Paired teaching: High-impact, low-cost professional development in evidence-based teaching for new faculty

Jared Stang[†1], Linda Strubbe[†], Tara Holland*, and Sarah Bean Sherman*
[†]*Department of Physics and Astronomy, University of British Columbia*
**Department of Earth, Ocean, and Atmospheric Sciences, University of British Columbia*

Executive summary

What is paired teaching?

Paired teaching—in which a new faculty member and an experienced faculty member are collaboratively responsible for all aspects of a course—is a promising and cost-effective strategy for helping faculty learn to use evidence-based teaching strategies.

Why paired teaching?

- *Place and Promise*, UBC's current strategic plan, commits to student learning and strives to provide students an education which is informed by pedagogical research.
- Strong evidence from the literature (e.g., active learning in STEM courses) demonstrates the potential for improved student outcomes through the use of evidence-based teaching strategies.
- Supporting faculty in adopting and continuing to use evidence-based teaching strategies is a significant challenge, and typical approaches for sharing these methods (e.g., teaching workshops) are ineffective at providing the long-term support a faculty member needs to effectively use these teaching strategies.

The impact of paired teaching

Interviews with and observations of 14 faculty members new to evidence-based teaching show that they:

- *Used* evidence-based teaching strategies while paired teaching.
- *Continued* to use evidence-based teaching strategies when later teaching the same course alone.
- *Transferred* the use of evidence-based teaching strategies to new contexts, introducing new teaching strategies where before the class was entirely traditional lecture.

Recommendations to departments considering paired teaching

- *Choose participating faculty carefully*
  - Partner new faculty members with faculty experienced in evidence-based teaching strategies.
  - Solicit volunteers (or applicants) for paired teaching.
  - Consider fit of individuals to paired teaching roles.
- *Choose courses which allow faculty to focus on learning about and using evidence-based teaching*
  - Place teaching pairs in courses where evidence-based teaching strategies already exist.
  - Plan future teaching assignments to give paired-teaching alumni opportunity to teach alone using the strategies they just learned.
- *Demonstrate that department values teaching pairs and set pairs up for success*
  - Hold an orientation to clarify instructor and departmental expectations, support development of professional development goals, and support building collaborative relationship between partners.
  - Give full teaching credit to both members of the pair, if possible.
  - Reward participants in other ways as well (e.g., department-wide announcements, awards).
- *For participating faculty: create a positive, shared, and respectful collaboration*
  - Get to know your partner before the course starts; schedule weekly teaching reflection meetings.
  - Share primary control of the class evenly, and switch control regularly.
  - Explicitly discuss and maintain privacy of feedback.

Acknowledgement: We thank Dean Simon Peacock; Associate Dean Academic Ian Cavers; Warren Code, Gülnur Birol, and the UBC CWSEI community; and the participating instructors. This work is funded by John and Deb Harris, the UBC Faculty of Science, and the UBC Departments of Earth, Ocean, and Atmospheric Sciences and Physics and Astronomy.
[1]jared@phas.ubc.ca

1. Overview

Place and Promise, UBC's strategic plan, commits to student learning, including the goal to "enhance the quality and impact of teaching for all students" with the corresponding action to "ensure that [curricula and pedagogy] are informed by leading edge research on how people learn." The need for this action is supported by a growing body of scholarship showing the critical role that instructional design choices make in student learning. For example, active learning strategies—e.g., group problem-solving, worksheets, peer instruction, use of personal response systems (clickers)—have been consistently shown to improve student learning compared to traditional lecture in STEM fields [1,2]. The message from the research is clear: if we want to "enhance the quality and impact of teaching for all students," we need faculty to use evidence-based teaching strategies.[1]

