Making the Most of Five Minutes: The Clinical Teaching Moment

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ABSTRACT
Clinical educators face the challenge of simultaneously caring for patients and teaching learners, often with an unpredictable caseload and learners of varied abilities. They also often have little control over the organization of their time. Effective clinical teaching must encourage student participation, problem solving, integration of basic and clinical knowledge, and deliberate practice. Close supervision and timely feedback are also essential. Just as one develops an effective lecture through training and practice, clinical teaching effectiveness may also be improved by using specific skills to teach in small increments. The purpose of this paper is to identify potential teachable moments and to describe efficient instructional methods to use in the clinical setting under time constraints. These techniques include asking better questions, performing focused observations, thinking aloud, and modeling reflection. Different frameworks for teaching encounters during case presentations can be selected according to learner ability and available time. These methods include modeling and deconstructing the concrete experience, guiding the thinking and reflecting process, and providing the setting and opportunity for active practice. Use of these educational strategies encourages the learner to acquire knowledge, clinical reasoning, and technical skills, and also values, attitudes, and professional judgment.

Key words: clinical, effective, strategies, teaching, techniques

INTRODUCTION
Clinical training is a substantial component of veterinary education, whether it is done throughout the curriculum or in the final years of the program. Learning is inevitable within this immersion, but academic clinicians influence the breadth and depth of learning and are tasked with assessing the learning that occurs.

Most academic clinicians have little training in “cage-side” teaching and likely evolve a teaching style similar to those they observed in training. In addition, the demands of clinical service affect the time available for teaching. Academic veterinary clinicians have pointed to the unpredictable caseload, the multiple levels of learners, and the culture or chaos of the clinic as impediments to clinical learning.1 However, just as one can learn to develop an effective lecture through training and practice, effective teaching in the clinical setting can be achieved through implementation of specific skills.

What Do We Know about Effective Clinical Teachers?
Effective clinical teachers share traits with all effective teachers, including knowing their field exceptionally well, showing enthusiasm, being prepared, setting clear and challenging expectations, creating a good learning environment, being available, and providing frequent and relevant feedback.2•5

Role modeling is important in clinical teaching and is a key feature of the ideal clinical teacher in medicine (Tables 1 and 2). Characteristics of positive role models in residency training include competent and knowledgeable patient care, a humanistic and inspiring teaching style, and personal qualities such as self-confidence, patience, integrity, and humility.6 Senior veterinary students reflecting on their clinical education felt the best role models not only had exemplary knowledge and professional skills, but were also good communicators and time managers who treated students, clients, colleagues, and animals well.4

The most effective clinical teachers, however, make extra efforts to encourage participation, problem solving, integration of basic and clinical knowledge, and deliberate practice, all the while providing close supervision and timely feedback.3 Epstein7 uses habits of mindful practice to enhance clinical teaching: priming students for critical thinking, being present and available in the moment, and using reflective questions, engagement, practice, and assessment to make the most of learning opportunities. Epstein also emphasizes curiosity, novelty, and ambiguity—modeling and training others to observe carefully, notice surprises, and develop alternative outcomes. (An excellent inventory for personalizing your view of the “ideal clinical teacher” and conducting an introductory self-assessment is the Clinical Teaching Perception Inventory®, available for free at http://residents.teachers.usc.edu/intro.htm).8

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Table 1: Characteristics of effective clinical teachers

Non-cognitive attributes
- is enthusiastic
- is stimulating and engaging
- is encouraging and collaborative
- is empathetic and compassionate
- is humble (exhibits uncertainty)
- is respectful
- displays honesty and integrity
- creates a positive, supportive learning environment
- interacts positively with students
- focuses on learners’ needs
- is available
- listens
- models professional characteristics

Cognitive attributes
- is well organized
- sets goals and expectations
- can teach various levels of learners
- perceives role modeling as important in medical education
- is knowledgeable with effective diagnostic and therapeutic skills and possesses sound clinical reasoning
- demonstrates knowledge acquisition and clinical thought processes
- demonstrates clinical skills
- has excellent communication skills
- explains difficult concepts clearly
- centers care on the patient instead of the disease
- provides direct supervision
- allows students autonomy to make independent decisions
- is able to control impulses and cope with adversity
- assumes responsibly in difficult clinical situations
- provides feedback

Table 2: How to be a poor clinical teacher and negative role model (i.e., what not to do)*

- be impatient
- stay very quiet, reserved, and mysterious
- focus on teaching students what not to do
- never acknowledge uncertainty or ambiguity
- appear uninterested or uncaring toward patients
- share your cynicism and bitterness freely
- pay no attention to your external appearance
- don’t give any feedback
- stay overextended all the time so your attention is always divided
- don’t bother to keep up with your specialty knowledge base
- make it challenging for other health care workers to work with you

* Adapted from reference 6

“What Do We Know about the Experiential Learning Process That Is Relevant?”

