogical, experiential, and formal training contexts and offers didactic strategies that promote student well-being while maintaining academic rigor.

THE IMPORTANCE OF TRAUMA-INFORMED PEDAGOGY IN HIGHER EDUCATION

College students increasingly report anxiety, depression, illness, instability, financial hardship, and caregiving stress (American College Health Association, 2023). For many, trauma remains an ongoing concern rather than a past event. Trauma-informed environments support persistence, motivation, and retention by combining clear expectations with compassionate flexibility (Brunzell et al., 2019; Imad, 2021).

Trauma and Its Impact on Learning

Trauma affects neurological processes, including attention, working memory, and executive functions (Van der Kolk, 2014). Students affected by trauma may struggle with deadlines, focus, planning, or emotional regulation, all of which are challenges that are often misinterpreted as disengagement or lack of motivation (Carello & Butler, 2015). Trauma-informed education reframes these behaviors as signs of cognitive overload rather than personal deficits.

Trauma-informed education emphasizes safety, trust, collaboration, choice, and empowerment (SAMHSA, 2014). Classrooms rooted in these principles reduce barriers to learning and promote equitable access to academic success, particularly for students facing adversity (SAMHSA, 2014).

The Role of Emotional Intelligence in Trauma-Informed Teaching

Emotional intelligence (EI) involves recognizing, understanding, and managing emotions in oneself and others (Mayer et al., 2016). Professors with high EI are better equipped to interpret student behavior, communicate effectively, maintain healthy boundaries, and respond empathetically to stress-related procrastination and conflict Emotionally intelligent instruction is associated with higher student engagement, a stronger sense of belonging, and improved learning outcomes (Mortiboys, 2013).

TRAUMA-INFORMED PRACTICES FOR ADULT LEARNERS AND ANDRAGOGY

Trauma-informed pedagogy is especially important for adult learners, whose educational experiences are shaped by age, identity, work history, family responsibilities, and prior learning. Many return to education after experiencing workplace trauma, military service, medical hardship, discrimination, or burnout. Andragogical models emphasize self-direction, internal motivation, and the application of life experience to learning (Knowles et al., 2015), and

trauma-informed adaptations strengthen these principles by acknowledging the emotional, cognitive, and social contexts adult learners bring.

Adult Learners' Unique Vulnerabilities and Strengths

Adult learners bring complex life experiences shaped by employment, caregiving, health challenges, military service, discrimination, or workplace trauma, which can influence how they engage with authority and structured learning environments (Imad, 2021). Trauma-informed classrooms reduce retraumatization by offering autonomy, transparency, predictable structures, and respect for lived experience as expertise rather than deficiency. At the same time, adult learners contribute resilience, professional insight, and practical problem-solving skills that trauma-informed educators can strengthen through reflective, collaborative, and applied learning opportunities.

Trauma-Informed Andragogy

Knowles' principles of andragogy emphasize self-direction, relevance, and problem-centered learning (Knowles et al., 2015). Trauma-informed adaptations strengthen these principles by acknowledging emotional realities, offering flexible policies, grounding coursework in real-world applications, and emphasizing collaboration over hierarchy. This alignment makes adult education more accessible and equitable, particularly for learners from historically marginalized backgrounds.

EXPERIENTIAL LEARNING THROUGH A TRAUMA-INFORMED LENS

Experiential learning models often require reflection on personal experiences, which may unintentionally activate trauma responses (Zarifa et al., 2021). Trauma-informed experiential learning includes opt-in alternatives for personal disclosure, content warnings for sensitive activities, opportunities for debriefing, and reflective practices that promote integration rather than emotional reactivation. These adaptations allow meaningful participation without compromising psychological safety.

TRAUMA-INFORMED PRACTICES IN FORMAL TRAINING ENVIRONMENTS

In professional and technical training settings such as healthcare, leadership development, and workforce education, trauma-informed approaches reduce performance anxiety, promote psychological safety, and improve skill retention. Adult learners in evaluative or hierarchical environments benefit from clear expectations, structured feedback, non-punitive correction, emotionally intelligent leadership, and flexible practice formats (e.g., simulations, peer-led exercises). Integrating trauma-informed care with adult learning theory enhances instructional effectiveness while preserving learner dignity.

PROCRASTINATION, TIME MANAGEMENT, AND LIFE BALANCE

Procrastination as Emotional Avoidance

Procrastination is often an emotional coping mechanism rather than a sign of weak motivation. Students procrastinate to avoid anxiety, perfectionism, or fear of failure, all of which are worsened by trauma (Sirois & Pychyl, 2013). Breaks, support, and clear expectations help stop avoidance cycles.

Time Management and Executive Functioning

Students benefit from structured opportunities to develop time management and planning skills, especially those whose executive functioning is impacted by stress or trauma. Effective strategies include maintaining consistent schedules, breaking assignments into smaller parts, setting milestone deadlines, and demonstrating strong planning behaviors.

Balancing Work, School, and Life

Many students balance employment, caregiving, and family responsibilities. Trauma-informed pedagogy recognizes that students do not have access to equal resources or free time and avoids punitive structures that unfairly burden marginalized learners (Imad, 2021). Promoting balance improves academic persistence and well-being.

TRAUMA-INFORMED FLEXIBILITY STRATEGIES (NON–EXTRA CREDIT)

Due-Date "Reprieves"

Due-date reprieves provide students with a limited number of no-questions-asked extensions (e.g., 48 hours or one week), often restricted to specific assignment types. These policies promote autonomy, reduce the need for personal disclosure, and support executive functioning while preserving academic standards. Research indicates that compassionate flexibility increases engagement and perceived fairness (Kelley et al., 2022). Students can strategically plan when to use reprieve, improving their executive functioning without sacrificing course standards.

Significant Hardship Allowance

A Significant Hardship Allowance acknowledges serious disruptions such as medical emergencies, loss, or crises. Options may include extending deadlines on a limited number of assignments, waiving one low-stakes task, or dropping the lowest grade. Trauma-informed practice discourages repeated explanations of traumatic experiences, maintaining student dignity while ensuring consistency and transparency (Carello & Butler, 2015).

Weekend Self-Care Challenges (Non-Academic Incentives)

Non-graded wellness activities, such as reflective journaling, digital rest, mindfulness, or organization tasks, promote stress regulation without grade-based incentives. Recognition through class highlights, optional enrichment, or collaborative activities fosters community and normalizes self-care, improving overall classroom functioning (Brunzell et al., 2019).

TRAUMA-INFORMED DIDACTIC STRATEGIES

Effective trauma-informed teaching includes transparency in instructions and assessment, consistent routines, and predictable course structures, which improve confidence, retention, and equity (Winkelmes et al., 2016). Scaffolding large assignments reduces cognitive overload, while offering choices in assignment formats promotes autonomy and engagement (SAMHSA, 2014).

Metacognitive reflection supports resilience and self-awareness (Tanner, 2012). Safety in dialogue can be enhanced through community agreements, content warnings, structured participation, and avoidance of forced personal disclosure (Carello & Butler, 2015). Consistent application of flexible policies fosters trust while protecting instructor boundaries and preventing burnout.

CONCLUSION

Trauma-informed classrooms foster fair, compassionate, and challenging academic environments for diverse learners. For caregiving professors, trauma-informed strategies such as breaks, hardship allowances, and wellness activities help students manage life challenges while remaining accountable. When combined with emotional intelligence, understanding the psychology of procrastination, and support for time management, trauma-informed teaching promotes resilience and academic success.

By integrating trauma-informed principles into andragogy, experiential learning, and formal training environments, educators can create learning spaces that acknowledge the experiences of adult learners and support their success. Trauma-informed teaching is not just compassionate; it is a vital pedagogical approach that promotes deeper understanding, higher engagement, and lasting equity.

REFERENCES

1. Carello, J., & Butler, L. D. (2015). Practicing what we teach: Trauma-informed educational practice. Journal of Teaching in Social Work, 35(3), 262–278. https://doi.org/10.1080/08841233.2015.1030059

2. Harper, S. R., & Neubauer, L. C. (2021). Teaching trauma-informed practice in higher education. New Directions for Teaching and Learning, 167, 37–48. mhttps://doi.org/10.1002/tl.20406

3. Brunzell, T., Waters, L., & Stokes, H. (2019). Shifting teacher practice in trauma-affected classrooms: Practice pedagogy strategies within a trauma-informed positive education model. School Mental Health, 11(3), 600–614. https://doi.org/10.1007/s12310-018-09308-8

4. Knowles, M. S., Holton, E. F., III, & Swanson, R. A. (2015). The adult learner: The definitive classic in adult education and human resource development (8th ed.). Routledge.

5. Imad, M. (2021). Trauma-informed pedagogy. The National Teaching & Learning Forum, 30(2), 5–7. https://doi.org/10.1002/ntlf.30176

6. Zarifa, D., Walters, D., & Etmanski, B. (2021). Adult education and experiential learning in contemporary contexts. Adult Education Quarterly, 71(3), 251–269.

7. Van der Kolk, B. A. (2014). The body keeps the score: Brain, mind, and body in the healing of trauma. Viking.

8. SAMHSA. (2014). SAMHSA's concept of trauma and guidance for a trauma-informed approach (HHS Publication No. SMA 14-4884). Substance Abuse and Mental Health Services Administration.

9. American College Health Association. (2023). National college health assessment III: Undergraduate student reference group executive summary. ACHA.

10. Kelley, B., Hart, S., & King, R. (2022). Compassionate flexibility in higher education: Student perceptions of flexible deadline policies. Journal of Effective Teaching in Higher Education, 5(1), 1–19.

11. Mayer, J. D., Caruso, D. R., & Salovey, P. (2016). The ability model of emotional intelligence: Principles and updates. Emotion Review, 8(4), 290–300.

12. Mortiboys, A. (2013). Teaching with emotional intelligence: A step-by-step guide for higher and further education professionals (2nd ed.). Routledge.

13. Sirois, F. M., & Pychyl, T. A. (2013). Procrastination and the priority of short-term mood regulation: Consequences for future self. Social and Personality Psychology Compass, 7(2), 115–127.

14. Winkelmes, M.-A., Boye, A., & Tapp, S. (2016). Transparent design in higher education teaching and leadership. Stylus.

15. Tanner, K. (2012). Promoting student metacognition. CBE—Life Sciences Education, 11(2), 113–120.

More Reptile Education Is Needed in Veterinary Technology Curricula

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RECOVER Certified Rescuer, Fear Free Elite Certified

SUMMARY

Reptile ownership has grown significantly worldwide, and an increasing number of people are taking their reptiles to the veterinarian. Veterinary Technology programs (which produce Veterinary Technicians) often lack adequate knowledge about reptile care and medicine, as demonstrated by surveys of fellow technicians and personal experience. A reptile-specific class for Veterinary Technician students would fill that gap and help reptile owners take better care of their pets, which would improve patient outcomes.

INTRODUCTION

Pet reptile ownership has increased significantly over the last two decades worldwide. In the U.S. alone, reptile ownership has more than doubled over the past two decades, with an estimated 4.5 million homes currently housing at least one pet reptile[1]. Many, if not the majority of reptiles kept as pets in the average home are relatively easy to manage, handle, and care for if kept within specific environmental and nutritional parameters. Popular captive reptiles include bearded dragons, chameleons, ball pythons, turtles and tortoises, and several kinds of geckos. Unfortunately, without proper research, knowledge, and guidance, many reptiles suffer from preventable morbidities and comorbidities, living long and sometimes very unhealthy lives.

Small animal veterinary clinics who see reptiles often see sick ones that present as:

- Underweight
- Anorexic
- Dehydrated
- Egg bound (females)

Or with:

- Respiratory issues or distress
- Ocular or aural swelling
- Retained sperm plugs (males)
- Secondary Nutritional Hyperparathyroidism (also known as Metabolic Bone Disease, or MBD)

- Bone fractures
- Wounds
- Parasitic overloads
- Fungal and/or bacterial infections
- Viruses

Most of the illnesses mentioned above, and many others (with the exception of trauma), show a direct line of causation from improper nutrition and/or improper husbandry. As credentialed veterinary technicians, a significant job duty is educating clients and guiding them to maintain proper care of their pets. Education on reptiles in most veterinary technology programs in the US is weak at best. Most reptile knowledge is gained outside of the collegiate program, and on personal time. Perhaps it is time to ask an important question: if we do not spend time teaching these concepts, how can our graduates help clients prevent reptile illnesses? The number of private owners of pet reptiles seeking veterinary care is certainly growing, but are the credentialed veterinary technicians equipped to counsel those owners about proper nutrition and husbandry, two of the most common causes for reptile illness? Maybe the most important question to ask is: Should there be a reptile specific course required in every veterinary technology program?