However, supporting faculty in adopting evidence-based teaching strategies is a significant challenge. Most faculty members were themselves taught by traditional lecture and are most comfortable with this teaching method. A recent large-scale survey of more than 700 U.S. physics faculty found that about half don't currently use evidence-based teaching strategies at all [5]. A variety of methods have been developed to educate faculty about and promote use of evidence-based teaching strategies: E.g., teaching workshops; seminars about teaching; and websites, books, and journals devoted to university teaching. These methods have been shown to support faculty through the first stages of adopting new strategies: Gaining knowledge about evidence-based teaching strategies and trying them in class. However, they have not been fully successful at facilitating the wholesale adoption and continued use of evidence-based teaching strategies [5]. Additional coaching, support, and feedback during the crucial "trying-out" stage is needed to help faculty overcome the hurdles they face and fully adopt evidence-based teaching strategies [5–7]. The Carl Wieman Science Education Initiative (CWSEI) [8] within the Faculty of Science is one successful model for promoting change in teaching practices: Using science education specialists to support faculty in the adoption of evidence-based teaching strategies has resulted in 98.6% of these faculty continuing to use these methods [9]. The science education initiative model, however, is relatively expensive, and may not be accessible given the constrained resources of a typical department.

A promising and cost-efficient avenue for helping faculty adopt evidence-based teaching strategies is *paired teaching*: Two faculty members teaching a semester-long course together, sharing responsibility for all aspects of the course including preparation, instruction, homework and exam composition, and course management [10]. By pairing a faculty member new to evidence-based teaching strategies with someone experienced in these strategies, paired teaching becomes a semester-long professional development experience [11,12] in which the new instructor learns about and practices using evidence-based teaching strategies in a supportive environment.

Paired teaching has so far provided high-impact discipline- and department-specific professional development experiences for 14 faculty in the Departments of Earth, Ocean, and Atmospheric Sciences (EOAS) and Physics and Astronomy (PHAS), all who were relatively new to evidence-based teaching strategies. Interviews and observations show that these new instructors *continued* to use evidence-based teaching strategies when later teaching the same course alone, and that several of them *transferred* the use of evidence-based teaching strategies to their other courses, introducing new teaching strategies where before the class was entirely traditional lecture. New Instructor A[2] summarized that "*the experience was really very important for me in order to get on my feet up and running… It's sort of a knowledge and technique [in teaching] transfer that would probably take years to develop on your own. Which, to be honest, as a new faculty, you don't have time for.*" *"Yes, I'm continuing to use these activities in my class,"* New Instructor B said, *"because I saw last year how they worked well for the students."* Paired teaching has had a transformative effect on the teaching practices of these faculty.

In this paper, we review the benefits of paired teaching, describe the results of our systematic case study into paired teaching in EOAS and PHAS, and provide evidence-based recommendations for departments interested in implementing paired teaching.

[1] See [3,4] for recent summaries of evidence-based teaching practices.

[2] To protect the identities of the instructors we will use pseudonyms when referring to them.

2. Paired teaching for faculty development

At UBC, we define paired teaching as an arrangement in which two faculty members (typically one "*New*" to evidence-based teaching, and one "*Experienced*" in it) collaborate to teach a semester-long course together, sharing responsibility for all aspects of the course. In particular, during class time, both instructors are in the room at all times. Typically, one instructor is "in charge" at a time—facilitating the learning activities—and the in-charge duties are split equally through the semester (though how they are split can vary, e.g., alternating week by week, topic by topic, or more frequent changes in lead). Paired teaching is situated in an apprenticeship model of learning [11,13], as it places the *New* instructor into the world of the *Experienced* instructor, where they can observe, question, practice, and receive feedback—behaviours that support the *New* instructor's learning—in situ. The structure of paired teaching promotes deliberate reflection on teaching practice [14] and contains built-in feedback mechanisms known to be effective at improving teaching, such as debriefing immediately after partner observations and making repeated observations [7].