Practice-based learning through apprenticeship pre-dates formal medical training. In contemporary veterinary curricula, we assume learning happens when students are in clinics, and feel more comfortable the more time students spend in supervised practices. The “see one, do one, teach one” mantra has been replaced with the reality that “see some, practice many, do many more” is required to develop expertise.

Experiential learning theory,9 advanced by scholars of human development in the last century, frames a deeper understanding of the learning process. It includes two key features of relevance here: first, learning starts and ends with direct experiences; and second, learning includes a holistic interaction of learner characteristics, the experience, and the setting or space in which the experience occurs. The cyclic experience that creates knowledge is defined here as experiencing (concrete experience, e.g., “see one” or “practice one”), thinking (abstract conceptualization), reflecting (reflective observation), and acting (active experimentation, e.g., “now, do one” or “try again”).9

Effective clinical teaching incorporates all points in this cycle by modeling and deconstructing the concrete experience, guiding the thinking and reflecting process, and providing the setting and opportunity for active practice. The more responsibility a student gains, the more the learner practices decision making and witnesses the natural consequences of those decisions. The clinical setting also provides the opportunity for learning values, attitudes, and professional judgment. How the clinical instructor attends to conceptualization and reflection can influence learning outcomes.

What Do We Know about Teaching Moments?

Clinical teachers must care for patients and teach a variety of learners in a time-constrained environment, with limited control over the organization of their time. Formal teaching rounds typically require pre-planning and a finite time limit. Fortunately, teaching also occurs in hundreds of moments embedded in the workday:

- admitting a patient
- interpreting data
- making a treatment decision
- writing a prescription
- formulating and getting a consult
- planning client communication
- preparing discharge instructions

Not all “moments” are good teaching moments. Consider the following questions to assess the educational environment:

- Are the learners (or you) distracted by other duties, hunger, or tiredness?
- Is the location too busy, noisy, or uncomfortable?
- Is the situation urgent or tense?
- Do the learners feel uncomfortable demonstrating their lack of knowledge and asking questions?
If any of the answers are yes, consider waiting to debrief with the learners at another opportunity. Indeed, acute stress has been shown to impair performance in practical examinations and simulations. In one study, stress was found to reduce students’ performance when asked to generate and justify differential diagnoses, a common teaching strategy. Reilly also points out that the search for “teachable moments” could risk an overemphasis on errors or corrections, and suggests embracing surprises, challenges, and uncertainties as part of an effective teaching process.

The purpose of this paper is to use published frameworks to give clinical teachers three concrete skills to improve teaching “in the workflow”—during the regular daily operations of a practice or teaching hospital. Two of the skills (ask better questions and think aloud) are habits that can be cultivated with practice. The third (use available frameworks to approach teaching encounters) may require some trial and error to individualize for specific students or situations.

ASK BETTER QUESTIONS
Skillful questioning strategies are important for clinical practice and for teaching and evaluating learners.

Ideally, questions should be directed toward diagnosing the learner in addition to the patient. Targeted questioning is particularly important when time is limited.

Motivate like a coach—Wiese shares strategies that move questioning toward coaching. Simple techniques, such as being demonstrably present (making eye contact, shaking hands or using similar gestures), deliberately beginning the question with the learner’s name (“Joan, what did you notice about the diet history?”), and using visualization for impact (“Picture yourself inserting the needle, Joan . . .”) can be combined with manipulation of the question to capture a specific learner’s interest (“Joan, since you’re hoping to be a food animal clinician, how would the acid-base status be different in a calf with this condition?”).

