

# Student Experiences in Practice-Based Small Animal Clerkships

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## ABSTRACT

Practice-based clerkships provide a way for students to experience the types of cases, clients, and procedures that they can expect to see in a general practice setting. These clerkships are typically quite different from those offered in teaching hospitals. Forty-seven (65.28%) of the 72 invited veterinary medicine students from three cohorts participated in pre- and post-test surveys designed to compare their expectations to their actual experiences. Students reported significant positive changes in terms of adequate supervision, approachability of practitioner, and comfort level when asking questions, as well as seeing different cases than they see at the teaching hospital. Students reported significant negative changes in terms of their ability to interact with clients as much as they expected with respect to the practice of communication skills, history-taking skills, preventative therapy discussions with clients, and treatment. These findings were supported by written survey comments regarding the most and least helpful portions of the clerkship. We suggest further research to study student experiences over time and to survey practitioners before and following placement with veterinary students; the aim would be to obtain more information about the expectations and success of practice-based clerkships.

**Key words:** clinical science, communication, curriculum, educational methods, practice/business management, statistics

## INTRODUCTION

Practice-based clerkships are an important way to expose students to the types of cases, clients, and procedures that they can expect to see in a general practice setting. Despite at least 1.5 years of clinical practice at most veterinary schools, many veterinary students claim that they are unprepared for the pace and volume of cases seen in general practice. New graduates often state that their working experience is quite different from what they imagined it would be.<sup>1</sup> In one study, less than a third of veterinary graduates felt well prepared to enter practice.<sup>2</sup> Recognizing that the majority of veterinary graduates will enter into primary care practice, this means that primary care education, and practice-based training in particular, are important elements of the veterinary curriculum.<sup>3</sup> Clinical practice-based training helps students to link theory and practice, to recognize diagnostic and treatment patterns, and to develop interpersonal skills. These experiences are likely to result in considerable improvement in senior veterinary students' perceptions of competence when starting to practice.<sup>4</sup> Over the past several years, an increased number of large animal practice-based clerkships<sup>5</sup> and distributed models of clinical workplace learning in private veterinary clinics have emerged.<sup>6,7</sup> In human health professions, the evidence suggests that practice-based clinical education is as effective as that offered in teaching hospitals. In addition, reports related to external veterinary medicine rotations indicate that practice-based veterinary rotations

and clerkships compare favorably with university-based rotations.<sup>8</sup>

In August 2015, the University of Florida College of Veterinary Medicine began the Practice-Based Small Animal Clerkship (PBSAC), an elective rotating clerkship for junior and senior veterinary students that places them with an approved local small animal general practitioner for 2 weeks. With the knowledge that most of our students enter small animal practice after graduation, the goal of this clerkship was to provide students with additional clinical experience in a practical real-world setting.

To recruit small animal veterinary general practitioners, an invitation was extended to those located in the county and in surrounding areas to participate in a practice-based rotating clerkship. All participating PBSAC practitioners are screened by site visit and an interview with a clerkship coordinator. Practitioners must be employed full time in a practice that meets the standards for canine/feline practices recommended by the American Board of Veterinary Practitioners (ABVP).<sup>9</sup> After a visitation and screening process, 42 practitioners enrolled in the program. Veterinary students in their junior and senior years are offered this elective pass/fail course. Based on the pre-PBSAC short survey, enrolled students were placed with a practitioner who was expected to offer them the most suitable educational experience. To fulfill course-related requirements, students were expected to complete several written assignments, including a business

assessment and a case log of all patients seen on their rotation. Also, the mentoring practitioner was expected to complete both a mid-rotation and a final evaluation of the student. Practitioners were urged to allow students to perform tasks and communicate with clients. However, since practitioners are legally responsible for their patients and their clients, there were no expectations that they would adhere to the same protocol that was followed in the university's teaching hospital. Students had a list of student learning objectives (SLOs) which are possible procedures that could be performed on the rotation, although there were no requirements specifying what procedures students were allowed to perform. The purpose of this study was to compare students' expectations of their practice-based small animal clerkships with their actual experiences.