Paired teaching has great potential since it satisfies many of the recommendations for successful strategies for change in higher education [6]. Particular constructive characteristics of paired teaching include: (1) it is an extended (semester-long) intervention which seeks to change the beliefs and practices of the *New* instructor, (2) it uses a support structure—the *Experienced* partner—to provide feedback for and to encourage reflection by the *New* instructor, and (3) the development takes place in the context of the *New* instructor's unit. A lack of ongoing support has been cited as the principal reason faculty discontinue their use of evidence-based teaching strategies [5]; by including a high degree of support, by construction, paired teaching can promote sustained impact on the teaching practices of the *New* instructor.

Paired teaching is a relatively low-cost strategy for supporting new faculty in teaching. One way to estimate the financial cost of paired teaching is by the cost of hiring a replacement instructor to teach the section that the *New* instructor would have otherwise taught.[3] At UBC, the typical cost for a sessional instructor for one course is on the order of $10,000. This replacement cost is low relative to the total investment an institution makes in a new faculty member: Including research start-up funds, hiring costs, and salary, a department might invest on the order of $500,000 in a new faculty member during their pre-tenure years. Notably, this does not typically include any "teaching start-up" funds. For a small percentage of the total investment a department makes in a new faculty member, paired teaching offers an effective and efficient way to positively impact their teaching practices—a key component of the faculty member's job and a fundamental aspect of the University's mandate.

Beyond the advantages described above, we have identified additional benefits of paired teaching, summarized in Table 1 [15].

Table 1. Summary of benefits of paired teaching.

- Paired satisfies many of the recommendations for successful change strategies in higher education.
- Paired teaching is relatively low cost.
- Paired teaching can work in many different departmental contexts. (In addition to EOAS and PHAS, paired teaching has been implemented in the Departments of Botany, Computer Science, and Statistics.)
- The program can be sustainable long-term: *New* instructors can return as *Experienced* instructors.
- Participation can support tenure and promotion packages.
- Paired teaching complements other professional development offerings, providing deeper and department-specific professional development.
- Students enjoy learning in a pair-taught classroom. (75% of students reported that having two instructors in the course was a small or large advantage—compared to similar courses with just one instructor—and 55% of students reported that having two instructors had a positive effect on their understanding of the course material.)

[3] Note that this estimate will not be applicable to all departments or contexts. In particular, some departments may have a policy against hiring temporary instructors, or others may have the flexibility to absorb the extra teaching section into the scope of the existing faculty members' duties.

3. Case studies of paired teaching in EOAS and PHAS

We conducted a case study of paired teaching in two departments (EOAS and PHAS) in the Faculty of Science at UBC. Since 2007, the Faculty of Science at UBC has been home to the CWSEI, an initiative whose aim is to promote evidence-based teaching practices across the Faculty. EOAS and PHAS have transformed 36 and 24 courses (respectively) to focus on evidence-based active learning, and thus serve as good environments to pilot a paired teaching model. The pairs in each department were established by teaming *Experienced* instructors, with experience teaching in a transformed course, with *New* instructors, who were either new to the department, to the course, or to evidence-based teaching practices.

Seven *New* instructors in each of EOAS and PHAS have participated in paired teaching. These pairs mostly occurred in previously transformed introductory courses which had established curricula and materials, but in each case the paired instructors made various additions/changes to activities and assessments throughout the semester. Semi-structured interviews with participants—before paired teaching, immediately after the semester of paired teaching, and one year after paired teaching—were used to determine whether and how participating in the paired teaching had influenced, informed, or changed their teaching practices.

Before paired teaching. Interviews before the start of the paired teaching indicated that the *New* faculty were most interested in the collaborative nature of paired teaching and in learning new teaching techniques from their colleague. The *Experienced* faculty noted they were most looking forward to having a colleague to offer a fresh perspective on class material, as well as someone to bounce ideas off of regarding how to deliver material.