BACKGROUND

In Veterinary Technology schools, reptiles and reptile medicine are largely addressed as part of a general exotics course. In a survey given to veterinary technology Program Directors around the United States via Facebook, 91% of respondents said that they do not feel like their program needs a reptile-specific course. Class time dedicated to reptile education ranged from 3 hours to 4-5 weeks. Some program directors shared that they spend little to no time on reptiles since knowledge about them is not required for the VTNE. It is important to note that the VTNE questions change every year and there are reptile questions in the review books, so technically there could be reptile questions on the test. VTNE questions are based on the required and suggested subject matter determined by the CVTEA, as discussed below (see DISCUSSION section). CVTEA and

VTNE requirements matter, because their content influences curriculum decisions. Without reptile specific required skills and test questions, there is no advantage to spending time on them. With such a wide range of time dedicated to reptiles, veterinary technician students certainly graduate with inconsistent amounts of knowledge about their care.

HISTORY

Veterinary medicine is generally accepted as the medical specialty concerned with the prevention, control, diagnosis, and treatment of the diseases affecting the health of domestic and wild animals and with the prevention of transmission of animal diseases to people[3]. The term "exotic" is defined in multiple veterinary dictionaries as relating to "an animal that is not indigenous to a location where it currently lives".[4] Diverse species fall under the category of exotic pets, including small mammals, birds, reptiles, amphibians,and less commonly primates and many invertebrates. All exotic pets require what could be considered more specialized knowledge than that for cats and dogs, but reptiles in particular have extremely specific husbandry needs that, when inadequate or incorrect, directly affect their health in adverse ways.

Reptile medicine is an outcome of the health care needs of reptiles kept as pets, displayed and used for educational and conservation programs in zoological parks and aquariums, used for captive breeding and sale in the pet trade.5 Historically, it was not until the 1970s that zoological medicine was even considered a specialty in the United States. Zoological medicine is a discipline that integrates clinical sciences, preventive medicine, and ecology to advance the health, wellbeing, and conservation of free-living and managed wildlife and non-traditional companion species.[6]

As reptile ownership grows, so too does the number of veterinarians who want to or already see these patients. New developments in reptile and amphibian medicine are supported by the Association of Reptile and Amphibian Veterinarians, a professional organization established in 1990 devoted to herptile conservation, medicine, and education.[7]

REPTILES AS REVENUE BUILDERS

Reptile ownership is not just an American phenomenon. The class Reptilia comprises nearly 11,000 species, many of which are becoming ever more popular pets, with 9.1 million reptiles kept as pets in Europe alone.[8] Pets and pet products are a huge industry worldwide. Data from the American Pet Products Association (found here) shows that in 2024, $152 billion dollars was spent on pets in the US. Products and services for cats and dogs certainly make up the bußlk of that number, but small mammals and reptiles have to be considered and included as well. This sector comprises over 12 million households and is worth approximately $3 billion in the United States.[9]

practice revenue is driven by patient visits. In a survey of a typical midwestern General Practice veterinary practice located in Michigan that sees exotic animals as patients, the number of exotic pets that were seen at least once at the practice for an exam from January of 2005 through July 2025 was 2,697 patients. Of those, 34% were listed as reptiles. If the cost of a typical exotic exam is seventy-five dollars, $202,275 was earned by the clinic on those pets. Sixty-eight thousand, seven hundred seventy three dollars was made at that clinic since 2005 on first-time reptiles alone. That may not seem like a large amount of money for such a long period of time, but that total does not take into account things like recheck exams, procedures, and medications. Snakes with upper respiratory infections, for example, are typically seen three to four times at a minimum, getting charged recheck exam fees and medication injection fees each time. They often have radiographs or other treatments at those recheck appointments as well. The importance of this kind of revenue cannot be ignored when considering all of the ways a practice makes money. The catch is that the staff and the doctor have to be knowledgeable about how to handle, diagnose, dose, and educate clients about snakes- and that is something that traditional veterinary technology schools do a poor job at. The knowledge gap of staff who have not learned about reptiles on their own time (and likely with their own money) could be detrimental to a practice's bottom line.

I had the pleasure of speaking at my state association's yearly conference in 2025, and lectured participants about reptiles and reptile medicine from an LVT perspective. There I asked some of the questions that I posed previously. Are we spending enough time on reptile specific education in our Veterinary Technology curriculums? Do recent and long time graduates wish that they had spent more time learning about reptiles before entering the veterinary field? Do LVTs have to pursue outside education on their own time and with their own money to be educated enough about reptiles to counsel clients? A twelve question survey was made available to registrations at the conference to try to help answer these kinds of questions.

Fifteen people responded to the survey. The results were:

- Of the people who responded, 92% graduated from an AVMA accredited Veterinary Technology program, and of those, 100% earned the 2-year degree.

- Graduation years were from 1998 through 2025.

- 77% of respondents went through a program that required an Exotic Animal class.

- Five respondents went through a program that discussed reptiles as part of a different class; two respondents said that they were not taught about exotic animals at all.

- 62% of respondents reported working at some point in their career at a practice that had reptiles as patients.

- As expected, Bearded Dragons are the number one reptile species seen at the reptile friendly practices.
- When asked the question "Looking back now, do you think you received adequate education about reptiles and reptile medicine in your Veterinary Technology education?" **100% of respondents said no.**

While this respondent pool was very small, it is likely representative of a broader group of LVTs in Michigan as those respondents came from different areas of the state.

METHODS AND MATERIALS

1. Several articles were reviewed that discussed current and past trends in reptile ownership, as well as what veterinary and veterinary technology programs traditionally offer for reptile education.

2. A survey link was sent via Facebook to all AVTE (Association of Veterinary Technician Educators) members about reptile education in their particular programs. The survey can be found here: Reptile Survey.

3. Another survey was given to attendees of the Michigan Association of Veterinary Technicians (MAVT) Fall conference in October 2025. The survey can be found here: Reptile Education Survey

4. A report was run from a typical midwestern veterinary practice located in Michigan that sees exotic animals as patients (not a specialty practice). The report listed all exotic pets that have been seen at least once at the practice for an exam from January of 2005 through July 2025. The percentage of those pets who were listed as reptiles was calculated (34%).

DISCUSSION

There are many intricacies to caring for a reptile in captivity so that it can thrive. Husbandry and nutritional requirements are varied in the different species kept as pets, and everything from local climate to enclosure location in a house affects the animal's ability to carry out normal bodily functions. New reptile owners may not think about the air temperature fluctuations that go through their house, for example, when picking a location for an enclosure and how that might affect the temperature inside of the enclosure. A new tortoise owner may not realize that a Sulcata tortoise and a Redfoot tortoise require very different diets. While the responsibility of seeking out such knowledge ultimately falls on the owner, the reality is that owners seek advice on the internet, then come to the vet for help when their reptile is clearly sick. It is at this time that a knowledgeable LVT can start the discussions needed about what the owner is doing right and what they are doing wrong.

Veterinarians do not have the time to spend with reptile owners going over all of the different heating, lighting,

substrate, humidifying, and nutritional choices that are available. It is generally accepted that a vet spends around 15 to 20 minutes in an exam room for a routine cat or dog visit. Reptile appointments, on the other hand, can take 30 minutes to over an hour. LVTs lift much of the burden off of the vet in an animal visit- it is the LVTs who collect diagnostic samples and do other important tasks, such as phlebotomy, radiography, wound care, various forms of fluid therapy, anesthesia and anesthetic monitoring, medication injections, bandaging, prescription filling, and home care instructions. Reptile appointments can involve all of the previously mentioned tasks, but the LVT has to know how to perform these things on a reptile, which is different than in cats and dogs.

As a veterinary technology instructor myself, I can attest to the fact that education in reptile medicine is not something that is given much time. Programs are built to produce students that can pass the VTNE, and the VTNE does not have many, if any, reptile questions on it. Curriculum decisions are made to satisfy the educational requirements, both didactic and pedagogic, set forth by the AVMA accrediting body, the Committee on Veterinary Technician Education and Activities (CVTEA). The CVTEA produces a list of essential skills for Veterinary Technology students, both required and recommended, that is a large part of accreditation. That list is located here: Appendix G – Veterinary Technology Student Essential and Recommended Skills List.[10] The list does include reptiles in Section 9 of Appendix G (Avian, Exotic, & Small Mammal Procedures), but only in general terms. Students are required to identify unique husbandry issues for reptiles and other species, but there are no required tasks. Reptile educational requirements are extremely vague and very basic. This is no doubt the reason that reptiles are not given the time and effort that other species (such as cats and dogs) age given in Programs. Considering the enormous amount of knowledge and skills that students must learn in such a small span of time, this is not a surprise, nor inappropriate.

Although the respondent groups to the surveys distributed were small, they still illustrate what I believe is true: LVTs feel like they did not receive adequate reptile education in their college program, and Program Directors do not see the need to spend time on them because of time constraints. I was one of those LVTs who learned a very superficial amount about reptiles in college and then ended up working in places that had reptile patients (both a zoo and a daytime clinic). Everything I know about reptiles I learned on my own time, with my own money, and by learning on the job.

Reptile owners are similar to other exotic animal owners- they do not generally trust "regular" vets to treat their reptiles, but in many cases do not have the option or choice to go see a specialist. It is imperative that not only the vets appear to be knowledgeable about reptiles, but also the staff, and especially the person whose responsibility it is to guide and educate them (the LVT). I have spent countless

hours writing care sheets, discussing them with owners, and trying to convince owners that our information is better than the random information that can be found on the internet. I have seen far too many cases of reptiles with Metabolic Bone Disease, upper respiratory infections, anorexia, and many other diseases due to lack of education on the owner's part. Many of our reptile patients spend their lives suffering, and die slow deaths. One of the best things we can do as an industry is train our LVTs on proper reptile care, and hope that owners continue to bring their pets to the vet to learn more.

CONCLUSION

Reptile owners often present their pets to a veterinary practice in what they suspect is an emergency, and often, it is. Reptiles hide their illnesses expertly, and in many cases are extremely ill by the time the owner notices a problem and then seeks veterinary care. Keeping exotic pets presents significant challenges when compared to keeping domestic species that have undergone selection for traits that favor their co-existence with humans.[11] CVTs should be the first line of defense when trying to educate owners and prevent reptile illnesses, but they need an adequate education in technician school. Unfortunately, many times they are forced to seek out and attend Continuing Education (CE) classes on their own time and often with their own money or rely on on-the-job (OTJ) training when it comes to gaining important knowledge about reptile pets.

Since the veterinary industry is driven by cats and dogs, most of the time spent on Veterinary Technology education has to be dedicated to them. Large animal species and exotic animals are addressed and given time as part of the curriculum, but that time is limited and students are expected to gain the bulk of this knowledge after college and on their own time. As the veterinary industry changes, we as educators have to make sure that our students are prepared to meet the trends of our industry at the current time. The current trend is for exotic animal veterinary visits to increase as ownership increases and people are more willing to take their reptiles and other species to the doctor. As a result, our students need a better foundation in exotic animal medicine. Reptiles are not the only species that should be given more attention in our Programs, but since they have so many requirements, perhaps they should have their own class, even if it is only offered as an elective. As adding more courses to an already packed Veterinary Technology education Program is likely not feasible at this time, I propose that an 8-week course, **Principles of Reptile Husbandry and Medicine**, be added to Veterinary Technology curriculums as an option for students who are interested in learning more about reptile medicine. In time, hopefully the AVMA and accrediting body will catch up to the current trend of increased exotic animal ownership by requiring that we offer a richer education in exotic animal

medicine as a whole. The benefit of this would be that graduates would be better prepared for improved patient outcomes.

ABOUT THE AUTHOR

Megan Olmstead graduated from Baker College of Flint with an AAS in Veterinary Technology in 2003. She then gained licensure in Michigan and earned the LVT credential. She has since graduated with a Bachelor's Degree in General Studies from Baker College, and earned a Graduate Certificate in Veterinary Medicine from the University of Missouri. She is currently an Assistant Professor of Veterinary Technology at Baker College of Owosso, and is pursuing a Masters Degree in Biomedical Science from the University of Missouri.

