

Collaborative Research: PROfessional Development and Uptake
through Collaborative Teams (PRODUCT)
Supporting Inquiry Based Learning in Undergraduate Mathematics

Combined Evaluation Reports: 2019 Workshops
March 2020

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This document includes the combined evaluation reports from three 2019 workshops:

Evaluation Report 9: Workshop 9, University of St Thomas, St Paul MN, June 18-21 2019

Evaluation Report 10: Workshop 10, Paramount Hotel, Portland, OR, June 25-28, 2019

Evaluation Report 11: Workshop 11, Staybridge Suites, Torrance, CA July 9-12, 2019

These reports present sample results from individual workshops sponsored by the PRODUCT project and serve as examples of the dashboard reporting format developed by the E&ER team. Our thanks to Chuck Hayward who first developed and deployed this format.

These reports also provide initial (pre/post) data to compare with the combined follow-up report where data from all 2019 respondents is analyzed as one data set.

To cite the combined report:

Archie, T., Daly, D., & Laursen, S. (2020, March). *Collaborative Research: PROfessional Development and Uptake through Collaborative Teams (PRODUCT) Supporting Inquiry Based Learning in Undergraduate Mathematics. Combined Evaluation Reports: 2019 Workshops*. [Report to AIBL] Boulder, CO: Ethnography & Evaluation Research, University of Colorado Boulder.

Or cite the report for the individual workshop, if appropriate.

Collaborative Research: PROfessional Development and Uptake through Collaborative Teams (PRODUCT) Supporting Inquiry Based Learning in Undergraduate Mathematics

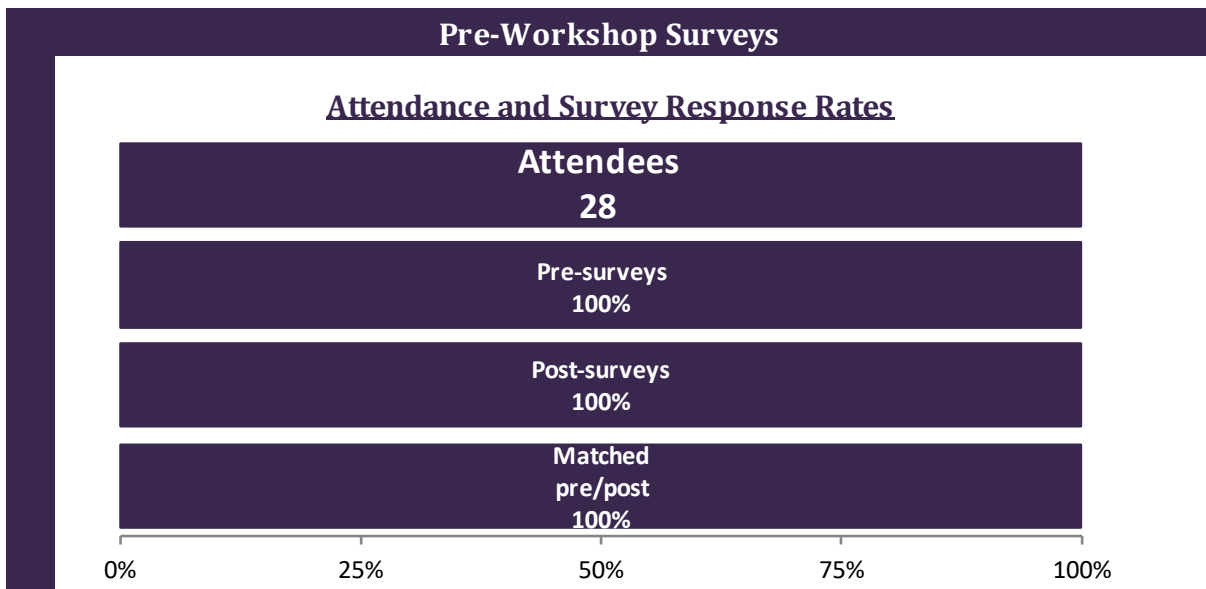
Evaluation Report 9: Workshop 9, University of St Thomas, St Paul MN, June 18-21 2019 March 2020