While paired teaching, *New* faculty used evidence-based teaching strategies. Throughout the term, weekly reflections by the pairs in EOAS demonstrated a continuous cycle of learning from each other and incorporating feedback from their colleague into activities or other materials for the next class session. For example, *New* Instructor C wrote: "*I learned, by example, effective ways to do adaptive teaching, like react to questions posed by students.*" Classroom observations through the term clearly indicated that *New* instructors were adopting active learning pedagogies in response to being paired with the *Experienced* instructors. As an example, Figure 1 shows observations of a class prepared and delivered by an *Experienced* Instructor, followed one week later by a class prepared and delivered by a *New* Instructor: Both spend most of the class time using active learning. Indeed, *New* instructors stated they felt most comfortable trying different active learning strategies after their partner had modelled them and explained their reasoning for incorporating those strategies.

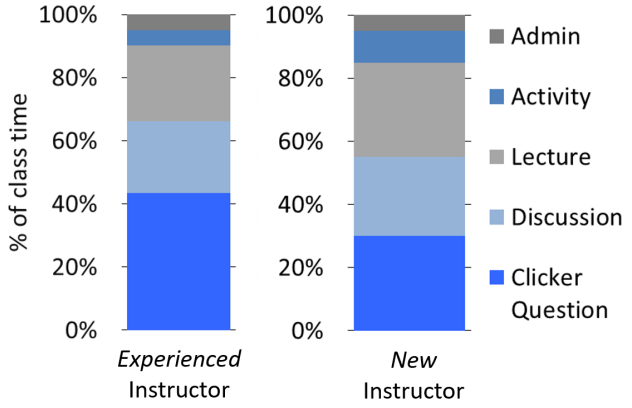

Figure 1. Classroom Observation Protocol in Undergraduate STEM (COPUS) [16] results in two consecutive weeks of a pair-taught course. The *Experienced* instructor teaches using a variety of active learning strategies (in blue shades, left); the *New* instructor teaches in a similar pattern the following week (right).

After paired teaching, *New* faculty continued to use evidence-based teaching strategies in the same courses. In their post-semester interview, *New* Instructor A—a brand-new research-track faculty member at the time of paired teaching—described the experience as "*vital,*" citing primary benefits of (1) allowing them to quickly start teaching using active learning during their first semester, and (2) providing social benefits in the department. With regards to the latter, they summarized: "*The kind of guidance [in teaching]… was very important for me at the beginning... Which, actually has more of an impact than you'd think, because, generally when you start… as a new faculty and everybody wants you to come there, and everybody is happy, and you get there and nobody says 'hello.'*" Likewise, paired teaching had significant impacts on Instructor D's teaching.

After paired teaching the first-year course (Course I) they stated, "*I can't be argumentative about the use of classical lecture versus a more interactive class [for teaching students effectively].*" Regarding worksheets (exercises that students complete in groups during lecture), Instructor D concluded: "*There is no doubt that they improve engagement.*" *New* Instructor B—who had very limited, strictly lecture-based teaching experience prior to paired-teaching—stated that *"I'm continuing to use these activities in my class… and I am making new [activities] as well."*

We conducted observations for three *New* instructors in PHAS (including Instructor D: see Figure 2) to measure their use of active learning strategies. We find that these instructors all used active learning strategies during paired teaching and later teaching the same course alone, in all cases using a "Student-Centred Peer Instruction" style [17], which is correlated with positive student learning outcomes.

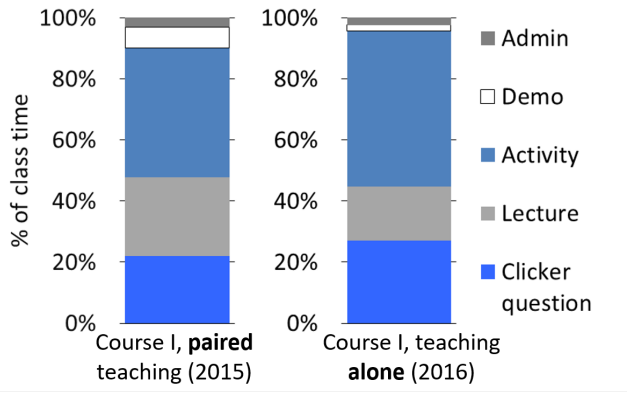

Figure 2. COPUS results for Instructor D teaching the first-year course (Course I): while paired (10 observations), then alone (3 observations). Instructor D continued using active learning strategies while teaching the same course alone the following year.