CITATIONS

1. Valdez JW. Using Google Trends to determine current, past, and future trends in the reptile pet trade. Animals. 2021;11(3):676. doi:10.3390/ani11030676

2. American Animal Hospital Association (AAHA). What is a veterinary technician? Published 2025. Accessed June 25, 2025. https://www.aaha.org/resources/what-is-a-veterinary-technician/

3. Bowen JM. Veterinary medicine. In: Encyclopedia Britannica. Encyclopædia Britannica, Inc; 2025. Accessed September 6, 2025. https://www.britannica.com/science/veterinary-medicine

4. Espinosa García-San Román J, Quesada-Canales Ó, Arbelo Hernández M, Déniz Suárez S, Castro-Alonso A. Veterinary Education and Training on Non-Traditional Companion Animals, Exotic, Zoo, and Wild Animals: Concepts Review and Challenging Perspective on Zoological Medicine. Vet. Sci. 2023;10(5):357. doi:10.3390/vetsci10050357.

5. Jacobson E, Heard D, Isaza R. Future directions in reptile medical education. J Vet Med Educ. 2006;33(3):373-381. doi:10.3138/jvme.33.3.373

6. American College of Zoological Medicine. Copyright 2025. Accessed June 27, 2025. https://aczm.org/content.aspx?page_id=0&club_id=366916

7. Nolen RS. Giving reptiles and amphibians the best medicine. AVMA News. May 3, 2022. https://www.avma.org/news/giving-reptiles-and-amphibians-best-medicine. Accessed October 17, 2025.

8. Ostović M, Sabolek I, Piplica A, Žaja IŽ, Menčik S, Nejedli S, Mesić Ž. A survey study of veterinary student opinions and knowledge about pet reptiles and their welfare. Animals (Basel). 2021;11(11):3185. doi:10.3390/ani11113185. PMID: 34827917; PMCID: PMC8614325.

9. Trevino CH, Cope M. BSM Partners. Reptiles and Small Mammals: An Industry Perspective. Published July 17, 2023. Accessed September 20, 2025. https://bsmpartners.net/insights/reptiles-and-small-mammals-an-industry-perspective/

10. American Veterinary Medical Association. Accreditation policies and procedures of the AVMA Committee on Veterinary Technician Education and Activities (CVTEA). American Veterinary Medical Association. Updated August 2025. Accessed October 11, 2025. https://www.avma.org/education/center-for-veterinary-accreditation/committee-veterinary-technician-education-activities

11. Azevedo A, Guimarães L, Ferraz J, Whiting M, Magalhães-Sant'Ana M. Pet reptiles—are we meeting their needs? Animals. 2021;11(10):2964. doi:10.3390/ani11102964

Self-Graded Assignments Promote Metacognition and Build Self-Efficacy

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INTRODUCTION

Homework assignments are too often a missed opportunity for learning. Students see them as something to complete for points rather than an opportunity to test their knowledge. Fearful of losing credit for incorrect answers, students tend to use their notes instead of retrieving the answers from memory, or they cut and paste the answers on digital assignments. Instructors provide meticulous feedback that goes unread because students don't review assignments once completed, no matter how well they align with the learning outcomes covered on exams. I know this as I spent hours providing feedback only to have students repeat their mistakes on exams because they never read my comments, thought about the faults in their logic, or used the assignments to study. After much frustration and contemplation about how to encourage full engagement with homework, I discovered self-graded assignments.

Self-graded assignments promote self-efficacy and metacognitive practices by creating low-risk opportunities for students to test their comprehension and learn from their mistakes. While comparing their own answers to a provided answer key, students identify gaps in their knowledge with the chance to self-correct in real time. The reflective aspect of self-graded assignments allows students to think about not just what they learned in the process but how they learned[1,2], which truly empowers them to become self-regulated learners.

My experience with self-graded assignments indicated some students used them more effectively than others to learn the material. Previous research on self-graded assignments found that students who gave their work too generous a grade tended to perform lower in the course[3]. I was interested in whether there was a difference in how critically high- and low-performing students graded their work. Accordingly, I tested the hypothesis that higher performing students graded themselves more critically than lower performing students did on self-graded assignments. Additionally, I collected survey data to understand how students in my Lab Procedures courses approach these assignments so I can tailor them to better support self-regulated learning.

MATERIALS AND METHODS

Self-Graded Assignment Structure

Self-graded assignments consisted of two parts: completion in part one and grading with reflection in part two. In part one of the assignments, students completed a worksheet on their own and received full credit (5 points) if all questions were answered. Part two provided an answer key and became available after the part one due date. Students graded their own worksheets using the answer key and submitted both the graded worksheet and a learning reflection. Visibly graded worksheets and thoughtful reflection were awarded full credit (10 points) for part two of the assignments.

This study took place over the first two semesters of the clinical (sophomore) year in the Lab Procedures I and II courses. During the Lab Procedures I course, students were instructed to grade their own worksheet using the answer key, indicate assigned points clearly, and add corrections or missed information to their original assignment before submitting the graded worksheet with the final numeric grade. The reflection prompt asked students to "explain why your initial answer was wrong and include an explanation of the correct answer to demonstrate mastery of the concept." Students who did not miss any points were asked to share what they found to be most challenging about the content. During the Lab Procedures II course, students graded their worksheets with an answer key indicating corrections or missed information, but they did not assign points or a final numeric grade. The reflection prompt directed students to identify the learning outcomes covered in the worksheet and then explain one or two of the learning outcomes based on what they learned while completing the assignment.

Difference Score

Quantitative data was collected with the self-graded worksheets during the Lab Procedures I course. In addition to the students grading their own work on three self-graded assignments, I also graded their worksheets and assigned a numerical grade solely for data collection purposes. Students did not see the grade I assigned, and my grading was completed prior to reviewing the student-assigned grades submitted in part two. The difference score was calculated

by subtracting the student assigned grade from mine; a positive difference score indicated I assigned a higher grade for their work, while a negative difference score indicated the student assigned a higher grade. The difference score was represented as a percent of the total value because available points varied among the three assignments, and the difference score for each student was averaged across the three assignments for statistical testing.

Survey Data

Qualitative data was collected through a survey question on the Lab Procedures I final exam and through a comprehensive survey at the end of the Lab Procedures II course. The survey question on the Lab Procedures I final exam asked students to rate how much they had used the self-graded worksheets to study for the exam: not at all, looked over the worksheets, reviewed the worksheets several times, or used them as the primary source for review. The responses were assigned a numerical score from 1 to 4, respectively. The anonymous survey at the end of Lab Procedures II asked students to rate the component parts of the self-graded assignments (completion, grading, reflection), explain how they approached each part for learning the material and studying for exams, and rank self-graded assignments compared to other assignment types used in the course.

RESULTS

Grade Differences

In the Lab Procedures I course, 31 students completed the self-graded assignments and answered the survey question on the final exam. The small sample size required grouping students into high-performers (A or B in the course) and average/low-performers (C or D in the course) for statistical analysis. There was a statistical difference in the difference scores between high-performers and average/low-performers, with high-performers having a mean positive difference score and average/low-performers having a mean negative difference score (student's t-test, p=0.032). High performing students gave themselves lower grades than I did (average of 4.2% lower), while average/low performing students gave themselves higher grades than I did (average of 2.2% higher) (Fig. 1). There was no difference between the groups in how much they used the worksheets to study for the exams. Both high- and average/low-performers reviewed the worksheets between once and several times for the final exam (average rating of 2.6 and 2.8, respectively).

Comprehensive Survey

The survey results from Lab Procedures II showed that students found the self-graded assignments helpful. Eighteen of 25 students completed the survey. Ninety-five percent of respondents found the assignments helpful for learning the course material, 95% found both the completion and graded components of the assignments helpful, and

67% found the reflection helpful (Fig. 2). Most students (72%) attempted initial completion of the assignments using recall alone with reference to notes as needed. Students were divided in their approach to grading, with 44% reporting they focused on the details of the answer key and 39% reporting awarding full points if they had the general concept of the answer. Students were asked to provide their current grade in the course; 71% of those reporting an A focused on the details when grading, while only 27% of those reporting a B or C focused on the details. Ninety-four percent of respondents used the self-graded assignments to study for exams and rated their usefulness as a study tool an average of 4 out of 5 on a Likert scale, with 1 being not very helpful and 5 being very helpful. Respondents rated self-graded assignments among the most useful for learning course material along with crosswords and lab worksheets (Fig. 3). Lastly, 60% of respondents preferred the reflection in self-graded assignments focus on learning outcomes rather than incorrect answers.

DISCUSSION

Higher performing students assessed themselves more critically than lower performing students did on self-graded assignments. Effective use of assignments involved completion using recall instead of notes and attention to the details of correct answers when grading rather than just assessing general concepts. Students overwhelmingly found these assignments useful for learning the course material and rated them among the most helpful types of assignments used in the Lab Procedures I and II courses. However, how they completed the assignments mattered. Focusing on answer details helped students identify misunderstood concepts and areas in need of additional study. This more nuanced approach presumably allowed higher performing students to better understand and meet course expectations.

Self-regulated learning practices, like self-assessment, promote metacognition and self-efficacy by teaching students to recognize what they know and help them create a plan to fill in the gaps for what they don't. The reflective component of self-graded assignments is critical to developing metacognition, or thinking about how you think, and empowers students to apply the process to complex concepts[1,2]. Students provide their own feedback, which better focuses their study efforts[4], and aligning the reflection with learning outcomes encourages students to apply critical thinking skills within the context of course objectives.

Self-efficacy grows out of the practice of self-assessment. Students assess their own understanding with a low-risk activity— they get full points for completing the assignment. Removing the penalty for incorrect answers encourages active recall during completion and motivates students to improve their understanding of the material. Mistakes are encouraged because they promote deeper understanding and help students build confidence in their own learning

and study skills[2,5]. Learning from mistakes is the foundation of a growth mindset that empowers students to test their own skills in both the classroom and the clinic. Self-graded assignments, when leveraged fully by the student, are thus a simple but effective learning tool to build confidence and self-awareness that translate across academic and clinical experience.

Self-graded assignments have become an essential learning tool in my courses, and this project has revealed ways to make them even more beneficial. The reflection was the least favorite part of assignments and a missed opportunity to recognize and explore gaps in knowledge, especially for lower performing students. Greater transparency of the value in reflection for learning how you learn is warranted early in the clinical year. Reflection raises students' self-awareness and can help them approach and organize dense material in a way that aligns with their own style of learning. Subtle changes in the reflection prompts can also encourage students to focus on the nuances of what they don't comprehend so they can close the circle of understanding on their own through refocused study and inquiry. For example, instead of asking students to choose one or two learning outcomes to explain after grading their own assignment, I can ask them to identify and explain the learning outcome for which they feel least confident and include at least one question they need to answer through additional study to feel more secure in their understanding. Lastly, sharing the findings of this study with students will hopefully encourage all to pay closer attention to the details as they assess their own knowledge of increasingly complex concepts. Pairing student feedback with my own at the start of the semester will set clear expectations for self-assessment and reflection while fostering the self-evaluative practices that enable all students to thrive.

REFERENCES

1. Ford MJ, Dillon H. A secure, scalable approach to student-graded homework for self-reflection. Paper presented at: ASEE Annual Conference & Exposition; June 23-26, 2024; Portland, OR. doi: 10.18260/1-2--46489

2. Nilson LB. Creating Self-Regulated Learners: Strategies to Strengthen Students' Self-Awareness and Learning Skills. Sterling, VA: Stylus Publishing LLC; 2013.