## METHODS

### Participants and Data Collection

This study was conducted across three semesters: Spring 2016, Fall 2016, and Spring 2017. Using a pre-test/post-test design, 72 veterinary medicine students were invited to take the pre- and post-test surveys: 17 from Spring 2016, 35 from Fall 2016, and 20 from Spring 2017 semester. Every participant was invited to take the pre-test survey before participating in a PBSAC rotation, and to take the post-test survey following the completion of the 2-week rotation. The surveys were administered via the professional encrypted version of SurveyMonkey (www.surveymonkey.com). The university's Institutional Review Board (IRB) approved this study (IRB# 15U1431).

### Instrument

The researcher-constructed survey included 22 questions; all 4-point Likert-scale questions asked participants to indicate their level of agreement with particular aspects of the PBSAC. Ratings on the 4-point Likert-scale were as follows: 1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, and 4 = *strongly disagree*. The post-test also included two open-ended questions.

### Quantitative Data Analysis Methods

After data collection, we analyzed matched Likert-type responses using SPSS Statistics version 24.0 (IBM Corp., Armonk, NY, USA). Based on the research purposes, two research questions were asked:

- Were there statistical differences between the participants' pre-test and post-test scores?
- Was there a significant effect due to class difference on the pre-test/post-test score changes?

The Kolmogorov-Smirnov test was conducted to examine if the data met the normal distribution assumption. Since data were not normally distributed, ( $p < .05$ ), Wilcoxon signed-rank tests were conducted for the item-by-item comparison. To answer the second research question, we conducted multivariate analysis along with follow-up analyses. The statistical significance level was set at  $\alpha = .05$  for all analyses.

## Qualitative Data Analysis Methods

In the post-test survey, students were asked two open-ended questions: Question 23 asked, "What aspects of the rotation were most helpful in preparing you for practice?" and Question 24 asked, "What aspects of the rotation were not helpful in preparing you for practice?" Student replies to these questions were coded and thematized by two researchers with expertise in qualitative analysis. The frequency of themes was calculated and is described using excerpted quotes.

## RESULTS

### Sample Description

Forty-seven of 72 participants completed both the pre-test and post-test surveys, a valid response rate of 65.28%. Specific response rates for each class were: 41.18% (7/17) for Spring 2016, 74.29% (26/35) for Fall 2016, and 70.00% (14/20) for Spring 2017.

### Paired-Samples Comparison Results

Paired-samples Wilcoxon signed-rank test results showed statistically significant differences for 10 of the 22 questions (questions 5, 7-13, and 17-18). Specifically, 4 of the 10 questions showed significant positive changes (i.e., an increased agreement level after the rotation). These questions were: question 5, "The types of clients I will see on this rotation will be different from the cases I see on clinics at the Veterinary Medicine Teaching Hospital (VMTH) ( $p = .008$ ); question 13, "I feel like I will have adequate supervision while on this rotation" ( $p < .001$ ); question 17, "The doctors I will work with on this rotation will be approachable for my learning" ( $p = .004$ ); and question 18, "I will feel comfortable asking questions when I will need help or clarification" ( $p < .001$ ). As Table 1 shows, students reported that they learned or experienced more in the rotation relative to the activity than they expected.

Six questions showed statistically significant negative changes (i.e., a decreased agreement level after the rotation). These questions were: question 7, "This rotation will allow me many opportunities to my practice communication skills" ( $p = .003$ ); question 8, "I will be able to practice my history-taking skills frequently on this rotation" ( $p < .001$ ); question 9, "This rotation will allow me to discuss preventative therapies with clients" ( $p < .001$ ); question 10, "I will be able to discuss a treatment plan/recommendations with a client either on my own or with a clinician supervising me" ( $p < .001$ ); question 11, "I will be given opportunities to discuss finances with clients during this rotation" ( $p < .001$ ); and question 12, "I will be given the opportunity to discuss euthanasia/end of life decisions with clients either on my own or with clinician supervision" ( $p < .001$ ). These results suggest that students' expectations about learning or experiencing something relative to those activities were not met (see Table 1).