After paired teaching, *New* faculty transferred the use of evidence-based teaching strategies to new contexts. In addition to continuing using evidence-based teaching strategies in Course I, Instructor D went further, implementing active learning in a third-year course (Course II) they were teaching alone. Following paired teaching, they said: "*[Next year] for the upper-level class… I will try to see if I can develop guided worksheets*" in order to "*try and let them work things out more directly with their own brains.*" Observations of Instructor D in Course II the year following paired teaching show that Instructor D has indeed transferred active techniques (Figure 3), now teaching Course II approximately half as "Lecture (at the board)" (i.) and half as "Group work" (ii.) [17]. This is strong evidence of long-lasting impact on Instructor D's teaching beliefs and practices.

Evidence from interviews with other *New* instructors one year after they pair-taught suggest that they are also committed to continuing to teach with methods learned while paired. For example, *New* Instructor E—who had significant teaching experience prior to paired-teaching—noted one year later: *"I have incorporated lots of similar activities into my fourth year [x] class, which has given it new life."*

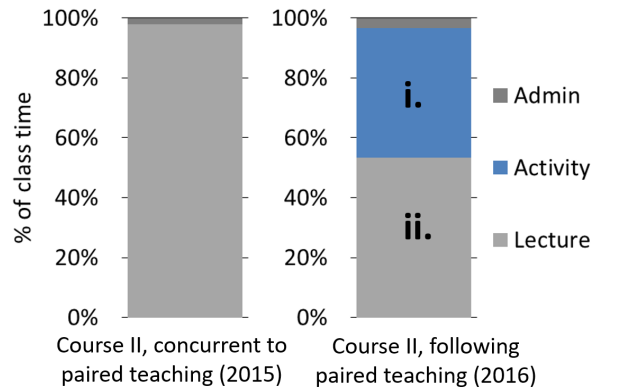

Figure 3. COPUS results for Instructor D teaching the third-year course (Course II) alone: While concurrently pair-teaching Course I (results estimated by Instructor D), then the following year (3 observations). Instructor D transferred their use of active learning strategies from Course I to Course II following paired teaching.

4. Recommendations for implementing paired teaching

In this section, we provide our evidence-based recommendations for units and individuals seeking to try paired teaching or establish a paired teaching program.

Recommendations to departments

I. Choose participating instructors carefully

- ***Partner new faculty members with faculty experienced in evidence-based teaching strategies***.
  We have observed some of the most positive results from pairs in which the *New* partner was a recent hire and the *Experienced* partner was highly experienced in evidence-based teaching strategies (see also [11,12]).[4] Targeting recently hired faculty members may be particularly effective, since unfamiliar situations encourage individuals to seek feedback more frequently and result in feedback that has higher value [7,18]. By contrast, more established (e.g., tenured) faculty may seek feedback less frequently—even though it would still be valuable—if they believe that doing so will hurt their image within the department.

- ***Solicit volunteers (or applicants) for paired teaching.***
  Soliciting volunteers to participate in the program may help participants receive and attend to feedback, as they are more likely to value feedback that they have actively sought [18].

- ***Consider fit of individuals to paired teaching roles.***
  Paired instructors feel that the success of a pairing is dependent on the personalities of the individuals involved, highlighting the need to find compatible partners. Furthermore, the *New* partner is more likely to seek and value feedback on their teaching if their *Experienced* partner acts supportive and sympathetic, and appears as high-status within the department [18].