3. Simkin MG. Should you allow your students to grade their own homework?. J Inf Syst Educ. 2015;26(2):147-154.

4. Irgens B, Micheron D, Pedersen IF. Empowering students: transitioning to self-assessment of written exercises in physics courses. Nord J STEM Educ. 2025;9(3):1-18. doi: 10.5324/q94htp18

5. McCune L. Blogging and self-graded homework in contemporary problem solving. PRIMUS. 2019;29(2):138-154. doi: 10.1080/10511970.2018.1443533
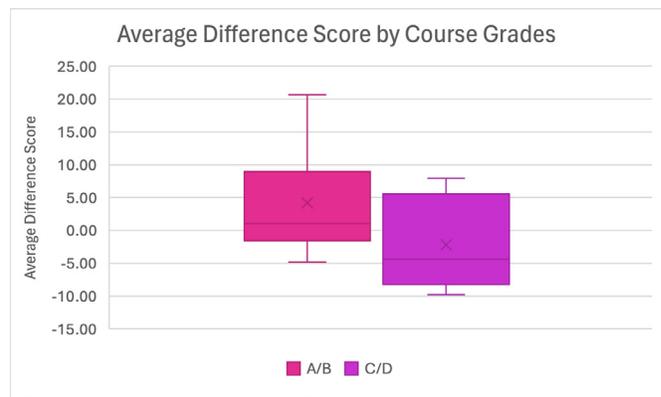
FIGURE 1: SIGNIFICANT DIFFERENCE IN AVERAGE DIFFERENCE SCORE BY COURSE GRADE
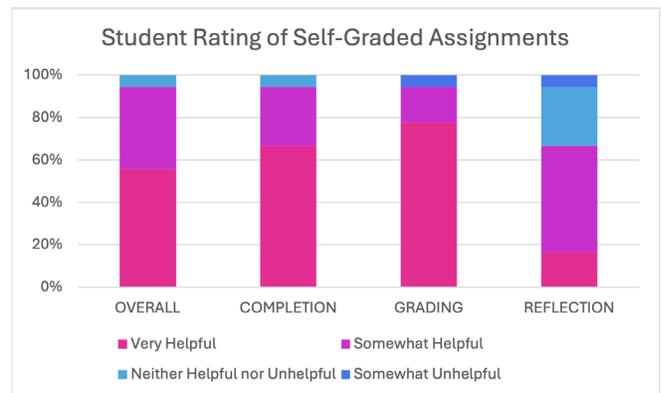

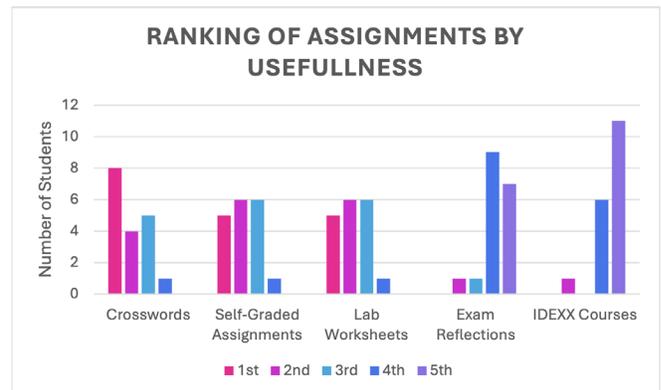FIGURE 2: STUDENT RATING OF SELF-GRADED ASSIGNMENT COMPONENTS

FIGURE 3: STUDENT RANKING OF ASSIGNMENT TYPES BY USEFULNESS

Beyond Restraint: The Role of Animal Behavior in Patient Care and Emotional Health

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ABSTRACT

Understanding animal behavior is not just helpful in veterinary care, it is essential. For veterinary technicians, behavior plays a role in every exam room interaction, every procedure, and every client conversation. When behavior is included in core education, technicians are better prepared to support patients, guide clients, and work confidently alongside veterinarians (AAVMC CBVE-N Working Group 2025). Clinical veterinary behavioral training helps reduce stress, prevent injuries, improve communication, and build stronger teams, all which align with Spectrum of Care principles (Brown et al. 2021; Fingland et al. 2021; Moutier et al. 2020). It also leads to more positive outcomes for animals and a more fulfilling, sustainable career for technicians (Kogan et al. 2020; Driscoll 2022).

INTRODUCTION

In many veterinary technician programs, animal behavior is still treated as a side note, addressed only in relation to handling and restraint. But in the day-to-day reality of veterinary practice, behavior is everywhere. It shapes how patients respond to care, how teams work together, and how clients feel about their visits. When clinical veterinary behavior concepts are left out of training, technicians may be unprepared to manage animals safely and effectively. Recognizing behavior as part of everyday practice, not as an optional skill, needs to be a requirement in the education and support of all veterinary professionals.

BEHAVIOR AS A CORE COMPETENCY

Animal behavior appears in every part of a veterinary technician's role and fits naturally across all CBVE-N domains (AAVMC CBVE-N Model 2025). In clinical reasoning, behavior guides care decisions and makes interactions safer. In individual and population care, it informs how animals are observed, handled, and supported. Understanding behavior helps prevent bites, strengthens communication with clients, and enhances collaboration by keeping teams aligned in their response to behavioral challenges (Boursiquot et al. 2023). These skills also support professionalism by building confidence and reducing stress while improving workflow and client satisfaction. When behavior is embedded into every aspect of pet care, technicians are better prepared to provide compassionate care that works for animals, clients, and teams.

BEHAVIOR IN EVERYDAY PRACTICE

Whether in general practice, specialty care, or emergency medicine, technicians are the first to notice when a patient is uncomfortable or afraid. Their ability to respond to that discomfort can shape the outcome of a visit. For example, during an emergency, a cat may act out, not because they are "bad," but because they are in pain. Without a behavior-informed approach, attempts to restrain the cat could escalate the problem. But with the right techniques, such as recognizing defensive signals, adjusting the environment, and using Low Stress Handling® methodologies, the technician can protect the patient and team while improving the quality of care.

RESTRAINT, REDEFINED

Restraint is not about control; it is about care. The goal is not to overpower a patient but to support them through a procedure with as little stress as possible. Understanding behavior and communication signals help technicians adjust their handling based on what the animal is telling them. This might mean using food distraction, changing body position, or choosing sedation when needed (Calder and Koven 2024; Calder and Koven 2025; Rodan et al. 2022). Tools like muzzles for cats or restraint bags should no longer be the default (Rodan et al. 2022). If they are being considered, the procedure should be stopped, and sedation may be the better choice (Calder and Koven 2024; Rodan et al. 2022).

Low Stress Handling® is not just better for the patients; it is better for the team. According to the 2023 AAHA Technician Utilization Guidelines, the Credentialed Veterinary Technician (CVT) is responsible for creating and facilitating the "nursing plan." Since a nursing plan must account for how a patient is handled during procedures, determining

the method of restraint is part of the CVT's standardized role. However, optimal utilization requires an environment of "mutual trust and collaboration". Technicians must feel empowered to advocate for a patient's emotional status without fear of being labeled "difficult" or "inefficient" (Boursiquot et al. 2023).

Cooperative care training illustrates why this environment of trust matters. In cooperative care, animals learn to participate in their own care. A dog that once resisted nail trims can be taught to rest their chin on a towel to signal, "I'm ready." If the dog lifts their head, the technician pauses. This gives the dog a voice, but that voice only has meaning if the technician feels safe honoring it. Pausing mid-procedure is a clinical judgement that falls within the CVT's nursing plan, yet in a culture that equates speed with competence, it can be misread as inefficiency. When technicians fear that perception, they are less likely to implement cooperative care at all. The patient loses agency, the technician loses autonomy, and the practice loses the standard of care that Low Stress Handling® is designed to protect.

BEYOND THE EXAMINATION ROOM

Technicians trained in behavior help clinics run more efficiently with fewer repeat visits, fewer injuries, shorter exam times, and stronger client relationships (Everett et al. 2026). Behavioral training also supports the Spectrum of Care approach (Fedesco et al. 2025; Brown et al. 2021; Fingland et al. 2021). The AAVMC Spectrum of Care Initiative defines "Contextualized Care" as an approach shaped by the "circumstances of individual animal caregivers and veterinary professionals, acknowledging the wider context of each clinical encounter, to deliver the most appropriate welfare-focused care for every animal" (Skipper et al. 2024). This includes the complex personal, clinical, economic, and social factors that influence every veterinary interaction (Fedesco et al. 2025). A behavior-centered approach embodies this principle by recognizing both a patient's fear and a client's ability to manage it, prioritizing individualized care over a one-size-fits-all approach (Fedesco et al. 2025).

SUPPORTING TECHNICIAN WELL-BEING

Handling stressed animals is one of the most emotionally taxing parts of the job. Behaviorally focused training helps technicians respond with confidence instead of anxiety, frustration, or fear, building resilience and protecting mental health. Advocating for a patient's emotional safety should be viewed as professional competency, not a weakness. When the emotional toll does build up, seeking support should be seen the same way. After a Suicide: A Guide for Veterinary Workplaces calls help-seeking "a sign of strength, a way to show the most proactive, mature level of professionalism" (Moutier et al. 2020). When technicians can fully apply their behavioral training, burnout risk

decreases. Recognizing technicians' skills and giving them control over patient care are key factors in both reducing burnout and increasing job satisfaction (Kogan et al. 2020). When technicians feel empowered, they stay in the profession longer, and with greater satisfaction (Driscoll 2022).

EDUCATION AS FOUNDATION

Behavior should be part of every technician's core curriculum. The 2025 AAVMC CBVE-Nursing Model formalizes behavior as a core competency within "Domain 2: Individual Animal Care and Management," designed to "prepare career-ready graduates" competent in educating clients on the prevention of behavioral problems and welfare needs. By establishing these skills as core competencies, the model confirms that behavioral management is a standard of care required to meet the "expectations of society" (AAVMC CBVE-N Model 2025). When equipped with this training, technicians become leaders in wellness planning, cooperative care, behavior modification, and client education, contributing to a stronger hospital culture and greater professional identity (Driscoll 2022).

PRACTICAL IMPLEMENTATION

While many programs face the challenge of a packed curriculum with limited contact hours, behavior education does not always require adding new separate courses. Behavior and clinical skills go hand in hand. Teaching Low Stress Handling® methodology as the foundation for patient-centered care helps students recognize communication signals during every interaction and incorporate behavioral concepts into anesthesia, dentistry, and other nursing care modules.

For programs seeking structured resources, the VIN® Behavior Academy offers materials developed specifically for veterinary technician education. The platform includes Dr. Sophia Yin's original Low Stress Handling® courses and a certificate awarded upon completion, her foundational textbook with teaching videos, and updated editions with up-to-date behavioral concepts. The VIN® Behavior Instructor Corner provides ready-to-use teaching materials designed to integrate seamlessly into existing courses.

When behavior education appears consistently across the curriculum, students recognize that understanding animal behavior is foundational to everything they will do as members of the veterinary care team.

KEYWORDS

Veterinary technician education, animal behavior, Low Stress Handling®, clinical competencies, cooperative care, spectrum of care, emotional well-being

REFERENCES

1. AAVMC Competency-Based Veterinary Education -Nursing Working Group, Cravens C, Epp T, Banach J, Brown C, Jackson M, Jensen W, Lloyd J, Salisbury SK. (2025) Competency-Based Veterinary Education – Nursing (CBVE-N) Model. Washington, DC: American Association of Veterinary Medical Colleges.

2. Brown CR, Garrett LD, Gilles WK, et al. Spectrum of care: more than treatment options. J Am Vet Med Assoc. 2021;259(7):712–717.

3. Boursiquot N, Prendergast H, Boudreau L, et al. 2023 AAHA Technician Utilization Guidelines. American Animal Hospital Association; 2023. Accessed February 6, 2026. https://www.aaha.org/resources/2023-aaha-technician-utilization-guidelines/

4. Calder CD, Koven P, eds. The Second Edition of Dr. Sophia Yin's Low Stress Handling® and Behavior Modification of Dogs & Cats. Davis, CA: CattleDog Publishing; 2024.

5. Calder CD, Koven P, eds. Low Stress Handling®: A Practical Guide to Cooperative Care, Training, and Behavior Modification. Davis, CA: CattleDog Publishing; 2025.

6. Driscoll DC. Credentialed veterinary technician intrinsic and extrinsic rewards: a narrative review. J Am Vet Med Assoc. 2022;260(9):1069–1075.

7. Everett E, Pavlovsky G, Springer C, Albright J. Practice-wide certification in stress-reducing animal care lowers the rate of patient-inflicted injuries to veterinary staff in small animal general practices. J Am Vet Med Assoc. 2026;264(2):163-170.

8. Fedesco HN, Brodsky JE, Banse HE, Eckman SL, Englar RE, Huston CL, Khosa DK, Noyes JA, Stull JW, Warman SM. (2025). Overview of the AAVMC Spectrum of Care Initiative. In Fedesco HN, Brodsky JE, eds. Enhancing Spectrum of Care Preparation in Veterinary Education Programs: An Implementation Strategies Guide American Association of Veterinary Medical Colleges; 2025:6-8.

9. Fingland RB, Stone LR, Read EK, Moore RM. Preparing veterinary students for excellence in general practice: building confidence and competence by focusing on spectrum of care. J Am Vet Med Assoc. 2021;259(5):463–470.

10. Kogan LR, Wallace JE, Schoenfeld-Tacher R, Hellyer PW, Richards M. Veterinary technicians and occupational burnout. Front Vet Sci. 2020; 7:328.