Listen—Infrequent questioning that allows time for thoughtful answers improves discussion. Interruptions may fluster or disorient the learner, making it harder to elicit thoughtful answers improves discussion. Interruptions may fluster or disorient the learner, making it harder to elicit a response from the learner. Targeted questioning improves discussion. Interruptions may fluster or disorient the learner, making it harder to elicit a response from the learner.

Stay general to save time—Starting with questions that have a small range of correct answers may be helpful when working with novice learners or establishing a rapport. However, avoid repeated, lower level questions or hints aimed at teasing out details. Instead, use probing, open-ended questions that focus on general principles or mechanisms. For new problems, focus on two or three of the most relevant differential diagnoses; for exacerbations of chronic disease, ask the learner to focus on why the disease has flared up now; and for wellness visits, ask the learner about screening tests or preventive treatments.

Higher order questions (Table 3) promote explanation, synthesis, and application of information, ideally encouraging learners to make new connections in their clinical reasoning process. (“What specifically makes you think this patient’s anemia is immune-mediated?” “How will you discriminate between your differentials and confirm the diagnosis?”)

Count to (at least) three—Despite the ticking clock on the wall or in your head, be prepared to let short gaps occur. Wait silently for several seconds to give the learner time to think and formulate a response before asking the next question; do not fill the silence with chatter or a mini-lecture. By waiting for at least three seconds, learners’ responses become more detailed, contain more logical arguments, and reflect more speculative thinking. Remember, even a time frame as short as five minutes holds 100 three-second intervals!

Adapt—Listen and study learners’ responses and body language to adjust the next question. If questions exceed learners’ abilities, evidenced by poor responses, neutral facial expressions, or lack of follow-up questions, switch to questions that will help learners demonstrate what they do know. Alternatively, help learners identify a learning issue for self-study and then move on.

USE FRAMEWORKS
You can also ask better questions on the fly by using simple tricks or frameworks developed by others. Teaching frameworks help to structure learning encounters and assess learners. They incorporate the skills of asking questions and providing feedback. Different models provide flexibility for adapting to the needs of the specific learner.

Aunt Minnie
The simplest (and probably oldest) teaching model is based on the principle of pattern recognition; it is most suited to simple cases when time is extremely limited, for example in the externship, community practice, or recheck clinic. The basis for this model is the adage, “if a woman walks, talks, and dresses like your Aunt Minnie, then she probably is your Aunt Minnie.” Veterinarians are probably more familiar with the analogies, “if it walks like a duck and quacks like a duck . . .” and “think horses, not zebras.”

In practice, learners briefly present the patient’s chief complaint, their assessment of the patient, and a therapeutic plan (Box 1). The biggest advantage of the model is the time saved by forcing assimilation, rather than deconstruction, of a lot of information. Using the Aunt Minnie approach, learners can be exposed to more cases and receive frequent targeted feedback on their conclusions.

Critics suggest the pattern recognition model reinforces snap judgments and delays development of clinical reasoning. The Aunt Minnie model also emphasizes diagnostic assessment and planning over history taking.
One-Minute Teacher or Five-Step Microskills Model of Clinical Teaching

This approach builds on the Aunt Minnie model and can still be adapted to encounters of less than five minutes. It encourages the learner to make a commitment, which causes the learner to feel more responsible for the patient and engenders a sense of collaboration.

Using this framework (Table 4), the teacher should

• ask the learner to outline and commit to a diagnosis or plan (an alternative way of eliciting a commitment is asking the learner to predict or “bet” on a particular outcome: “What do you think the white count will be tomorrow?”).

