

## University of Calgary Team Teaching Award Application: Team Teaching Philosophy

We firmly believe that we teach more effectively, and our students learn more effectively, through the use of team teaching strategies. Having two people with different knowledge, skills, and resources in the classroom at the same time allows us to learn from each other and helps create a dynamic and interactive classroom environment. During co-delivered lectures, we continually assess each other and our interaction with students. We are committed to providing feedback to each other and discussing a variety of different perspectives before, during, and after each session so that our teaching methods continually evolve. In our experience, collaborative teaching creates a learner-based environment that is engaging, efficient, and enjoyable. Students benefit from our shared enthusiasm as instructors, as well as from our varied backgrounds, different perspectives, and the multitude of experiences we bring to the classroom (one of us is a veterinary critical care specialist, the other a veterinary internal medicine specialist).

Our team teaching strategies involve shared responsibility for planning, classroom instruction, student assessment, and post-hoc analysis of delivered material. Over the past three years, we have worked closely together to build a system of trust, which allows us to exchange our ideas and concerns freely, regardless of differences in knowledge, skills, or attitudes. Several weeks prior to any team-teaching event, we discuss the objectives of the lesson and determine how to best challenge students within the learning environment. Both of us have completed the Instructor Skills Workshop and have received the Faculty Teaching Certificate, and we both have extensive practice in writing clear and concise lecture objectives. These objectives serve to organize the lecture and direct student interactions, and are integral in creating student assessments. Developing lectures together involves constructive in-depth discussions as we each share our own perspectives regarding objectives, lecture content, and delivery methods. This process gives us an opportunity to solicit feedback from each other prior to the lecture, which helps us refine and improve our individual ideas in a way that we feel best serves the learning interests of our students. Immediately after a team teaching session, we again discuss the lesson and reflect on aspects such as student participation, enthusiasm, timing, emphasis on the specific objectives of the lecture, and suggestions to improve the lecture for the following year (see figure 1) (for example, creating a clearer algorithm or using different case examples).

During team delivery of a lecture, our approach is not to have one person lecture followed by the other, but to both be actively involved throughout the session. We find that this approach facilitates student interaction and allows us to challenge students during the lecture. We develop our lectures to be as engaging as possible and leave ample time for active discussion, as this is one of the primary goals of our lectures; we believe that students learn more effectively by thinking, discussing, and participating rather than passively listening. We realize that not all students learn the same way and therefore we incorporate multiple co-teaching strategies in our lesson plans, including the SOAP approach (Subjective, Objective, Assessment, Plan medical approach to clinical situations), clinical reasoning worksheets, algorithms, dueling specialists, skits, and visual aids.

The SOAP approach involves having the first instructor present a clinical case to the students, asking questions of the class to have them interpret elements of the case such as history and

physical exam findings and then generate a problem list. As students respond to these questions, the second instructor writes student responses on the board and asks the students to explain and justify their reasoning. The second instructor then takes the lead by asking students to group and explain the value of the problems in relation to the overall case, or asks for more details on why the response supplied is a problem. The first teacher provides further clarification or a contrasting point of view to the second instructor while the students work through the justification for the problem list. Hearing our shared thought processes engages the students by allowing them to feel safe to voice their own thoughts or ask questions. One of the strengths of team teaching is that by observing the students while the other instructor is interacting with them, it is possible to pick up cues and body language from the students that may result in rephrasing a comment or providing clarification in a different manner to explain a concept.

By observing how students respond to questions and interact with each other, we have developed new strategies in how to co-deliver material to enhance critical diagnostic reasoning. Our team teaching approach initially involved stimulating group discussions with unstructured open responses from students. Our approach has since evolved to include the use of clinical reasoning worksheets (see attached worksheet) created by us to keep students more focused and help them to logically reason through cases within a specific framework. For example, the worksheets guide students through specific concepts such as “stable versus unstable” with regard to heart, brain and lungs in the triage setting, “relative specificity” with regard to prioritizing problems during case work-up, and “likely versus unlikely” with regard to differential diagnoses. The students can work in pairs or small groups and hand in their worksheets anonymously after class, which allows us to assess how well the class understood the material and determine whether our initial key objectives were met (not for grades). We now use a combination of unstructured student interaction and the clinical reasoning worksheets in the classroom setting. Student evaluations of our lectures support the value of this combined approach in teaching students how to work through a clinical case (see student comments).