11. Moutier C, Mortali M, Brandt J, Rose R, Hoffman L. After a Suicide: A Guide for Veterinary Workplaces. American Foundation for Suicide Prevention/American Veterinary Medical Association/ National Association of Veterinary Technicians in America/ Veterinary Hospital Managers Association/ Veterinary Medical Association Executives. 2020

12. Rodan I, Dowgray N, Carney HC, Carozza E, Ellis S, Heath S, Neil L, St Denis K, Taylor S. 2022 AAFP/ISFM cat friendly veterinary interaction guidelines: approach and handling techniques. J Feline Med Surg. 2022;24(11):1093-1132.

13. Skipper A, O'Neill D, Serlin R, Davidson J, Elwood C, Gray C. "Contextualised care: Faddish or foundational? Vet Rec. 2024;195(3):117.

Case by Case: Enhancing Veterinary Technician Training Through Case-Based Learning

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Emergency Veterinary Clinic of Okaloosa-Walton

INTRODUCTION

Case reports, also referred to as case-based learning (CBL), have long served as a cornerstone of clinical education in human medicine and are equally valuable in veterinary technician training. For veterinary educators, CBL functions as a dynamic instructional tool that promotes critical thinking, clinical reasoning, and communication skills while bridging the gap between theoretical knowledge and practical application—particularly relevant since clinical cases often deviate from textbook descriptions.[1,3,7]

The use of CBL in veterinary technician education is exceptionally valuable due to the unique instructional challenges of veterinary technology curricula. Veterinary technicians are expected not only to understand disease processes, but also to rapidly translate incomplete clinical information into practical nursing and patient care actions, often before a definitive diagnosis is established. This early emphasis on applied clinical reasoning, prioritization, and execution makes educational strategies that tolerate ambiguity—such as case-based learning—particularly well suited to veterinary technician training.

CASE-BASED LEARNING

CBL typically involves presenting students with real or hypothetical clinical scenarios that simulate authentic clinical situations. Learners are expected to gather relevant information and solve the case through written exercises or guided group discussions. This educational strategy mirrors formats used in clinical practice, such as morbidity and mortality (M&M) rounds, and is widely implemented in both veterinary and medical hospitals as a means of training.[5,7]

Numerous studies have demonstrated the benefits of CBL in enhancing learning outcomes. It fosters critical thinking, promotes teamwork, increases engagement, and improves communication skills, while also strengthening the connection between academic content and its practical application.[2,4,6-8] However, research suggests that while students reported feeling more connected to the information, CBL did not significantly improve the retention of students in their associated programs of study. Additionally, it was found that introducing case scenarios, particularly complex ones, early in the curriculum led to confusion and frustration among students.[7,8]

When implemented thoughtfully, CBL supports the development of specific cognitive skills essential to clinical practice, including hypothesis generation, prioritization under uncertainty, pattern recognition, and metacognitive reflection. However, effective use of this approach requires intentional structuring, with case complexity increasing as students acquire foundational knowledge and confidence. Guided facilitation early in the curriculum helps mitigate frustration and enhance student engagement and interest while preserving the benefits of active problem solving.

Through case analysis, students are able to apply foundational concepts from anatomy, physiology, pharmacology, and pathology within a clinical context. This approach reinforces theoretical knowledge and encourages learners to interpret diagnostics such as imaging and laboratory data, distinguish between relevant and incidental findings, and develop differential diagnoses. Educators can facilitate clinical reasoning by posing guided questions to students (e.g., "What would you do next?", "Why do you think that happened?", etc.). For instance, in a case involving a canine patient presenting with seizures and on physical exam, weak femoral pulses are noted, students can be asked to assess any relationship between the findings, consider the accuracy of the presenting complaint, evaluate potential causes of hypotension, identify involved body systems, and determine appropriate next diagnostic steps.[3,7]

CBL further promotes collaborative learning through discussion of treatment strategies, differential diagnoses, and nursing care considerations. These group interactions often foster confidence and lead to critical insights, as students recognize their capacity to arrive at sound clinical conclusions—often mirroring those reached by the staff who originally treated the case.[2,6]

A distinct advantage of CBL is the ability to examine rare or atypical presentations. Since replicating all clinical scenarios in a teaching environment is impractical, case discussions involving uncommon diseases, unusual clinical signs, or patients with multiple comorbidities allow students

to develop higher-level decision-making skills. Exposure to such cases may also stimulate professional curiosity, often motivating students to pursue independent research and share newly acquired knowledge with peers.[1,3]

APPLICATION

To integrate this method into clinical education, the author has implemented voluntary "Case of the Day" sessions with the senior veterinary technician students. These sessions are held following their formal lectures and are well attended. Cases span a wide range of species—including small animals, large animals, and exotics—and cover various topics such as internal medicine, emergency care, neurology, reproduction, orthopedics, and behavior. The cases are drawn from the author's personal clinical experience or contributed by colleagues.

Each "Case of the Day" session is structured as a facilitated discussion rather than a traditional lecture. The instructor serves as a guide rather than a content authority, and the students are prompted to verbalize their reasoning, ask clarifying questions, and justify proposed diagnostic or treatment decisions, reinforcing clinical reasoning processes rather than rote recall.

Each session simulates in-clinic procedures. Discussion begins with the signalment and presenting complaint, followed by a detailed history that highlights opportunities for targeted questioning (e.g., "When was this puppy's last set of vaccinations?" or "Has your cat experienced any recent lifestyle changes?"). Physical examination findings are reviewed, and potential diagnostic strategies are evaluated. Students analyze the diagnostic results, including radiographs, CTs, ECG tracings, and laboratory reports, leading to a working diagnosis and consideration of treatment plans. Management options may include pharmacologic therapy—which prompts discussions of pharmacokinetics and pharmacodynamics—or surgical intervention, encompassing perioperative care. Each case concludes with a discussion of the clinical outcome. Students are also encouraged to present cases encountered during clinical rotations. This approach enhances engagement and reinforces the real-world applicability of academic learning.

Although these sessions are not formally graded, learning outcomes are assessed informally through the quality of student discussion, the relevance of questions posed, and the ability to synthesize clinical findings into coherent care plans. Over time, students demonstrate increased confidence, improved clinical language, and greater willingness to engage with complex or uncertain cases, suggesting meaningful transfer of learning to clinical rotations.

These sessions also provide a secure environment for addressing complex issues in veterinary practice, including disparities between "gold standard" and practical care,

ethical challenges, financial limitations, and human error, such as misdiagnoses or iatrogenic events. Skilled facilitation and a psychologically safe learning environment are essential to these discussions, allowing students to examine errors, uncertainty, and ethical challenges without fear of judgment or punitive consequences.

Strict confidentiality protocols are observed. Participants may not reference hospital, staff, or client names. Sessions are not recorded, and the material is not made freely available. Any diagnostic materials from clinical rotations are only permitted with prior approval from the hospital and client, and in compliance with confidentiality policies.[1,7]

CONCLUSION

Incorporating case-based learning into veterinary technician education supports student engagement, strengthens clinical reasoning skills, and better prepares learners for real-world practice. This flexible and impactful teaching approach is crucial in cultivating competence and confidence in future veterinary professionals.[4,7] Future exploration of this approach may include formal assessment of learning outcomes, tracking clinical reasoning development, or inter-department collaboration to further define best practices for case-based learning in veterinary technician education.

REFERENCES

1. Jackson D, Cleary M, Hickman L. Case reports as a resource for teaching and learning. Clin Case Rep. 2014;2(5):163-164. doi:10.1002/ccr3.172

2. Wellmon R, Gilin B, Knauss L, Linn MI. Changes in student attitudes toward interprofessional learning and collaboration arising from a case-based educational experience. J Allied Health. 2012;41(1):26-34.

3. Packer CD, Katz RB, Iacopetti CL, Krimmel JD, Singh MK. A case suspended in time: the educational value of case reports. Acad Med. 2017;92(2):152-156. doi:10.1097/ACM.0000000000001199

4. Raza S, Qazi W, Umer B. Examining the impact of case-based learning on student engagement and learning performance among university students. J Appl Res High Educ. 2019. doi:10.1108/JARHE-05-2019-0105

5. Das S, Das A, Rai P, Kumar N. Case-based learning: modern teaching tool meant for present curriculum: a behavioral analysis from faculties' perspective. J Educ Health Promot. 2021;10:4103/jehp.jehp126520.

6. Seshan V, et al. Case study analysis as an effective teaching strategy: perceptions of undergraduate nursing students from a Middle Eastern country. SAGE Open Nurs. 2021;7:23779608211059265. doi:10.1177/23779608211059265

7. McLean S. Case-based learning and its application in medical and health-care fields: a review of worldwide literature. J Med Educ Curric Dev. 2016;3:JMECD. S20377. doi:10.4137/JMECD.S20377

8. Rhodes A, Wilson A, Rozell T. Value of case-based learning within STEM courses: is it the method or is it the student? CBE Life Sci Educ. 2020;19(3). doi:10.1187/ cbe.19-10-0200

Reinforcing Clinical Skills and Study Retention Through Structured Handwritten Journals

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Throughout my time teaching in online veterinary education, a common pattern has emerged: students struggle to fully grasp and retain key concepts because they lack hands-on experience. Reading from textbooks and watching recorded lectures often fails to hold their attention, and many graze past important information without realizing it. Even when students retain material early on, much of it fades by the time they reach their clinical externships or begin preparing for the VTNE.

Part of this issue stems from limited hands-on practice, but another major factor is the lack of structured note-taking skills. When meeting with struggling students to review their study habits, I frequently hear the same response—they simply don't know how to take effective notes. By the time they enter their clinical externships, many cannot recall how to complete key tasks, and because they rented their textbooks for earlier courses, they no longer have those resources available to review. In an age where technology dominates and attention spans are shrinking, I wanted to design a weekly graded assignment that not only teaches students how to take meaningful notes, but also guides them in creating a personalized resource they can rely on for studying throughout the course, during clinical externships, and when preparing for the VTNE.

Research and educational practice both suggest that handwritten learning has significant advantages for memory, understanding, and concept retention (Marano et al., 2025). Writing, sketching, and visually organizing information help students process material more deeply than typing or passively viewing content. These techniques are particularly relevant in veterinary medicine, where students must learn step-by-step procedures, identify anatomy, and recall clinical protocols weeks or months later. This assignment was designed to address that gap by

providing students with an organized method for capturing, processing, and revisiting the material throughout the course and beyond.

Students are instructed to obtain a subject notebook and notebook tabs at the very beginning of the semester. The notebook tabs are used to divide their journal into the

modules of the course. Each week, students are given specific topics to take notes, draw pictures or diagrams, and list how to do step by step tasks. Some examples are to draw a surgical gown and color the sterile areas green and the non-sterile areas red, list in order the flow of a rebreathing anesthesia machine, or how to properly inflate an endotracheal tube cuff. The topics will cover everything that was taught that week and emphasizes topics that will be on the VTNE or need to be demonstrated in their clinical externships.

An essential component of the assignment is referencing. For every section of the entry, students must include where the information came from, and they may only use that week's assigned pre-work. If they reference the textbook, they include the page number. If they use micro-lectures, they list the lecture title and slide number. This practice reinforces the professional skills veterinary technicians use daily: verifying information, tracing it back to the original source, and documenting it clearly. It also encourages students to be more intentional in how they engage with the material, since their notes must connect directly to the assigned learning resources. By limiting entries to that week's pre-work, students avoid relying on outside sources that may provide inaccurate information. If they ever need a deeper explanation later, they will know exactly where the material came from and can return to the original source for clarification.

Because this is a handwritten project, students submit their work by taking a photograph of each completed page and uploading it. To ensure fairness in grading, I require the photo to be clear, well-lit, and fully visible. A blurry or cropped image can't be accurately evaluated, so

part of the assignment includes learning to present academic work professionally. When I evaluate the journals, I look for four things: neatness, organization, creativity, and the level of understanding shown in the content. The rubric rewards clarity and effort but also encourages students to make the journal their own. I frequently see students using color coding, diagrams, or creative layouts that help them better remember the information. The most successful entries are those that are both informative and thoughtfully

constructed.

At the beginning of the semester, students are wary of this assignment as it takes dedication and time, however, by mid-semester, they survey that they enjoy the journal assignments because they support studying and allow room for creativity. By the end of the course, students have built something meaningful: a comprehensive, personalized study tool that reflects their effort across the semester. Many students tell me they carry their journals into clinicals and reference them during later classes. Others use them as part of their long-term VTNE preparation. While the assignment begins as a weekly requirement, it ultimately becomes a resource they rely on as developing veterinary professionals.