<table>
<thead>
<tr>
<th>Table 3: Example questions to promote effective clinical teaching and learning</th>
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<tbody>
<tr>
<td><strong>Low- (recall or factual) to high-order (probing or application) progression</strong></td>
</tr>
<tr>
<td>What are the common causes of _____ [disease] in the cat? How can we discriminate between them? How will you confirm a diagnosis in this cat? What would you expect to see on _____ [diagnostic test]? Where could you find information on _____ [disease] in cats?</td>
</tr>
<tr>
<td>What are the possible causes of _____ [disease]? Did you think about this _____ [differential #1]? What made you think about _____ [differential #2] first?</td>
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<tr>
<td><strong>Broadening</strong></td>
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<tr>
<td>What are some other causes of _____?</td>
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<tr>
<td>(This question may assess additional knowledge not elicited by factual questions. It is useful for when the learner has failed to consider additional differential diagnoses.)</td>
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<tr>
<td><strong>Justifying</strong></td>
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<tr>
<td>What about the patient’s history or physical examination supports your diagnosis?</td>
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<tr>
<td>(This question can challenge ideas and assess the depth of knowledge and understanding. See also probing questions in Box 3.)</td>
</tr>
<tr>
<td><strong>Hypothetical</strong></td>
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<tr>
<td>How do you think this animal looked when it first presented to the referring veterinarian?</td>
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<tr>
<td>What would you have done if you were the veterinarian on call?</td>
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<tr>
<td>Suppose your patient had a history of _____ . How would that influence your diagnosis?</td>
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<tr>
<td>What if the _____ [clinical parameter] had been normal?</td>
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<tr>
<td>What if we’d chosen _____ [drug A] instead of _____ [drug B]?</td>
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<tr>
<td>(These questions can be used to explore new learning situations by creating a more diverse patient population if you are seeing a common condition repeatedly.)</td>
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<tr>
<td><strong>Alternative</strong></td>
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<tr>
<td>Suppose we performed that diagnostic/intervention next week instead of today. What would be the advantages or disadvantages?</td>
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<tr>
<td>(This question can assess decision-making skills by presenting different plans and asking for a commitment to probable outcomes. It requires the learner to have a higher order of content mastery and judgment.)</td>
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<tr>
<td><strong>Reflection</strong></td>
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<tr>
<td>What else could it be?</td>
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<tr>
<td>What should we see in this type of condition that is missing in this case?</td>
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<tr>
<td>(These questions are suited to cases with unexplained elements or for complex clinical syndromes and may prevent premature closure and foster lifelong learning.)</td>
</tr>
<tr>
<td>What did we learn from this?</td>
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<tr>
<td>What did this patient teach us?</td>
</tr>
<tr>
<td>(These questions place this learning session into the larger context of patient care and professional development.)</td>
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Box 1: Examples of the Aunt Minnie approach in a veterinary context

EXAMPLE 1

**Learner:** Penny is a 4-year-old spayed female Labrador retriever presenting for urinary incontinence. She started leaking small amounts probably a few months ago and now leaves wet spots on her bed or on the couch. It doesn’t happen every day but it’s getting worse and they don’t think she can control it. She might be drinking more water but she always drinks lots of water. Otherwise she doesn’t have any problems with anything else. On physical examination I didn’t find anything—I’m not very good at palpating abdomens though.

**Instructor:** Go on.

**Learner:** Um . . . so I guess her problems are leaking urine and maybe drinking more water. I know there can be neurological problems and maybe a urinary tract infection on this list of differential diagnoses. Aren’t there some dogs that have a bladder problem? Probably we could do radiographs and ultrasound and check her urine?

**Instructor:** OK, you’re on the right track, but tell me, putting everything together here, what do you think is most likely?

**Learner:** That thing that spayed dogs get.

**Instructor:** Yes, it sure sounds like it. So what would you do at the absolute minimum? For example, if the owner had really limited funds?

**Learner:** Um . . . Could you just try treating it?

**Instructor:** Great. Yes that would be reasonable in a dog that is healthy otherwise, normal on exam, and fits the signalment and leakage pattern you described. We do always want to check a urinalysis and culture though, like you mentioned earlier. Alright let’s go get her taken care of, future Dr. Carter!

EXAMPLE 2

**Learner:** Mrs. King is here today with Smokey, a 2-year-old neutered male cocker spaniel. Smokey is here for a recheck of his immune-mediated hemolytic anemia. He's currently getting prednisone twice a day. Mrs. King's very happy with his energy levels, but she's rather worried about some changes in his appearance: his hair seems to be getting thinner along his flanks and he's losing some muscling on his head.

**Instructor:** OK Chelsea. What did you notice on your physical exam?

**Learner:** Well, he looks very pot-bellied and he's got generalized poor muscling, not just on his head. His coat is certainly sparse along both sides. It's not red or inflamed though, and it doesn’t look like he's been scratching it.

**Instructor:** What do you think is causing the changes in his coat?

**Learner:** Well, given his pot belly and muscle wasting . . . I wonder if it’s another side effect of the prednisone. He’s been on a high dose for several weeks.