II. Choose courses which allow instructors to focus on learning about and using evidence-based teaching

- ***Place teaching pairs in courses where evidence-based materials already exist.***
  Placing teaching pairs in courses with strong portfolios of evidence-based teaching materials can help the *New* instructor focus on adopting and understanding the established pedagogy, rather than needing to create new materials at the same time [11,12].

- ***Plan future teaching assignments to give paired-teaching alumni opportunity to teach alone using the strategies they just learned.***
  We suggest deliberately mapping out future teaching assignments so that the *New* instructor can immediately practice their new teaching strategies individually in the same (or similar) course [11,12]. As shown in Figure 2, Instructor D continued to use the same evidence-based teaching strategies in first-year Course I the year after paired teaching in the course.

III. Demonstrate that department values teaching pairs and set pairs up for success

- ***Hold an orientation to clarify instructor and departmental expectations, support development of professional development goals, and support building collaborative relationship between partners.***
  An orientation for paired teaching can help communicate expectations to participants and provide structured time for participants to set professional development goals and begin or continue building their collaborative relationship [10,12]. For example, *New* Instructor E said about the orientation that, "I think you were clarifying some maybe misconceptions that I had, that this was something that the students are going to substantially benefit from… [The goal is to develop a] bigger skill set, more tools and a better idea of what works, what doesn't."

[4] Although we advocate pairing new instructors with experienced instructors, we have also observed positive results from pairs where the *New* instructor was already fairly experienced. It has also been reported that collaborative pairs of equal status may still be effective for participants learning about teaching [19].

- ***Give full teaching credit to both members of the pair, if possible.***
  Both partners should receive full teaching-credit for their paired course: Faculty report that paired teaching does take less time than teaching individually, but takes much more than half the time.

- ***Reward pair-teachers in other ways as well (e.g., department-wide announcements, awards).***
  To legitimize the effort they put into improving their teaching, participants should be rewarded, e.g., in the same way others are rewarded for positive student evaluations [7]. In our departments, participants in these case studies received support from science education specialists [12,20], who facilitated orientations and meetings, observed classes, and provided feedback to the pairs.

Recommendations to paired instructors

- ***Get to know your teaching partner before the course starts.***
  Paired instructors highly recommend actively creating and maintaining positive relationships between partners (e.g., through informal meetings). This may increase the impact of each other's feedback [18].

- ***Schedule weekly teaching reflection meetings.***
  Pairs should schedule weekly meetings, with time explicitly allotted for reflecting on previous classes and discussing specific concerns, challenges, and solutions; these meetings can also focus future observations and feedback, and create goals for improvement. (See also, e.g., [7,11].)

- ***Share primary control of the class evenly, and switch control regularly.***
  We recommend that primary control of the pair-taught class—including preparation of activities and facilitation during class—be shared evenly through the semester. Switching this control back and forth week by week or topic by topic provides opportunities for each instructor to move through several cycles of feedback, reflection, and iteration during the semester.

- ***Explicitly discuss and maintain privacy of feedback.***
  Privacy of feedback should be explicitly discussed and maintained, as this may reduce potential costs to instructors' images [18].

In addition to the above, Table 2 summarizes the roles that paired instructors can play to promote effective professional development for both, taken from faculty interviews, reflection and observations.

Table 2. Roles instructors can play to promote effective professional development.

Experienced **Instructor:**
- Model evidence-based teaching practices for the *New* instructor
- Explain subtleties of in-class facilitation (choreography & timing of activities, monitoring group work)
- Welcome questions from *New* instructor
- Ask for input from *New* Instructor; their fresh eyes can offer new ideas on the course
- Model, then guide, then consult on development of activities and lecture
- Offer empathy to *New* instructor

New **Instructor:**
- Start as active observer; reflect on class and ask questions of *Experienced* instructor
- Take equal ownership of class; don't be "the glorified TA"
- Develop some materials/activities independently; ask for feedback
- Ask for feedback on teaching in specific areas from *Experienced* instructor
- Overall: Aim to maximize amount and quality of feedback they receive on teaching

Both Instructors:
- Seek to build a true collaboration, with a two-way exchange of information, ideas, and feedback
- Present themselves as equal-status to students

Recommendations to administrators

If a unit is planning to make more regular use of paired teaching, we recommend that some structure is considered to ensure the program runs smoothly.