Midway through the semester, I send out a course survey. Here are some student responses to the question: 'What aspects of the course have been most helpful to your learning?'"

"I really liked the weekly journal assignments because they gave me something to look back on when studying. Writing things out helped me focus on the most important topics, and it made reviewing for quizzes and exams a lot easier since my notes were already organized in one place."

"At first, I didn't really like the weekly journals because they took a lot of time, but once I got to clinicals, I realized they were super helpful for remembering how to do different skills."

The journal assignment is proof that handwritten work still has a meaningful place in online education, and it can be just as valuable in an in-person setting. The process requires attention, reflection, and active engagement, all of which strengthen understanding in ways that digital assignments often cannot. Most importantly, the journal gives students confidence, a sense of ownership, and a resource they can carry forward as they develop their skills in the veterinary field.

REFERENCES

1. Marano, G., Kotzalidis, G. D., Lisci, F. M., Anesini, M. B., Rossi, S., Barbonetti, S., Cangini, A., Ronsisvalle, A., Artuso, L., Falsini, C., Caso, R., Mandracchia, G., Brisi, C., Traversi, G., Mazza, O., Pola, R., Sani, G., Mercuri, E. M., Gaetani, E., & Mazza, M. (2025). The Neuroscience Behind Writing: Handwriting vs. Typing—Who Wins the Battle? Life, 15(3), 345. https://doi.org/10.3390/life15030345

Book Review: Small Animal Emergency and Critical Care Medicine: A Cornerstone for Veterinary Nurse Education

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Dogs and Cats Emergency & Specialty

As a veterinary nurse and training & education coordinator at a busy emergency and specialty hospital, I have spent more than a decade developing veterinary nurse and assistant training programs and clinical education resources. Few references have been proven as foundational as Small Animal Emergency and Critical Care Medicine, 3rd Edition, by Deborah Silverstein and Kate Hopper. Silverstein and Hopper didn't release 'just' a textbook to sit on a shelf; It's a book I recommend and one I rely on daily as both an educator and practicing veterinary nurse.

Its comprehensive, systems-based format makes it easy to locate clinical information quickly, an essential feature in high-pressure ER settings. The chapters are structured with clarity and consistency, integrating nursing considerations alongside pathophysiology, diagnostics, and treatment protocols. This structure makes the text especially valuable not only for practicing veterinary nurses and assistants but also for veterinary technology students seeking to understand the "why" behind their patient care decisions. I have used this resource to bridge classroom learning with clinical application, helping students transition from memorization to mastery.

I frequently use this book to support case-based learning during technician rounds, guide discussions on fluid therapy, CPR, and triage strategies, and build internal hospital protocols. When I use this book with students, I notice how its layout makes complicated ECC topics, such as shock or acid-base balance, feel more approachable. It doesn't talk down to the reader, but it also doesn't oversimplify things. The writing is straightforward and detailed enough that both beginners and experienced technicians can follow along and use the information. Standout chapters on triage, transfusion medicine, pain management, acid-base disorders, and shock have become staples in my educational toolkit. Each topic presents clear explanations, evidence-based recommendations, and practical insights that translate seamlessly into clinical care. I especially appreciate how the authors emphasize critical thinking and prioritization skills that are essential for students preparing for the VTNE and for new graduates entering emergency practice.

What sets this book apart is its clear value for the work of the veterinary nurse. It doesn't just outline procedures; it helps readers see the reasoning behind them. That approach resonates with both students and seasoned technicians. It has boosted confidence in new hires and sparked fresh insights among experienced team members.

The level of detail can sometimes feel overwhelming for someone new to critical care. A study guide or companion workbook designed for students could make it even easier for them to absorb the material. Additionally, a more visual presentation of specific complex topics, such as ventilator management or fluid balance, could strengthen understanding for visual learners. However, these are minor points in an otherwise exceptional reference.

Whether used as a daily clinical reference, a study aid for veterinary technology programs, or a cornerstone of a hospital's small Animal Emergency and Critical Care Medicine, it remains an indispensable resource for educators and veterinary nurses alike. It captures the intersection of medicine and nursing in a way that not only informs practice but also inspires the next generation of veterinary nurses.

Teaching Office Procedures to Veterinary Technology Students ONLINE! How?

Bethany Buck MSML, Fort Valley State University
and Oreta M. Samples BS, RVT, MPH, DHSc

INTRODUCTION

Developing online instruction can be daunting for anyone, but the stakes are even higher for fields like Veterinary Science, where hands-on, experiential learning is so vital. At a southeastern college where a BS in Veterinary Technology is offered, instructors during COVID encountered this specific challenge of how to assess Knowledge, Attitude and Performance (KAP) of proficiency by students in basic veterinary office skills. The skills in question are listed in the AVMA-CVTEA Essential Skills List and also are embedded within the VTNE and state licensure exams. Our solution: a thoughtful partnership between Veterinary Educators and Instructional Designers (IDs) to create a way to introduce students to content that would challenge them and allow for assessment of their abilities.

DISCUSSION

The most effective collaboration begins with storytelling - Veterinary Educators simply sharing the experiences their students have in labs or internships before diving into files, forms, and content. This narrative approach allows IDs to apply their creativity and technical expertise from the start. The narrative in this case, involved a discussion on ways to potentially take a 16-week lesson plan that was developed for students to work through in a traditional weekly classroom setting and transform it into a online learning opportunity to be used during the Pandemic when the University sent all students and faculty home for an extended 2 semester period of online learning. The parameters were simple, a detailed scenario that allowed students to mimic being the front office receptionist for a week or a month (instructors choice) in a veterinary clinic that included phone service, appointment triage scheduling, invoicing, cash receipts, banking, create and maintain medical reports (including lab reports and radiographs), drug inventory, create and maintain all logs including O2 cylinders, surgical, radiological, and eyewash stations. While this does not encompass 100% of the AVMA-CVTEA required skills, it does cover roughly 75% of the skills that need to be demonstrated. This makes the model invaluable to those who may be struggling to meet all the skills in a limited timeframe either in the traditional classroom, a web-hybrid or web-based format.

Through a collaboration between an Instructional Designer and a Veterinary Technician Educator tasked with teaching Veterinary Ethics and Office Procedures class, the use of a paper and pen exercise that was used as a workbook in the traditional classroom, before being turned in to the instructor to grade. The exercise presented in that form was no less than 100 pages of paper for each booklet which the instructor created for each student. These booklets held all the information needed to complete the exercise, which included a diary of the week (or months) events, full list of clients with animal records to be retrieved and utilized throughout the exercise, schedule, etc. Additionally blank forms (i.e. exam forms, consent forms, etc.) are included for any new clients that are added to the mix during the exercise.

The following documents were utilized in the traditional classroom exercise:

- 13 patient records
- Appointment calendar for 1 week
- Blank invoices
- Blank medical records – Large Animals
- Blank medical records – Companion Animals
- Blank Cage Cards
- Controlled Substance Inventory
- Bank Deposit Slip
- Diary of 1 week of activity typically seen by front office receptionist by day (M-Sa)
- Instructions for the Exercise
- Maintenance Logs (O^2, Soda lime changes for anesthesia machines, eye wash stations, etc.)

Once the ID was provided with the paper copies of this, and a description of what the grading rubric looked like for the assignment, the task was to create an online learning opportunity that would be utilized by the student to "run a front office" in a virtual veterinary clinic.

Following the receipt of the comprehensive document packet, including diaries and teaching content, the Instructional Designer initiated a strategic mapping of the online module's navigational structure. This process leveraged established instructional design methodologies to optimize student engagement and minimize cognitive overload. The resulting scalable module, adaptable for either a one-week or one-month duration, was then seamlessly integrated into the learning management system (LMS), ensuring universal accessibility for all designated students and faculty via any internet-enabled electronic device.

Guided by the principles of Backward Design (Wiggins & McTighe, 2005), the online course incorporated practical, level-appropriate assessments meticulously aligned with the Knowledge, Attitude, and Performance (KAP) proficiencies essential for demonstrating mastery of the AVMA-CVTEA required skills. The LMS functioned as a readily available, 24/7 resource, providing access to teaching content, relevant case studies, a comprehensive document repository, and secure student portfolio submission portals.

The asynchronous teaching content delivered through the online course served as invaluable supplemental instruction, enabling students to revisit and reinforce the knowledge acquired during traditional face-to-face sessions. The success of this approach led to the widespread adoption of the online modules by multiple instructors across the discipline, who integrated the asynchronous content into their respective courses to enhance the overall learning experience.

Within the online simulation module, veterinary students actively engaged in a virtual day-in-the-life experience, assuming the role of a Vet Tech working in a veterinarian's front office. This immersive simulation encompassed a wide range of tasks, from retrieving patient charts and assisting clients to processing payments and managing more complex responsibilities such as recording treatments. All pertinent documents, forms, records, charts, and logs were readily available for students to review, download, complete, and submit for assessment.
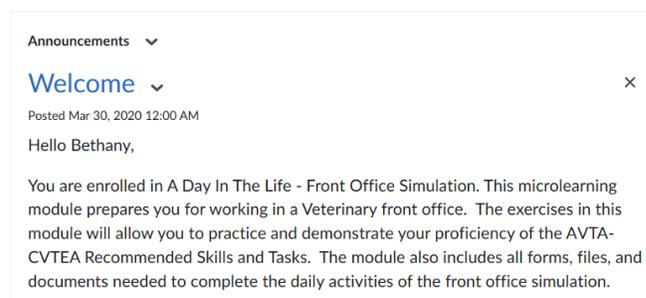
To further enhance the learning experience, the online course incorporated interactive scenarios within the content and a dedicated class-wide discussion board, fostering a collaborative environment where students could share their experiences and challenge one another with practice questions and relevant case studies. In a continuous effort to refine and improve the online module, students are encouraged each term to develop and submit novel case studies derived from their own experiences or creative imagination, thereby contributing to the ongoing education of future students utilizing the course. These student-generated case studies undergo a rigorous evaluation process to assess their relevance and impact before being incorporated into the front office simulation.

REFERENCES

1. CVTEA accreditation policies and procedures. Appendix G – Veterinary Technology Student Essential and Recommended Skills List. January 2026. Accessed February 4, 2026. https://www.avma.org/education/center-for-veterinary-accreditation/committee-veterinary-technician-education-activities/cvtea-accreditation-policies-and-procedures-appendix-g.

2. Dávila Rubio AM. Wiggins, G., & mctighe, J. (2005) understanding by design (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development ASCD. Colombian Applied Linguistics Journal. 2017;19(1):140. doi:10.14483/calj.v19n1.11490

3. VI. Accreditation Standards. CVTEA accreditation policies and procedures. January 2026. Accessed February 4, 2026. https://www.avma.org/education/center-for-veterinary-accreditation/committee-veterinary-technician-education-activities/cvtea-accreditation-policies-and-procedures-standards.

4. Winkelmes M-A. Transparent methods. TILT Higher Education. 2023. Accessed February 4, 2026. https://www.tilthighered.com/transparent-methods.

IMAGES

Below are screenshots from the actual microlearing found within the learning management system.

Announcements ˅

Welcome ˅   ×
Posted Mar 30, 2020 12:00 AM
Hello Bethany,

You are enrolled in A Day In The Life - Front Office Simulation. This microlearning module prepares you for working in a Veterinary front office. The exercises in this module will allow you to practice and demonstrate your proficiency of the AVTA-CVTEA Recommended Skills and Tasks. The module also includes all forms, files, and documents needed to complete the daily activities of the front office simulation.

ALT TEXT: Students are welcomed into microlearning with a purpose message that reads: This microlearning module prepares you for working in a Veterinary front office. The exercises in this module will allow you to practice and demonstrate your proficiency of the AVTA-CVTEA Recommended Skills and Tasks. The module also includes all forms, files, and documents needed to complete the daily activities of the front office simulation.

The Scenario

You have just been hired to work as a full-time veterinary technician at the new opened Fins, Fur and Feathers Animal Clinic. Presently the staff includes the veterinarian, Dr. Furrific, one full-time veterinary assistant Paula Pounds and one kennel assistant Doug Bassett and the receptionist Sally B. Beagle. Sally was hired last Thursday and quit on Friday due to a previously undiagnosed allergy to animals. Dr. Furrific based on your references, has asked that you manage the front office until a suitable replacement can be found. He has recently bought this clinic with a full client load and has no time to look for a replacement.