**Instructor:** I agree with you. From your description it seems like he has bilateral symmetrical flank alopecia and it’s also non-pruritic. These are both hallmarks of an endocrine dermatopathy. Or in his case, iatrogenic Cushing's. It's always worth remembering that he is immunosuppressed, so we need to check that these changes aren’t due to an infection. Let’s go and look at him together.

- probe for supportive evidence and elicit the learner’s underlying reasoning;
- teach a rule or general principle (the take-home point);
- provide specific positive feedback to reinforce what was done well; and
- correct errors and suggest what could be improved for next time.

Rapid feedback during probing questioning emphasizes development of the learner’s clinical reasoning process. Gaps in knowledge or judgment can be addressed via a short explanation or follow-up assignment.

**SNAPPS Model**

This model is more appropriate for experienced learners; it encourages them to do most of the work in justifying their thinking and exploring what they do not understand. It requires the learner to be adept at case presentations, and so beginners may struggle to complete all the steps in less than five minutes. In this model, the learner should

- Summarize the history and physical exam findings briefly;
- Narrow down the differential diagnosis;

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Table 4: Example questions for adapting the One-Minute Teacher/Five-Step Microskills model

1. Get a commitment—the learner makes a decision about the case
   What do you think is going on?
   What would you like to do next?
   What do you want to accomplish during this visit?
   (These questions can be used throughout the process, from making a diagnosis to working out a case management plan. The learner is not simply providing information for the teacher to make decisions.)

2. Probe for supportive evidence and evaluate the critical thinking that led to the decision
   Why do you think that?
   What led you to that conclusion?
   How did you decide this was the diagnosis?
   What were the factors that led you to consider that?
   What else did you consider and rule out?
   How did you rule out those other things?
   (Identify the learner’s understanding gaps, misunderstandings, and poor reasoning or attitudes; do not ask for textbook knowledge.)

3. Teach a general principle/clarify the take-home lesson
   The key point I want you to remember is . . .
   Always remember to _____ when you see a similar case.
   (Point out key ideas and prioritize essential points among the many details.)

4. Tell the learner what was correct in their conclusions and critical thinking
   Specifically, you did a good job of _____ and this is why it is important: . . .
   Katie, you did a good job of _____, and this will help to . . .
   (To reinforce excellent performance, state specifically what was done well and why it was important.)

5. Correct learner errors
   You did well based on your knowledge of _____. You didn’t take into account . . .
   I disagreed with . . .
   A more efficient way . . .
   (Specific correction will reinforce correct ideas and replace incorrect ones.)

These questions are not specific to any particular type of case and thus can be used in many different contexts and medical disciplines.

- Analyze the differential diagnoses by comparing and contrasting the possibilities;
- Probe (ask the teacher about areas not understood);
- Plan the case management; and
- Select an issue for self-directed learning.

Proponents of this framework suggest that learners become more concise with case presentations, are more likely to express uncertainty, debate management strategies, and volunteer to do self-study.18,19 The learner’s thought processes and knowledge base can be inferred from the type and sophistication of questions raised. While teachers are relieved of the burden of creating learning points, they must follow up with learners on self-directed learning issues.

MiPLAN
This learner-centered model highlights the preparation component of a meaningful teaching encounter (Box 2).
In the MiPLAN model, the instructor and learner(s) meet before the patient encounter, set specific learning goals, and see the patient together.20

- Meet before engaging the patient to set mutual goals and clarify expectations.
- Introduce the team to the client and emphasize the teaching nature of the encounter.
- In the moment—Be a focused listener.
- Inspection—Ask the entire team to perform a visual PE.
- Interruptions—Limit interruptions to allow learners to get through the presentation.
- Independent thought—Expect the learner to commit to a diagnosis and management plan.

Establish priorities for teaching after the learner’s presentation related to

- Patient care;
- Learner’s questions and self-directed learning issues;
- Attending to faculty’s agenda—teach a key point relevant to the case and the learner; and
- Next steps—provide feedback.

While this approach allows activities to be pre-tailored to the learner’s individual needs, it can be more time-consuming than the other suggested models.