### Multivariate Analysis Results

Results showed that for 9 of the 10 questions (questions 5, 7-13, and 18), class (semester) difference did not have a statistically significant effect on the pre-test to post-test score

**Table 1:** Paired-samples Wilcoxon signed-rank test results

Question statement	Direction of change in level of agreement (from pre- to post-test)	Test statistics (z)	p
Q1. The amount of time spent on this rotation will be unreasonable given the specialty.*	Increase	-.12 <sup>†</sup>	.905
Q2. I will see a broad mixture of small animal cases on this rotation.‡	Increase	-1.34 <sup>†</sup>	.180
Q3. The types of cases I will see on this rotation will be a good representation of the types of cases I will see in practice.§	Increase	-.66 <sup>†</sup>	.513
Q4. The types of cases I will see on this rotation will be different from the cases I see on clinics at the Veterinary Medicine Teaching Hospital (VMTH).‡	Increase	-1.53 <sup>†</sup>	.127
Q5. The types of clients I will see on this rotation will be different from the cases I see on clinics at the VMTH.‡	Increase	-2.65 <sup>†</sup>	.008 <sup>¶</sup>
Q6. I will have many opportunities to practice procedures while on this rotation.§	Increase	-.12 <sup>†</sup>	.903
Q7. This rotation will allow me many opportunities to practice my communication skills.‡	Decrease	-2.92 <sup>**</sup>	.003 <sup>¶</sup>
Q8. I will be able to practice my history-taking skills frequently on this rotation.‡	Decrease	-5.03 <sup>**</sup>	<.001 <sup>¶¶</sup>
Q9. This rotation will allow me to discuss preventative therapies with clients.‡	Decrease	-3.92 <sup>**</sup>	<.001 <sup>¶¶</sup>
Q10. I will be able to discuss a treatment plan/recommendations with a client either on my own or with a clinician supervising me.‡	Decrease	-3.39 <sup>**</sup>	<.001 <sup>¶¶</sup>
Q11. I will be given opportunities to discuss finances with clients during this rotation.¶¶	Decrease	-4.26 <sup>**</sup>	<.001 <sup>¶¶</sup>
Q12. I will be given the opportunity to discuss euthanasia/end of life decisions with clients either on my own or with clinician supervision.¶¶	Decrease	-3.92 <sup>**</sup>	<.001 <sup>¶¶</sup>
Q13. I feel like I will have adequate supervision while on this rotation.§	Increase	-3.58 <sup>†</sup>	<.001 <sup>¶¶</sup>
Q14. I will have many opportunities for didactic teaching rounds with my supervising clinician on this rotation.¶¶	Increase	-1.67 <sup>†</sup>	.095
Q15. I feel this rotation will be very important for making me ready to enter practice after graduation.§	Decrease	-.05 <sup>**</sup>	.958
Q16. As a result of this rotation, I will feel more comfortable with small animal general practice.‡	Increase	-.37 <sup>†</sup>	.712
Q17. The doctors I will work with on this rotation will be approachable for my learning.§	Increase	-2.87 <sup>†</sup>	.004 <sup>¶</sup>

Question statement	Direction of change in level of agreement (from pre- to post-test)	Test statistics (z)	p
Q18. I will feel comfortable asking questions when I will need help or clarification. <sup>‡</sup>	Increase	-3.84 <sup>†</sup>	<.001 <sup>††</sup>
Q19. The expectations for me on this rotation will be clearly explained to me. <sup>‡</sup>	Increase	-.89 <sup>†</sup>	.371
Q20. I will likely pursue a career exclusively in small animal practice (e.g., no large animal/equine practice) following graduation. <sup>‡</sup>	Increase	-.62 <sup>†</sup>	.539
Q21. I plan to do a 1-year (rotating) internship following graduation. <sup>‡</sup>	Decrease	-1.51 <sup>**</sup>	.132
Q22. I plan to pursue a residency in my chosen specialty following graduation/internship.*	Decrease	-1.94 <sup>**</sup>	.052

\* N = 44

<sup>†</sup> Wilcoxon signed-rank test statistics were based on positive ranks of (post-test score to pre-test score).