Tim Archie, Devan Daly, and Sandra Laursen
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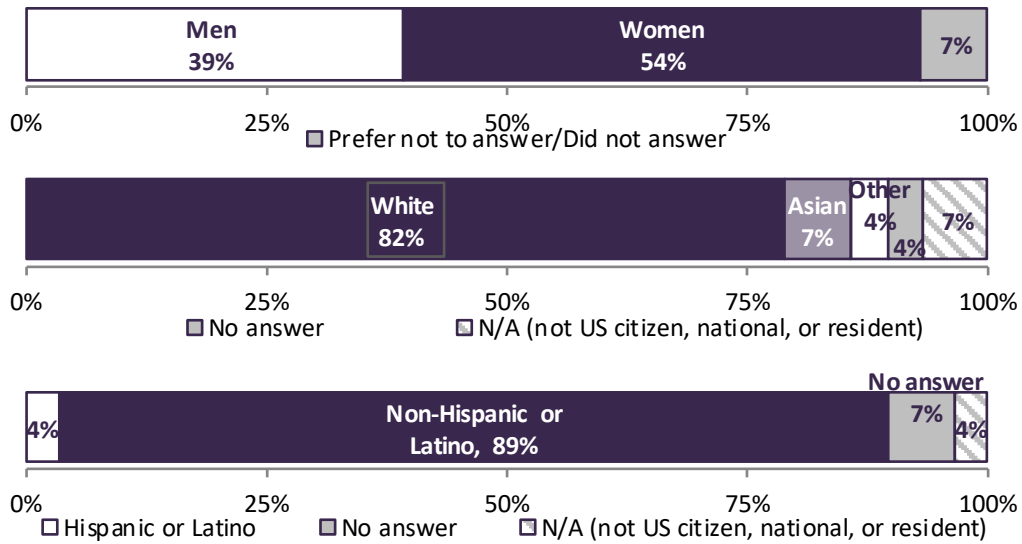
This evaluation report covers data from pre- and post-workshop surveys from the 9th ProDUCT workshop, held June 18-21 at the St Thomas University in St Paul, MN. Participants were asked to pre-register online and complete a brief survey; a similar survey was administered on the final day of the workshop. For a full description of data collection and analysis methods, please see the "ProDUCT Project Methods" document (available from the authors). One evaluator (Katie Kahle) attended as a participant observer.

Context

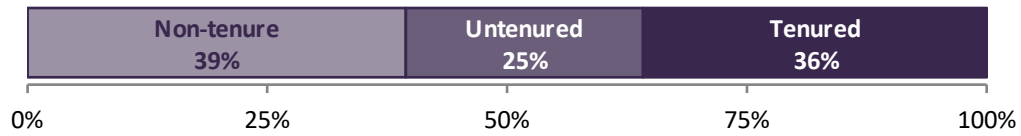
This ninth ProDUCT workshop served 28 participants. The workshop used the model developed during the previous SPIGOT project. It includes 4 main types of sessions: (1) Literature to Practice sessions - where participants read and discussed research about IBL and active learning, (2) Video sessions - where participants watched and analyzed IBL classes, (3) Nuts & Bolts sessions - where participants and staff discussed how to structure and run an IBL class, and (4) Course Content sessions - where participants worked in small groups, along with staff guidance, to develop materials to use in their own courses. The facilitation team included: Nina White & Rebecca Glover (Literature to Practice), Kyle Peterson & Rebecca Glover (Video), TJ Hitchman (Nuts & Bolts), and Xiao Xiao (Course Content). Rebecca Glover provided facilitation support and Katie Kahle logistical support.