- ***Create a program lead to administer, monitor, and maintain the program***

  The program lead is an educational leadership position, and should be filled by someone with strong teaching experience and leadership capabilities, with experience in evidence-based teaching practices, and who understands well the goals of the paired teaching program. The duties for this position may include:

  - Advertising paired teaching program.
  - Advocating for the program within and without the unit.
  - Soliciting volunteers or applicants for paired teaching, and working with the unit and instructors to choose instructor pairs who have a high probability for success.
  - Communicating program expectations to instructor pairs.
  - Holding a paired teaching orientation for pairs, and checking in with the pairs periodically during the teaching term.
  - Evaluating the success of the program, either formally or informally.

  The load for the program lead may be reduced through the selection of *Experienced* partners who have a strong commitment to the goals of the program and to the development of their partner.

References

1. Freeman S, Eddy SL, McDonough M, Smith MK, Okoroafor N, Jordt H, et al. Active learning increases student performance in science, engineering, and mathematics. Proc Natl Acad Sci USA. 2014;111: 8410–8415.
2. Wieman CE. Large-scale comparison of science teaching methods sends clear message. Proc Natl Acad Sci USA. 2014;111: 8319–8320.
3. Ambrose SA, Bridges MW, DiPietro M, Lovett MC, Norman MK. How Learning Works: Seven Research-Based Principles for Smart Teaching. John Wiley & Sons; 2010.
4. Kober N. Reaching students: What research says about effective instruction in undergraduate science and engineering. National Academies Press. 500 Fifth Street NW, Washington, DC 20001; 2015.
5. Henderson C, Dancy M, Niewiadomska-Bugaj M. Use of research-based instructional strategies in introductory physics: Where do faculty leave the innovation-decision process? Physical Review Special Topics-Physics Education Research. 2012;8(2): 020104.
6. Henderson C, Beach A, Finkelstein N. Facilitating change in undergraduate STEM instructional practices: An analytic review of the literature. Journal of Research in Science Teaching. 2011;48: 952–984.
7. Gormally C, Evans M, Brickman P. Feedback about Teaching in Higher Ed: Neglected Opportunities to Promote Change. CBE Life Sci Educ. 2014;13.2: 187–199.
8. www.cwsei.ubc.ca
9. Wieman C, Deslauriers L, Gilley B. Use of research-based instructional strategies: How to avoid faculty quitting. Physical Review Special Topics-Physics Education Research. 2013;9(2): 023102.
10. Bacharach N, Heck TW, Dahlberg K. Co-Teaching In Higher Education. Journal of College Teaching & Learning. 2008;5.3: 9-16.
11. Henderson C, Beach A, Famiano M. Promoting instructional change via co-teaching. Am J Phys. 2009;77: 274.
12. Stang J, Strubbe L. Paired teaching for faculty professional development in teaching. Discussions on University Science Teaching: Proceedings of the 2015 Western Conference on Science Education. 2016 [arXiv:1507.05948 [physics.ed-ph]].
13. Farnham-Diggory S. Paradigms of Knowledge and Instruction. Rev Educ Res. 1994;64: 463.
14. Crow J, Smith L. Co-teaching in higher education: reflective conversation on shared experience as continued professional development for lecturers and health and social care students. Reflective Practice. 2005;6: 491–506.
15. Strubbe L, Stang J, Holland T, Sherman SB. Faculty adoption of active learning strategies via paired teaching: Lessons from multiple pairs across two science departments. Under review.
16. Smith MK, Jones FHM, Gilbert SL, Wieman CE. The Classroom Observation Protocol for Undergraduate STEM (COPUS): A New Instrument to Characterize University STEM Classroom Practices. CBE Life Sci Educ. 2013;12.4: 618–627.
17. Lund TJ, Pilarz M, Velasco JB, Chakraverty D, Rosploch K, Undersander M, et al. The best of both worlds: Building on the COPUS and RTOP observation protocols to easily and reliably measure various levels of reformed instructional practice. CBE Life Sci Educ. 2015;14.2: ar18.
18. Ashford S. Reflections on the Looking Glass: A Review of Research on Feedback-Seeking Behavior in Organizations. J Manage. 2003;29: 773–799.
19. Chanmugam A, Gerlach B. A co-teaching model for developing future educators' teaching effectiveness. International Journal of Teaching and Learning in Higher Education. 2013;25(1): 110-117.
20. Wieman, C, Perkins K, Gilbert S. Transforming Science Education at Large Research Universities: A Case Study in Progress. Change: The Magazine of Higher Learning 2010;42.2: 6-14.