<sup>‡</sup> N = 46

<sup>§</sup> N = 47

<sup>††</sup> p <.05 is statistically significant

<sup>\*\*</sup> Test statistics were based on negatives ranks

<sup>†††</sup> p <.001 is statistically significant

<sup>‡‡</sup> N = 45

\* - § Number of pairs in this item analysis

changes ( $p > .05$ ). However, for question 17, "The doctors I will work with on this rotation will be approachable for my learning," class difference did have a significant effect on the pre-post score changes ( $p = .047$ ) (see Table 2). Follow-up procedures showed that Spring 2016 ( $p = .014$ ) and Fall 2016 ( $p = .021$ ) participants' score changes contributed to the observed significant difference in results. Participants from Spring 2017 semester did not have significant score changes from pre-test to post-test on question 17 ( $p = .739$ ). There was a significant increase in the Spring 2016 and Fall 2016 semester participant level of agreement for the statement that "The doctors I will work with on this rotation will be approachable for my learning." Participants from the 2017 Spring semester did not show a significantly increased agreement level (see Table 3).

### Qualitative Findings

Regarding the most helpful aspects of the rotation, 34 (72.34%) participants provided a response; 13 (27.66%) who did not provide a response were coded as "nothing." Codes were categorized into eight themes: (a) general practice, (b) hands-on practice, (c) communication and observation, (d) financial limitations, (e) balance, (f) enhanced confidence, (g) surgery, and (h) all. Only those themes that met a minimum threshold of 25% (general practice, hands-on practice, and communication and observation) are described.

The most frequent theme was "general practice." Fifteen participants reported having (a) seen clinical cases in general practice, (b) seen diverse and varied clientele cases that were very helpful, and (c) benefited from experiencing a "real life concept." One participant appreciated seeing the "types of cases seen every day." Another participant

**Table 2:** Multivariate test results for Question 17\*

Source	Time	Time × class	Between-subjects effects (class)
Wilks's lambda ( $\lambda$ )	.76	.87	—
p	.001	.047	.822

\* Question 17: "The doctors I will work with on this rotation will be approachable for my learning."

**Table 3:** Follow-up analyses results for Question 17\*

Group	No. of pairs	Test statistics (z) <sup>†</sup>	p
2016 Spring-only	7	-2.45	.014 <sup>‡</sup>
2016 Fall-only	26	-2.31	.021 <sup>‡</sup>
2017 Spring-only	14	-.33	.739

Note: Results based on class-control paired-samples Wilcoxon signed-rank test

\* Question 17: "The doctors I will work with on this rotation will be approachable for my learning."

<sup>†</sup> Wilcoxon signed-rank test statistics were based on positive ranks of (post-test score to pre-test score).

<sup>‡</sup> p <.05 is statistically significant

reported "seeing a more diverse clientele than those typical for VMTH." Others reported the advantages of seeing "many otitis externa cases, a few cat abscesses, and some other good general practices cases [and the opportunity] to observe high-quality dentistry" (see Table 4).