Another approach that we have found useful as a team teaching strategy is to create algorithms to help organize our lectures and guide students through different medical problems (see attached team teaching power point examples on dyspnea and exercise intolerance clinical presentations). We spend a lot of time as a team discussing and debating our different thought processes to create a shared algorithm. We then choose real-life cases and work through them together before delivering the lecture to ensure that the algorithm is effective and logical in arriving at the conclusion we hope students will also reach. In class, we go through the algorithm together with the students in a step-by-step fashion using multiple case examples. Initially the cases and application of the algorithms are instructor-driven, but this is followed by a period during the lecture where we allow the students to work in pairs or small groups to work through similar cases using the algorithm. Based on in-class student feedback and student comments on lecture evaluations, we modify and improve the algorithms yearly. This often involves external review by consulting other faculty members regarding their thoughts on the algorithms.

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Another co-teaching strategy we employ is called “dueling specialists”, which is a form of role-playing. This format is designed to actively support, contrast, or challenge the other teacher in a debate style. This engages students and allows them to present their thoughts and ideas to further support or challenge the points of view presented by the two instructors. For example, one teacher presents a case to the class and asks the class to interpret the findings. Depending on student responses, the other teacher will make suggestions that may support or refute the case interpretation. Both teachers then challenge students to use the presented information to help rule in or rule out the second teacher’s suggestions. We provide parity to the interaction by alternatively engaging in the dual roles of teacher and learner, expert and novice, provider and recipient of knowledge or skills. We have found this helps build student confidence and engagement by providing a safe environment and demonstrating that it’s okay to have a different point of view. It also shows students that clinical reasoning can be expanded by challenging or questioning the information provided.

An additional team teaching strategy that we find effective is the opportunity to enforce ideas or concepts through visual aids, short skits, and co-teacher interactions. For instance, each year we coordinate a cardiopulmonary resuscitation (CPR) training session for students. During this session, we create simulated scenarios where one instructor plays the role of an anxious client while the other facilitates the rest of the CPR scenario, with both instructors engaging students as the scenario unfolds. In other teaching sessions, we try to cater to a variety of different student learning styles by incorporating visual aids such as collaboratively produced videos and pictures to highlight key learning objectives and skills. These videos often arise following post-hoc analysis of the learning objectives and in-depth discussion on the best way further enhance learning in the classroom setting. Examples of videos produced include videos demonstrating technical skills (such as physical exams, urethral catheter placements etc.), videos demonstrating clinical signs such as different breathing patterns (dyspnea) or ataxia, photos of veterinary equipment that students may not have seen before, photos of patients or fluid/cytology/ultrasound/radiographs that can help during in-class case work-up and reinforcement of principles. We recruit our students to help produce and narrate the videos.

In conclusion, we are strong believers in the team teaching philosophy and the positive impact it has on student learning. We feel team teaching provides horizontal and vertical learning opportunities between co-teachers, between students and teachers, and between fellow students. Having more than one individual co-design and co-deliver all aspects of the lesson plan, including post-lecture analysis, provides a more rich variety of perspectives on how student interaction, engagement, and deeper learning can be enhanced. In fact, we are such firm believers in the value of team teaching that we have expanded its application beyond the undergraduate university level, to the national and international level through both workshops and conferences. For example, we co-delivered an ultrasound lab to veterinarians at the recent CANWEST conference (Calgary, Alberta), have co-delivered case based lectures to local veterinarians at the CAVMA conference (Calgary, Alberta), and instituted our approach with other experts around the world in a case base fashion at conferences such as the VETNOW conference (Loughborough, England) and WSAVA conference (Cape Town, South Africa). In a single phrase, team teaching is FUN!