The current records of patients may be found in the Appendix A list below. There are 13 existing clients/patient records. There will be 9 new patients which you will have to set up records for as they are introduced into the practice. Additionally, there are other office records that you will need to work with and therefore should familiarize yourself with. These records include drug logs, radiology logs, surgical logs, the appointment book, check book and petty cash records.

Note: Each of the patient records in Appendix A will open in a new window when the hyperlink is clicked.

Appendix A:

NEED TO KNOW...

VET RECEPTIONISTS HAVE TO LEARN A LOT OF INFORMATION ABOUT:
DISPENSING MEDS AND KNOWING WHAT THEY ARE FOR, NEUTERING, VACCINATIONS, INSURANCE, PET HEALTH PLANS, DIETS, CUSTOMER SERVICE, BEREAVEMENT, HEALTH & SAFETY
#VETRECEPTIONISTTHANKS

Johnson, E.L.
Jones, Brenda
Lang, Christina
Mason, Joanna
Norman, Dick
Shorter, Mickey
Smith, Naomi
Smith, Susie
Smith, Thomas
Terry, Robin
Thomas, Lori
Thorpe, Julia

ALT TEXT: Students are guided through asynchronous, scenario-based learning with interactive links that store documents and repositories.

How This Works...

The entire assignment is broken down into 3 days. The front office activities are documented in a weekly diary which you will access for instructional purposes before working through the exercises. The diary will give you the following information: 6 day calendar schedule, drug usage, payment information, bank account information, petty cash amounts and client-patient appointment information.

The student should begin with the first day and work their way through Wednesday's events. Do not skip or jump ahead as this will cause confusion and erroneous results at the end. All activities build on the previous day's activities; any attempts to change or work ahead may compromise the end results especially regarding drug inventory as well as monies (both bank accounts and petty cash).

Before beginning work, browse through the various records as well as the appendix to familiarize you with the project as well as the existing client base. Once your instructor has reviewed their expectations, you should begin the project. You should plan to allocate an average of 1 hours per day to spend working on this project (some days require more, some less).

Appendix, Records & Logs:

- Change Record
- Consent for Treatment
- Control Substance Log
- Deposit Slip
- Invoice
- Medical Record Canine
- Medical Record Feline
- Price List
- Radiology Sheet
- Surgical Log
- Weekly Appointment Calendar

Note: The hyperlinks above will download the file onto your device for editing.

Tips for Assignments: You will come back to this page each time you need a form for your assignments. It is recommended that you save your work under a unique name that is easy to find.

ALT TEXT: Step-by-step processes are outlined for student that simulate the practices of traditional veterinary front office. Students can link to the necessary forms, logs, and documents necessary for daily vet front office work.

⠿ WHAT TO SUBMIT ⌄ ✓
🌐 Web Page

⠿ Day 1 ⌄ ✓
🌐 Web Page

⠿ Day 1: Diary Discussion ⌄ ✓
🗨 Discussion Topic

⚏ All conditions must be met
Receives **equal to 100 %** on the quiz: **Attendance Verification**

Discussion Purpose:

Use this daily diary to journal your experience for each day. Review the previous day's entry to see what new things you've learned and what you would have done differently. List questions you have each day.

Discussion Topic:

What was the most surprising thing that happened today? What was your biggest obstacle? Reflecting back on your day, what would you do differently tomorrow? What questions do you still have? Who was your favorite patient?

Grading Criteria:

What you must do to get full credit:

- Initial posts should be at least 250 words.
- You must respond to 2 classmates during the week (up to Sunday 11:59pm). Responses must be substantial.
- Research and/or citations as necessary in APA format.
- Worth 50 pts

ALT TEXT: Students navigate through the simulation using daily diaries and activities that provided the Transparency in Learning and Teaching (TILT) foundation using purpose, tasks, and criteria.

Lecture Capture as a Learning Tool for Veterinary Technician Students

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ABSTRACT

Lecture capture is increasingly being used in higher education to enhance student learning, improve accessibility and convenience, and serve as a resource for review for assessments. This mixed-methods study explored the perceptions of veterinary technician students regarding the use of lecture capture technology as a supplemental learning tool. Data were collected through a survey containing Likert-scale and open-ended items to evaluate usage frequency, perceived effectiveness, and satisfaction. Nineteen participants provided feedback, indicating high satisfaction, perceived academic benefit, and preference for lecture capture to support traditional study methods. Thematic analysis revealed common benefits such as flexibility, clarification of complex content, and accommodation for diverse learning styles. These findings suggest that lecture capture supports comprehension, retention, and accessibility in veterinary technician education.

KEYWORDS

lecture capture, veterinary technician education, educational technology, student perceptions, learning tools

INTRODUCTION

Lecture capture, the systematic recording and distribution of live lectures for asynchronous review, has become an established component of higher education, particularly within veterinary and allied health disciplines. Its integration offers students flexibility in accessing course materials, reviewing complex topics, and accommodating diverse learning needs. Empirical evidence suggests that lecture capture may contribute to improved academic performance, with students of average to below-average achievement levels most likely to utilize these recordings (Groen et al., 2016). The rapid transition to remote and blended instruction during the COVID-19 pandemic further accelerated the adoption of lecture-capture technologies, prompting ongoing discussions regarding their pedagogical efficacy and sustainability in post-pandemic curricula.

Existing literature presents a nuanced understanding of lecture capture's educational value. Faculty generally acknowledge its benefits in supporting students' learning autonomy and flexibility (Kwiatkowski & Demirbilek, 2016; LaTour, 2021), yet concerns persist regarding its potential to diminish attendance, participation, and in-class engagement. Danielson et al. (2013) identified lecture capture as particularly effective for courses emphasizing fact-heavy or content-dense material, whereas MacKay (2019) and Nordmann and McGeorge (2018) highlighted its capacity to alleviate student anxiety and facilitate exam preparation. Collectively, these studies underscore that while lecture capture can enhance learning outcomes, it is most effective as a complement—rather than a replacement—to traditional instructional methods and interactive pedagogy.

Despite growing evidence within veterinary medical education, limited scholarship has examined the role of lecture capture in veterinary technician training. Given that veterinary technology programs combine rigorous theoretical instruction with extensive psychomotor skill development, understanding how students perceive and engage with lecture capture is critical for optimizing blended-learning strategies. Accordingly, this study investigated veterinary technician students' perceptions of lecture capture as an instructional tool, focusing on usage patterns, perceived ease of use, effects on academic performance, and overall satisfaction. To the authors' knowledge, no published research has examined veterinary technician students' perceptions of lecture capture. This study addresses this gap by evaluating how students in an accredited VMT program engage with and benefit from this technology.

METHODOLOGY

This study received Institutional Review Board approval at Lincoln Memorial University (LMU). Because no existing instrument captured lecture-capture perceptions specific to veterinary technician students, the research team developed a novel survey tailored to the needs of this population. This study enrolled students in the LMU Veterinary Medical Technology program (N=19). Faculty used Zoom to record lectures across all VMT courses, with recordings uploaded to Microsoft SharePoint for captioning and posted to the learning management software (Canvas). All students had semester-long access to lecture recordings.

Following midterm exams, students completed an anonymous survey via Qualtrics. The instrument (Appendix A) consisted of 15 Likert-scale questions assessing lecture capture usage, ease of use, academic benefit, and satisfaction, alongside an open-ended prompt for qualitative feedback. Data were analyzed descriptively for quantitative trends and thematically for qualitative responses.

RESULTS

A total of 19 veterinary technician students completed the survey, representing both first- and second-year cohorts. Fifty-three percent (n = 10) were first-year students, and 47% (n = 9) were second-year students (See Appendix B, Figure 1). Age distribution was as follows: 37% (n = 7) were under 20 years old, 53% (n = 10) were 20–24 years old, and 5% each (n = 1) were in the 25–29 and 35+ age ranges.

Lecture capture usage was evenly distributed among categories, with 32% (n = 6) using it "a little," 26% (n = 5) "a moderate amount," 32% (n = 6) "a lot," and 11% (n = 2) "a great deal." Most students (79%; n = 15) strongly agreed and 11% (n = 2) somewhat agreed that the technology was easy to use (See Appendix B, Figure 2). Preference for lecture capture over traditional instructional methods was moderate, with 53% (n = 10) somewhat agreeing and 16% (n = 3) strongly agreeing.

A majority of students (68%; n = 13) strongly agreed that lecture capture helped them understand course material, while 42% (n = 8) somewhat agreed that it supported information retention. Similarly, 58% (n = 11) strongly agreed and 42% (n = 8) somewhat agreed that it allowed self-paced study. Approximately one-third (32%; n = 6) strongly agreed and 47% (n = 9) somewhat agreed that lecture capture contributed to improved grades.

Students also reported that lecture capture filled gaps in their notes (68%; n = 13 strongly agreed, 32%; n = 6 somewhat agreed) and provided flexible scheduling (74%; n = 14 strongly agreed, 26%; n = 5 somewhat agreed). Reported challenges included difficulty maintaining focus (11%; n = 2 strongly agreed, 11%; n = 2 somewhat agreed), though many students disagreed with this statement (26%; n = 5 strongly disagreed, 32%; n = 6 somewhat disagreed). Most respondents (42%; n = 8) strongly disagreed that technical issues posed a barrier.

Overall, 79% (n = 15) of students strongly agreed they were satisfied with lecture capture, and 84% (n = 16) indicated they would recommend it to other veterinary technician students (See Appendix B, Figure 3). Thematic analysis of open-ended responses reinforced survey findings, revealing recurring themes of accessibility, convenience, and academic reinforcement. These qualitative data supported the overall positive perceptions observed in the quantitative results. Full results in Appendix B.

DISCUSSION

Veterinary technician students in this study perceived lecture capture to be flexible, user-friendly, and supportive of content mastery. Students valued the ability to review lectures at their own pace, particularly for complex or fact-heavy topics, consistent with prior research demonstrating that recorded lectures enhance comprehension and retention in demanding subject areas (Danielson et al., 2013; Ford et al., 2012; Groen & Quigley, 2016; MacKay, 2019). Similar to findings in broader health-sciences education, participants reported that lecture capture promoted autonomy and accommodated diverse learning needs (Baillie et al., 2022; Chinnery et al., 2021; Morris et al., 2019). These results align with previous studies that advocate for the thoughtful integration of lecture capture into veterinary and allied-health curricula as a supplement to, rather than a replacement for, traditional instruction (Kwiatkowski & Demirbilek, 2016; LaTour, 2021; MacKay, 2019; Nordmann & McGeorge, 2018; Reid et al., 2022).

Notably, while the sample was small, the overwhelmingly positive response suggests strong support for continued use. Thematic analysis of open-ended responses reinforced survey findings, revealing recurring themes of accessibility, convenience, and academic reinforcement. Unlike some prior studies that reported decreased attendance following the introduction of lecture capture (Chinnery et al., 2021; Morris et al., 2019; Reid et al., 2022), this research did not identify attendance concerns, due to institutional policies mandating live lecture participation and attendance taken daily. Nevertheless, programs implementing lecture capture should continue to emphasize its role as a complementary tool that enhances, rather than replaces, active engagement and in-person learning (Danielson et al., 2013; MacKay, 2019; Nordmann & McGeorge, 2018; Reid et al., 2022).

This study's limitations include a small, single-institution sample and the absence of longitudinal performance data. Future research should employ larger, multi-cohort comparisons to examine academic outcomes among students with and without access to lecture capture, building on models established in other biomedical and veterinary education contexts (Baillie et al., 2022; Reid et al., 2022). Identifying best practices for optimizing lecture-capture use within veterinary technician programs will be essential for maximizing its pedagogical benefit.

CONCLUSION

Lecture capture was well-received among veterinary technician students who reported that lecture capture supported their learning, enhanced their comprehension, accommodated their different learning styles, and offered schedule flexibility. Given its positive reception, veterinary technician programs should consider lecture capture as a strategic educational tool, while also addressing faculty training and technical infrastructure to ensure successful implementation.

REFERENCES

1. Baillie, L. D., Banow, R., & Botterill, J. J. (2022). The impact of lecture capture availability on academic performance in a large biomedical science course. Higher Education Research & Development, 41(1), 72–87.

2. Chinnery, S., MacKay, J. R. D., & Hughes, K. (2021). What'd I Miss? A qualitative exploration of student and staff experiences with lecture recording over an academic year. Journal of Perspectives in Applied Academic Practice, 9(1), 82–92.