**Table 4:** Themes and codes for most helpful aspects of the rotation

Theme	Frequency	Codes	Example references
General practice	16	Clinical cases in general practice	“Saw many otitis externa cases, a few cat abscesses, and some other good general practices cases”
		Real life concept	“Was able to observe high-quality dentistry”
		More diverse clientele	“Seeing a more diverse clientele than those typical for [the] VMTH”
		Variety of cases	“Types of cases seen everyday”
Hands-on practice	8	Direct client care	“Being able to exam animals and coming up with a treatment plan”
		Hands-on care	“I was able to have a lot of hands-on practice during this rotation.”
		Practice opportunities	“The opportunity to act as the primary veterinarian was very helpful and encouraging to my comfort and confidence in my own skills and knowledge base.”
		Drawbacks of CVM-scripted teaching	“Too often do I feel like my hand is held every step of the way while in the [school’s] clinic. It was nice going on this clerkship without training wheels, yet knowing that if I needed help, all I had to do was ask.”
Communication and observation	8	Communication; observing doctor–patient interactions	“Communication with clients”
		Treatment protocols	“Reviewing major systems and seeing different treatment protocols”
		Practice approaches	“The teaching rounds were great and allowed for a more practical look at approaching problems that isn’t by the book like is taught at VMTH.”

VMTH = Veterinary Medicine Teaching Hospital; CVM = college of veterinary medicine

“Hands-on practice” was the second most frequent theme ( $n = 8$ ). Participants commented that hands-on practice/care and direct client care were helpful opportunities. They benefited from being able to “exam animals and coming up with a treatment plan,” and having “a lot of hands-on practice during this rotation.” Others found “the opportunity to act as the primary veterinarian was very helpful and encouraging to my comfort and confidence in my own skills and knowledge base. Too often do I feel like my hand is held every step of the way while in the [school’s] clinic. It was nice going on this clerkship without training wheels, yet knowing that if I needed help, all I had to do was ask.” Students also appreciated communication and observation experiences ( $n = 8$ ). They found that the rotation was helpful to their “communication with clients.” Also, they reported that having an opportunity to review major systems and “seeing different treatment protocols” was valuable. One participant discovered the advantage of teaching rounds that “allowed for a more practical look at approaching problems that isn’t by the book like is taught at VMTH.” (See Table 4).

In response to being asked to identify aspects of the rotation that were not helpful, 26 of 47 (55.32%) participants

provided a response. Codes were categorized into five themes: (a) insufficient patient interaction, (b) insufficient practice of procedural and hands-on opportunities, (c) not applicable to practice interest, (d) having to think on feet, and (e) lack of diagnostic reasoning. Only the “insufficient patient interaction” theme met the minimum threshold of 25%. Twelve students reported “not enough, minimum, and/or little patient interaction,” as well as “insufficient involvement/fast pace,” and “not enough history practice opportunities.” One participant reported not being “given many opportunities to interact with clients on my own,” while another described having had a lack of opportunities to perform physical exams, take histories, and discuss treatment. Students had hoped to have “been more involved with cases;” however, the fast pace in the clinic often resulted in discharging a client before the student learned the outcome of the visit. Six participants stated that they had “insufficient practice of procedural and hands-on opportunities.” Another participant reported not having as many opportunities “to do hands-on procedures as I had anticipated.” This individual opined that because they were not at a teaching hospital this was understandable, while another participant reasoned that insufficient hands-on opportunities were probably due to legalities (see Table 5).

**Table 5:** Themes and codes for least helpful aspects of the rotation

Theme	Frequency	Codes	Example references
Insufficient patient interaction	12	Not enough patient interaction	"I didn't get to do any history-taking or client communication on my own, but I did get to listen to my practitioner and see how she communicates."
		Minimum patient interaction	"I was not given many opportunities to interact with clients on my own."
		Little patient interaction	"Very little opportunity given to interact with clients and perform physical exams get history discuss treatment, etc."
		Insufficient involvement/fast pace	"I wish I could have been more involved with cases, because sometimes things were moving so fast that the doctor popped back into a room and discharged a client without me even hearing what the conclusion of the visit was."
		Not enough history practice opportunities	"There was very little client interaction which honestly is to be expected given that clients aren't paying to go to a private practice to be talked to by a student."
Insufficient practice of procedural and hands-on opportunities	6	Not enough practice	"Not being able to take part in dentals . . ."
		Little practice opportunities	"There were not enough hands-on at times, however, I do understand the legal aspect behind it. My clinician made me do as much as he could."
		Not enough hands-on	". . . the veterinarian really didn't offer that opportunity though there were occasional opportunities to perform spay/neuter and examine boarding"
		Minimal hands-on	"Would have liked to practice more procedures"
		Not enough dental interaction	"There weren't as many opportunities to do hands-on procedures as I had anticipated, but is also understandable given these are owned animals and not a teaching hospital."