Paired teaching FAQ

1. What are the benefits of establishing a paired teaching program in a department?

Paired teaching is a flexible and low-cost method for supporting *New* faculty to quickly learn to use effective teaching strategies, and contributes to the development of the teaching community within a department. Table 1 describes general benefits of paired teaching, while the specific benefits to paired teachers are described below, 2.

2. What are the benefits to paired teaching partners?

Benefits to participating instructors, as reported by past participants, include: Opportunity to reflect on their own teaching practices; opportunity to discuss teaching with colleagues; experience articulating teaching strategies and rationales; experience designing, implementing, and giving and receiving feedback on evidence-based teaching; greater flexibility during term (e.g., to attend conferences); and enjoyment of experience.

3. How much time does paired teaching require for the people involved?

Paired instructors report spending a bit less or the same amount of time as teaching a comparable course alone. The program lead might spend the equivalent of 10% of a single course load, amortized over a year. Typically, little time is needed to support pairs during the term; choosing strong *Experienced* partners may reduce this load.

4. What is the cost of paired teaching?

The main cost of paired teaching is to arrange coverage for the section that either the *New* or *Experienced* instructor would otherwise teach. Relative to other costs for new faculty, this is a small, one-time investment that has great potential to positively influence the teaching development of a *New* instructor.

5. What type of courses should paired teaching be implemented in?

We have found paired teaching to be most effective when implemented in courses with existing evidence-based materials, so that the *New* instructor can focus on learning to use the existing materials. Paired teaching can be used in courses which have a single course section or in a single section of a course with multiple sections. In the latter case, if all sections of the course are using the same evidence-based materials, it may create greater buy-in.

6. How long in advance should pairs be chosen and instructors notified?

Pairs should be planned as early as possible within departmental constraints. We recommend at least several months of notice for new pairs, so that they may begin collaboratively planning and building their partnership.

7. How do we ensure the success of the program, and how can it be evaluated?

It is important to carefully select the faculty involved and the context: Strong *Experienced* partners and courses with established evidence-based materials will provide high support to the *New* instructor's development. The program can be evaluated by directly asking the participants about the experience, by observing the teaching strategies used while paired teaching, and by observing the future teaching of past participants.

8. Is the support of a science education specialist (SES) essential to the success of paired teaching?

In the initial paired teaching arrangements, SESs provided feedback to and supported the pairs, and conducted evaluation of the overall program. SES support of this type is not necessary. Choosing *Experienced* mentors who have a strong understanding of the goals of the program means that they can provide this support.

9. What are the implications for students or teaching assistants in the course?

Students enjoy learning in a pair-taught classroom, citing the benefits of easier access to help during class, diverse expertise with regards to the course material, and thorough content coverage. The main disadvantage reported was the need to adjust to two different teaching styles, which can be mitigated through close collaboration between the paired instructors. In a typical course, paired teaching has no implications for the teaching assistants.