**MODELING AND THINKING ALOUD**

In the clinical environment, instructors frequently serve as role models as they attend to patients and procedures, providing an example for learners to follow. Patients’ problems are resolved as the clinician demonstrates real-time information processing.21,22 Modeling is best used with learners who have mastered foundational knowledge and skills and when there is not enough time for a more learner-centered approach. Modeling can also be useful when the team encounters scenarios too advanced for learners’ current levels of comprehension. Here, the instructor simplifies the situation by deconstruction or demonstration.

For modeling to be effective, the teacher should

- demonstrate the modeled behavior or thought process in an exemplary manner;
- fully explain the clinical knowledge and reasoning process; and
- actively involve the learner.

**Modeling as focused observation**—Modeling may involve thinking aloud, sharing clinical hunches or insights, pointing out controversial issues, or prioritizing the goals of a patient encounter. In this process, also known as “focused observation,”23 the teacher informs the learner in advance of the specific behavior to be modeled. The learner sees how complex clinical encounters are broken down into discrete elements and skills. For example, the teacher may emphasize listening for empathy when discussing compliance (e.g., “We are going to talk to Ms. Ross about the importance of administering the insulin as prescribed; try to pick out the opportunities and phrases I use to show empathy for her situation”). The process of “priming” before the encounter differentiates modeling from a more passive “shadowing” experience. Once the patient encounter is complete, modeling can also include a brief discussion of what was accomplished and why it mattered. Emphasizing three to four points will help maximize time efficiency and focus learner development.

**Thinking aloud** (Box 3)—One form of modeling that is highly adaptable and efficient for clinical education is the

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**Box 2: Example MiPLAN preparation strategy**

**Instructor:** OK Tevon, we are going to take in an emergency this afternoon. It sounds like Butch developed an acute rear leg lameness. What might we be looking at?

**Tevon:** Let’s see, we’ll need to figure out what part of the limb is affected. What kind of dog did you say it was?

**Instructor:** Ah, good question. I didn’t tell you that Butch is a 4-year-old English bulldog.

**Tevon:** OK, that makes a knee problem more likely. I’d really like to get more comfortable with the orthopedic exam and checking for the drawer sign.

**Instructor:** Great. We’ll get the story together and you will do the examination while I watch. Laura, anything else we should be thinking about?

**Laura:** Um . . . hips? And what about patellar luxation?

**Instructor:** Sure, although I agree that a cranial cruciate rupture would be more likely to be acute. What do you want to focus on with this case, Laura?

**Laura:** Well, if we have time, I’m really interested in Bulldogs’ upper airway issues. Can you help me see if the nares are normal size?

**Instructor:** Sure, let’s go.

**Instructor:** Hi, Mr. Frank, I’m Dr. _____, and Tevon and Laura are working with me this week to see orthopedic cases. They are only 6 months from graduating and will do the majority of the examination and planning for Butch under my supervision. So tell me what happened with Butch today?
Box 3: Example narratives to “think aloud and model” during clinical activities

EXAMPLES TO OPTIMIZE MODELING AND FOCUSED OBSERVATIONS

“Lucy, I understand we’re going to be working on this case together. I want you to listen for the open-ended questions I use to get our initial history, and then how I switch to more close-ended questions as we focus in on specific problems.”

“David, I believe you have a real interest in cardiology. You might want to pay particular attention to where I place my stethoscope when auscultating this dog’s heart. I feel for the apical beat on the thoracic wall and start there, since I think that’s where the heartbeat is going to sound the loudest. I prefer to do this with the dog standing, since it means the heart is in a more consistent position and it makes feeling for the femoral pulse easier too.”

“When trying to palpate for an enlarged thyroid, I typically use my forefinger and the thumb of my dominant hand and palpate gently either side of the trachea, all the way from the throat down to the thoracic inlet. I’m not feeling for a mass per se, more the slipping sensation of the skin and fascia over the thyroid gland.”

“Sophie is going to demonstrate how to get a blood sample from a lateral saphenous vein. Notice how she tenses the skin slightly and puts her thumb alongside the vessel to stop it rolling away from the needle.”

EXAMPLES OF THINKING ALOUD TO FACILITATE LEARNING

“Let’s have a look at Riley’s chemistry panel together. Hmmm, that’s interesting, his albumin and cholesterol are both decreased; so that could be consistent with GI or liver disease. To try to differentiate between these, I look at the globulins next.”