## DISCUSSION

Four survey questions showed statistically significant positive changes; these were the questions related to adequate supervision, approachability of practitioner, comfort level of the student while asking questions, and seeing different cases than they see at the VMTH. Of the survey questions with statistically significant negative changes, students reported that they were not able to interact with clients as much as they expected with respect to the practice of communication skills, history-taking skills, preventative therapy discussions with clients, treatment plan/recommendation discussions, financial discussions, and end of life/euthanasia discussions. These findings were also supported by written comments to questions that asked students to explain which portions of the clerkship were the most and the least helpful (see Tables 4 and 5). While agreement to the item "I will have many opportunities to practice procedures while on this rotation" did not significantly decrease from pre-test to post-test, written comments

revealed that some students felt that there was a lack of sufficient hands-on and procedural experience. Perhaps this finding indicated that students began the clerkship without expecting to perform a lot of hands-on procedures. Several statements indicated that students understood that they were not at a teaching hospital and that clients were not expecting students to perform procedures.

The findings showed that students on the PBSAC experienced a better student-mentor relationship with their assigned practitioner than they expected before their clerkship. Overall, students were less likely to have opportunities to practice communication skills or work with clients than they expected before their clerkship. Although most veterinary students and graduates agree that training in communication skills is essential for successful transition into practice, many have reported inadequate instruction during their education.<sup>10</sup> As a result, communication training is becoming more prevalent as part of veterinary education. Students need more opportunities

to practice communication skills in both teaching hospital and practice-based settings.

Most practitioners have concentrated on educating their assigned students in medicine and surgery, introducing them to the pace and caseload encountered in small animal general practice. However, sharing the study's findings with enrolled practice-based practitioners would be helpful. For example, by making practitioners aware that students desire more hands-on procedural opportunities and occasions to communicate with clients, perhaps they will be more likely to make those situations available. This information is also valuable to share with students enrolled in the PBSAC course. Making students aware of previous PBSAC student experiences may result in their willingness to become assertive in asking their mentor practitioner for more experience in procedural opportunities and client communication. We also advise reminding enrolled students that their assigned practitioner is not employed at a teaching hospital and that they must feel comfortable allowing a student to perform a procedure on their patient or discussing potentially sensitive information with a client. It is also possible that students' lack of preparation for the fast pace and high case load of general practice resulted in more limited opportunities for learning. While an absence of interactive opportunities on busy days was unfortunate, witnessing a practitioner navigate the increased pace and case load of general practice was also a valuable student learning experience.

The study's findings must be considered in context with the study's limitations. First, the sample was comprised by a small number of participants taken from only a single school. As practice-based clerkships increase in number, a comparison of programs could be undertaken to further evaluate student expectations and experiences. The study was initiated close to the beginning of the clerkship. Thus, many practitioners were working with students for the first time. As practitioners become more comfortable with having students in their facilities, perhaps in the future, they that will allow students to perform procedures and to communicate with clients. Further research should seek to repeat this study after the program has been established for several years to determine if there is an increase in practitioner willingness to permit students to perform procedures and communicate with clients. Students are evaluated by the practitioners on both a mid-term (after 1 week) and a final evaluation basis. The student's pass/fail grade is then determined by their practitioner's evaluation and completion of all required clerkship documents. In addition, all PBSAC students complete a Likert-scale evaluation of their assigned practitioner following their clerkship. The data are summarized, and enrolled practitioners receive a summary of student feedback every other year. Further studies that survey practitioners before and following placement with a veterinary student could be developed to obtain more information about the expectations and success of practice-based clerkships.

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