3. Danielson, J., Preast, V., Bender, H., & Hassall, L. (2013). Is the effectiveness of lecture capture related to teaching approach or content type? Computers & Education. https://doi.org/10.1016/j.compedu.2013.10.016

4. Ford, M., Burns, S., & Gómez, R. (2012). The effectiveness of classroom capture technology. Active Learning in Higher Education, 13(3), 191–201.

5. Groen, J. F., Quigley, B. (2016). Examining the use of lecture capture technology: Implications for teaching and learning. The Canadian Journal for the Scholarship of Teaching and Learning, 7(1), 8.

6. Kwiatkowski, A. C., & Demirbilek, M. (2016). Investigating veterinary medicine faculty perceptions of lecture capture. Journal of Veterinary Medical Education, 43(3), 302–309.

7. LaTour, A. V. (2021). Educational Technology Tools in Veterinary Technology Education: A Case Study Exploring Faculty Perspectives (Doctoral dissertation, Southern New Hampshire University).

8. MacKay, J. (2019). Show and 'tool': How lecture recording transforms staff and student perspectives. Computers & Education, 140, 102068.

9. Morris, N. P., Swinnerton, B., & Coop, T. (2019). Lecture recordings to support learning: A contested space. Computers & Education, 140, 103604.

10. Nordmann, E., & McGeorge, P. (2018). Lecture capture in higher education: Time to learn from the learners. https://doi.org/10.31234/osf.io/ux29v

11. Reid, A., Duret, D., & Noble, K. (2022). Lecture capture: Friend or foe? Journal of Veterinary Medical Education, 49(1), 126–137.

The Role of Mentorship Programs in Advancing Veterinary Technician Education and Professional Growth

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ABSTRACT

Mentorship programs play a critical role in the education, development, and retention of veterinary technicians in clinical and academic settings. These programs provide opportunities for hands-on learning, emotional support, and professional guidance in a profession frequently affected by high stress, burnout, and workforce shortages. Initiatives such as MentorVet Tech and structured mentorship programs at Ethos Veterinary Health demonstrate how intentional mentorship bridges the gap between academic training and clinical practice. This paper examines the benefits of mentorship for veterinary technicians, including improved clinical competency, confidence, job satisfaction, team cohesion, and patient outcomes. It also addresses common barriers to implementation and offers evidence-based strategies for building sustainable mentorship models. Understanding the impact of mentorship can guide future research and support programs that promote technician well-being and long-term career success.

Keywords: Veterinary technician education; Mentorship programs; Professional development; Technician retention; Clinical training; Technician well-being

INTRODUCTION

Veterinary technicians play a vital role in delivering high-quality patient care through anesthesia management, patient monitoring, laboratory diagnostics, and client communication across general, specialty, and academic settings. As veterinary medicine grows more complex, the demand for skilled technicians continues to rise. However, turnover among veterinary technicians remains one of the highest in healthcare. The American Animal Hospital Association (AAHA) reports that many technicians leave the profession within five years due to high stress, limited advancement opportunities, and insufficient support systems.[1] These pressures are compounded by staffing shortages and compassion fatigue, emphasizing the need for sustainable professional development strategies.

Mentorship, defined as a professional relationship in which an experienced individual provides guidance and support to a less experienced colleague, has been widely recognized as a driver of success across healthcare professions.[2] In veterinary medicine, structured mentorship is increasingly viewed as essential for fostering competence, confidence, and career longevity. Programs such as Ethos Veterinary Health's training pathways and the nationwide MentorVet Tech initiative illustrate how mentorship can support technicians throughout their careers.[3,4] Despite its benefits, many practices face barriers to implementation, including time limitations, lack of mentor training, and insufficient institutional support. This paper examines the value of mentorship for veterinary technicians and provides strategies for sustainable program development.

LITERATURE REVIEW

Mentorship has long been associated with improved professional development in human healthcare fields, including nursing and medicine.[2] In veterinary settings, mentorship helps early-career technicians transition from academic learning to clinical practice. According to AAHA, mentorship is associated with higher job satisfaction, increased confidence, and stronger clinical competencies, all of which contribute to improved patient outcomes and healthier workplace cultures.[1]

Research consistently demonstrates that mentored professionals experience improved performance, greater career satisfaction, and reduced burnout. A meta-analysis of mentorship research across multiple professions found consistent positive outcomes, including improved retention in demanding careers.[2] These findings align closely with the challenges faced by veterinary technicians, who often experience emotional exhaustion and role strain. Mentorship also strengthens communication and clinical decision-making skills, which are essential in high-pressure veterinary environments.

Veterinary-specific programs further illustrate these benefits. MentorVet Tech provides structured mentorship modules that address technical skills, communication,

leadership, and technician well-being.[3] Ethos Veterinary Health integrates mentorship across its hospitals through hands-on training and formal learning pathways.[4] Early program evaluations report improved engagement, confidence, and clinical competence among participants.

Recent veterinary literature reinforces these findings. Hendricks emphasizes mentorship and technician utilization as key strategies for improving job satisfaction and retention.[5] Quicksall highlights inclusive mentorship models that foster psychological safety and professional growth across veterinary teams.[6] Koziol and Wagner found that mentorship programs focused on relationship-building and consistent communication were most effective in promoting engagement and career development.[7] Together, these findings support mentorship as a cornerstone of technician success.

DISCUSSION

The literature demonstrates that mentorship significantly enhances professional growth, confidence, and retention among veterinary technicians. Programs such as MentorVet Tech and Ethos Veterinary Health show that structured mentorship reduces feelings of isolation and promotes belonging, which are essential in combating burnout.[1,3,4]

Successful mentorship programs share common characteristics: they are structured, goal-oriented, flexible, and supported by leadership. Clearly defined objectives, regular feedback, and measurable outcomes help ensure program consistency. Flexibility allows programs to adapt to the needs of various practice environments, including small clinics, specialty hospitals, and academic institutions. Leadership support is critical, as time allocation, mentor engagement, and access to resources directly influence program success.[1]

Practice size often determines mentorship structure. Smaller practices may rely on informal peer mentorship, while larger hospitals frequently implement formal programs with designated mentors, standardized training modules, and scheduled evaluations. Technology has expanded mentorship access through virtual platforms, teleconferencing, and online learning tools, making support available to technicians in rural or underserved areas.

Despite these benefits, barriers remain. Time constraints are the most frequently cited challenge, as busy clinical schedules limit one-on-one mentoring opportunities. In addition, many mentors lack formal training, resulting in inconsistent guidance. Addressing these challenges requires intentional program design, including mentor education in communication, feedback, and psychological safety.[2] Regular program evaluation is also necessary to ensure continued effectiveness and relevance.

There is a growing need for veterinary-specific empirical research. While human healthcare literature strongly supports mentorship, few veterinary studies have quantitatively examined long-term outcomes. Longitudinal research tracking technician retention, performance, and satisfaction would provide valuable evidence to support mentorship as a return-on-investment strategy for veterinary organizations.

CONCLUSION

Mentorship programs are a critical component of veterinary technician education and professional growth. By fostering competence, confidence, and resilience, mentorship supports technicians throughout their careers. Evidence from MentorVet Tech and Ethos Veterinary Health demonstrates that structured mentorship improves job satisfaction, team cohesion, and retention.[3,4]

To maximize impact, veterinary practices and educational institutions must invest in formal, evidence-based mentorship programs supported by leadership, mentor training, and ongoing evaluation. Future research should focus on veterinary-specific data to better quantify mentorship's long-term benefits. Integrating mentorship as a foundational element of veterinary technician education will strengthen the profession and improve outcomes for veterinary teams, patients, and clients alike.

REFERENCES

1. View from the Board: Strengthening veterinary practice through mentorship and formal training. AAHA. Published June 12, 2025. https://www.aaha.org/trends-magazine/publications/view-from-the-board-strengthening-veterinary-practice-through-mentorship-and-formal-training/

2. Allen TD, Eby LT, O'Brien KE, Lentz E. The state of mentoring research: A qualitative review of current research methods and future research implications. Journal of Vocational Behavior. 2008;73(3):343-357. doi: https://doi.org/10.1016/j.jvb.2007.08.004

3. Tech M. MentorVet. MentorVet. Published 2019. Accessed January 28, 2026. https://www.mentorvet.net/tech-scholarships

4. Veterinary Training Programs - Ethos Veterinary Health. Ethos Veterinary Health. Published August 13, 2025. Accessed January 28, 2026. https://www.ethosvet.com/veterinary-training-programs/

5. Ways. MentorVet. MentorVet. Published November 14, 2024. Accessed January 28, 2026. https://www.mentorvet.net/articles/8-ways-to-better-utilize-veterinary-technicians/

6. Quicksall MS. Inclusive Mentorship for the Next Generation of Veterinary Professionals. Veterinary Clinics of North America Small Animal Practice. Published online September 1, 2024. doi: https://doi.org/10.1016/j.cvsm.2024.07.014

7. Koziol JH, Wagner SA. Students value relationship building in a student mentorship program. American journal of veterinary research. 2024;85(11):ajvr.24.03.0074. doi: https://doi.org/10.2460/ajvr.24.03.0074

SCNAVTA Profile:

Northcentral Technical College

Nicole Getzloff, CVT
Instructional Assistant-Veterinary Technology
SCNAVTA Club Advisor
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Northcentral Technical College's SCNAVTA Chapter is located in a small central Wisconsin town called Wausau. We have been established for about 3 years and focus on promoting professional and educational advancement of veterinary technicians while also promoting progressing and humane medical care for all creatures. Current members feel that the club helps them develop many skills that are needed to help them grow, gain teamwork and leadership experience while making friendships and lasting memories. Our club prides itself on inclusiveness by having all students enrolled in the veterinary technician program as members and partnering with our campus Professional Agriculture Club, among other campus club events.

If you ask any of our members, one of their favorite club activities is participating in vaccine clinics to support and educate animal owners in our community, not only on vaccines, but who we are as students and the knowledge gained during their time in the program. Members also enjoy the opportunities to put that knowledge and application of skills learned in the classroom to use; this has made a significant impact on confidence for many students. Thanks to additional fundraising efforts, we have been able to branch out and participate in more conferences and industry networking events. Each year brings new opportunities, challenges and experiences for our club, but it allows us to continue to grow and become the best that we can be. As the club's advisor, I look forward to many years of guiding students to be the best that they can and providing support to make sure the clubs goals are met.

Program Profile:
Veterinary VITALS Vet Assistant Training Program

Christy L. Langwell-Millett, CVTg, VTES
Educational Service Provider
Veterinary VITALS

The Veterinary VITALS Vet Assistant (VA) Training Program was developed in response to a need for improved educational processes and outcomes. When I began teaching Vet Tech (VT) students, I quickly realized there was a need for better foundational training to help avoid the near 50% drop/fail rate our school had for first semester VT students. With the intention of better supporting students, I started creating supplemental course content that unintentionally evolved into the robust VITALS VA Curriculum and earned NAVTA Program Approval at six college campuses. The VITALS Vet Assistant Training Program offers both traditional and nontraditional learners the opportunity to try-on a veterinary career. Many students take my course because they are considering careers as vet techs or veterinarians. The program offers these students the ability to be better prepared for more advanced training programs which can lead to higher rates of retention and more successful outcomes. Other students take my course to learn more about how to pursue nonmedical careers working with animals. The program provides both demographics guidance toward building a career path through creative career planning, certification opportunities, externship experiences, and even support toward entrepreneurship.

In addition to being in alignment with the NAVTA Essential Skills for Vet Assistants, the VITALS VA Program Materials also focuses on developing soft skills, professional communication habits, critical thinking abilities, and strategies for trauma-informed wellness. This year we are excited to expand our core content to now include the full VITALS Well-being content which we introduced at the 2023 AVTE Conference (Breakout Session: The Oxygen Mask Project) and presented in full at the ISVMA Power of 10 Conference in March 2024. I am humbled by the positive feedback I have received so far. Through Veterinary VITALS, I have created a community of sharing by providing comprehensive and seamless Program Management Services that allow passive income opportunities for campuses and access to high-quality education for students. With a VITALS Partnership, any college can have the hassle-free ability to diversify their course offerings with an in-demand, workforce-eligible training opportunity that can lead to an industry recognized credential, and a future of professionals with a solid foundation to their career path.

Contact connect@veterinaryvitals.org for more information or to schedule a time to preview the VITALS VA Training and Vet Well-being Programs to learn how they can be integrated into your campus's course offerings in time for next semester.

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