“OK, let’s think about antibiotic choices for Tiger’s cholangitis. Enrofloxacin has good spectrum against the Gram-negative bacteria we’d find in the GI tract and it’s lipophilic too, so it should penetrate bile really well. Hmmm, it doesn’t cover anaerobic infections though, so we’d better add something that does.”

“Jill, I signed your discharge instructions on Mr. Simmons’ horse. When you get a chance, take a look at the places where I changed your ‘veterinary’ language to terms more familiar to laypersons; for example, you wrote ‘hyporexia’ instead of ‘decreased appetite’ and used the terms ‘lateral’ and ‘medial’ in your descriptions.”

Resident: What do you think about adding clopidogrel? Senior clinician: Hmmm. Yeah, that’s a good idea. Oh, wait for the rest of the team, the clopidogrel could help serve as an anti-platelet agent in this case because dogs with immune-mediated hemolytic anemia are prone to thromboembolic disease.

HOW TO PROMPT STUDENTS TO THINK ALOUD

“Tell me what you are thinking.”

“Ok, Todd, walk and talk . . . tell me what you’re doing at each step.”

“Go ahead and finish your thought there—what were you thinking when you stopped yourself?”

EXAMPLES OF MODELING REFLECTIVE BEHAVIOR

“I’m struggling with the decision to euthanize as well. I almost always wonder if we could have done something differently or should keep trying to treat the patient.”

“I’m comfortable with the diagnosis but keep trying to figure out how the chronic abscess fits in, if it does fit in.”

“In retrospect, I wish that we had rechecked the radiographs first.”

“Here’s what’s bothering me about this case . . . the appetite should be picking up by now.”

“I did find it hard not to snap at that client. I think she was just frustrated after having to wait and hearing that we didn’t have all the information we needed. Even when it feels personal, it may not be and you have to keep your cool.”

“think aloud” concept. Thinking aloud makes your clinical reasoning transparent and explicit. Thinking aloud has three primary purposes:

• communicating the conceptual scaffold for solving the problem;
• demonstrating evidence-based medicine and evaluating how the evidence should be applied to a specific patient’s case; and
• purposefully exposing the ambiguity of clinical medicine.
Thinking aloud may also reinforce mindfulness by clarifying for everyone the instructor’s primary focus at that moment: factual or theoretical content, technical skill, reasoning, patient care, or professional values.25

Specific occasions when thinking aloud may be used include:

- highlighting salient points that direct thinking toward a particular differential diagnosis;
- hypothesizing potential connections among problems or concerns during history taking;
- describing findings during a physical examination;
- considering other pieces of information that might be useful, or more efficient ways to gather information;
- evaluating diagnostic test results;
- explaining the rationale for diagnostic or therapeutic decisions; and
- anticipating potential complications.

Learners are not excluded from think-aloud exercises. Asking a student to “talk and drive” is useful during patient encounters as well as patient care activities and procedures (“I am trying to find the landmark and am touching something I think is softer than bone”).26 Thinking errors or procedural missteps can be corrected immediately, and students will often correct themselves during the “talk.”

**Modeling reflection**—Clinicians can also openly reflect on decisions, actions, and outcomes to model reflection as a valuable component of professional growth. Reflection on thinking can reduce cognitive biases, which may be subtle or unapparent to learners. Reflecting on assumptions can reinforce ambiguity and invoke mental exercises in curiosity and problem solving (“What are we assuming here that may not be true?”).27 Reflective discourse can also move discussion from the clinical facts of the case toward meaningful content that focuses on the ethical, moral, and professional development of the learner. It requires the instructor to

- be a good role model (see Table 1);
- gain the trust of the learner; and
- be willing to share thoughts on deeper, emotionally laden or critical questions (see Box 3).

**SUMMARY: CLINICAL TEACHING AS A CONVERSATION**

Effective clinical teaching can be framed as an explicit, purposeful conversation. How would you get to know someone in the course of multiple, brief interactions? Listen, watch, share your thoughts and ask pertinent and relevant questions that lead both of you to hear what the other thinks and feels. Effort is required at first to get past self-protective social and experiential barriers, but as the number of exchanges grows (or as the days of the clinical experience pass), conversation is easier, comfortable, more natural. As in social settings, interruptions, judgments, impatience, and poor listening habits interfere with effectiveness; however, when inspired by the conversations we have with one another, we usually all learn.

**REFERENCES**


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