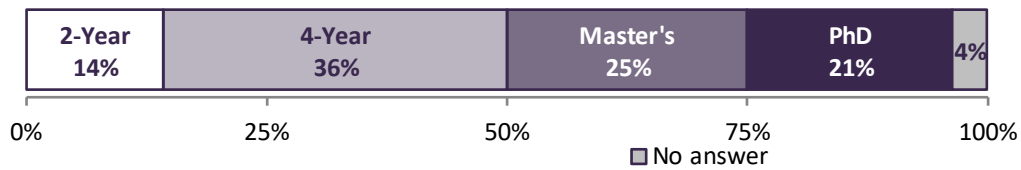
Demographics



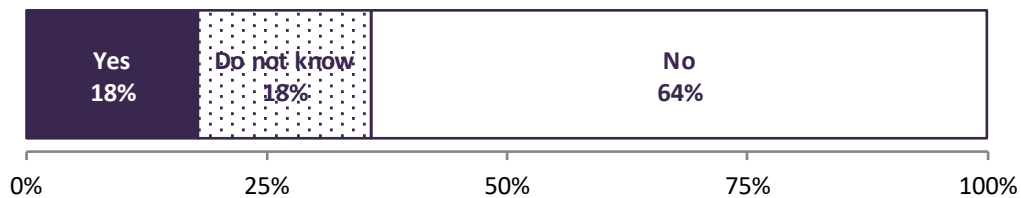
Appointment

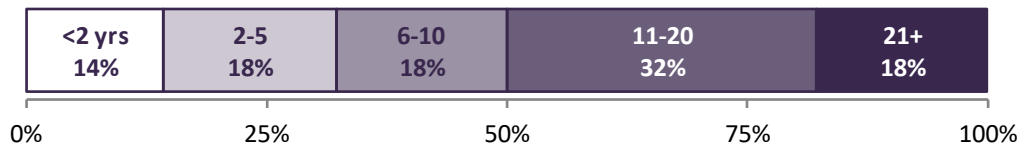
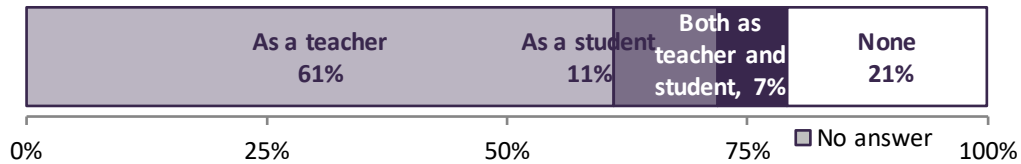
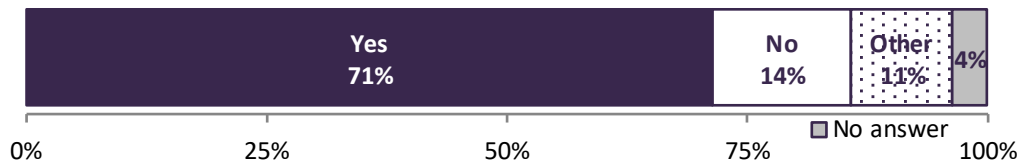
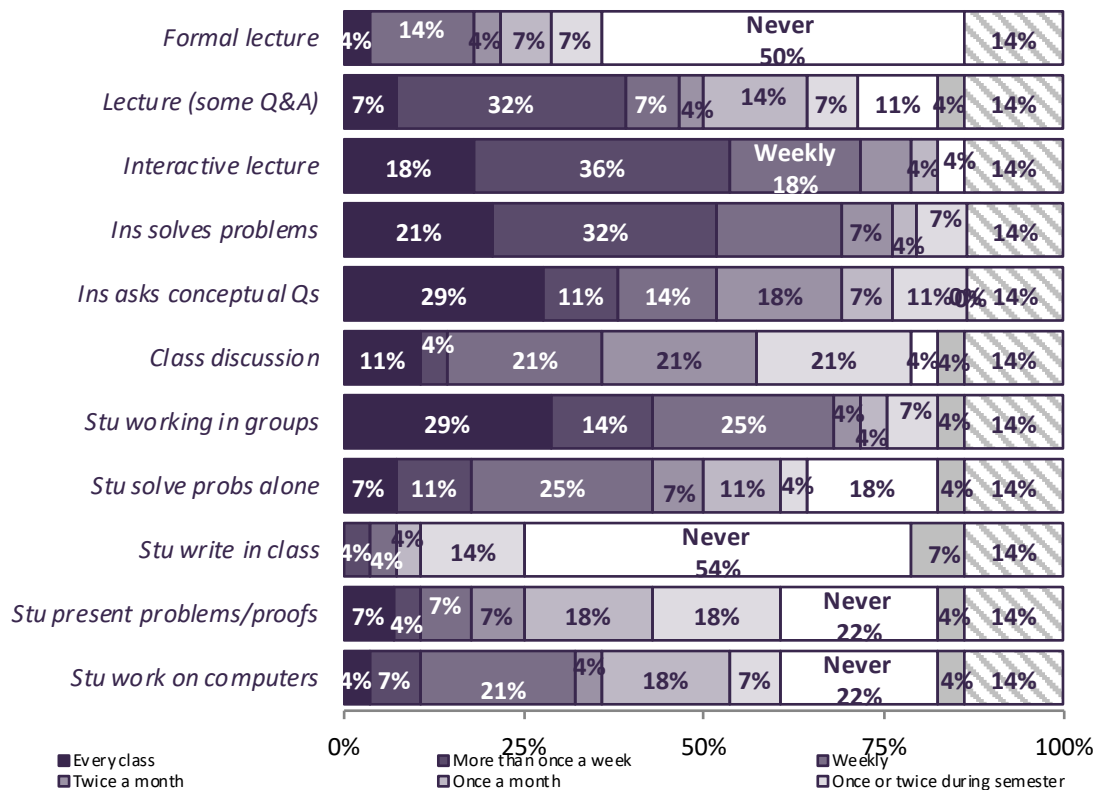


Institution type

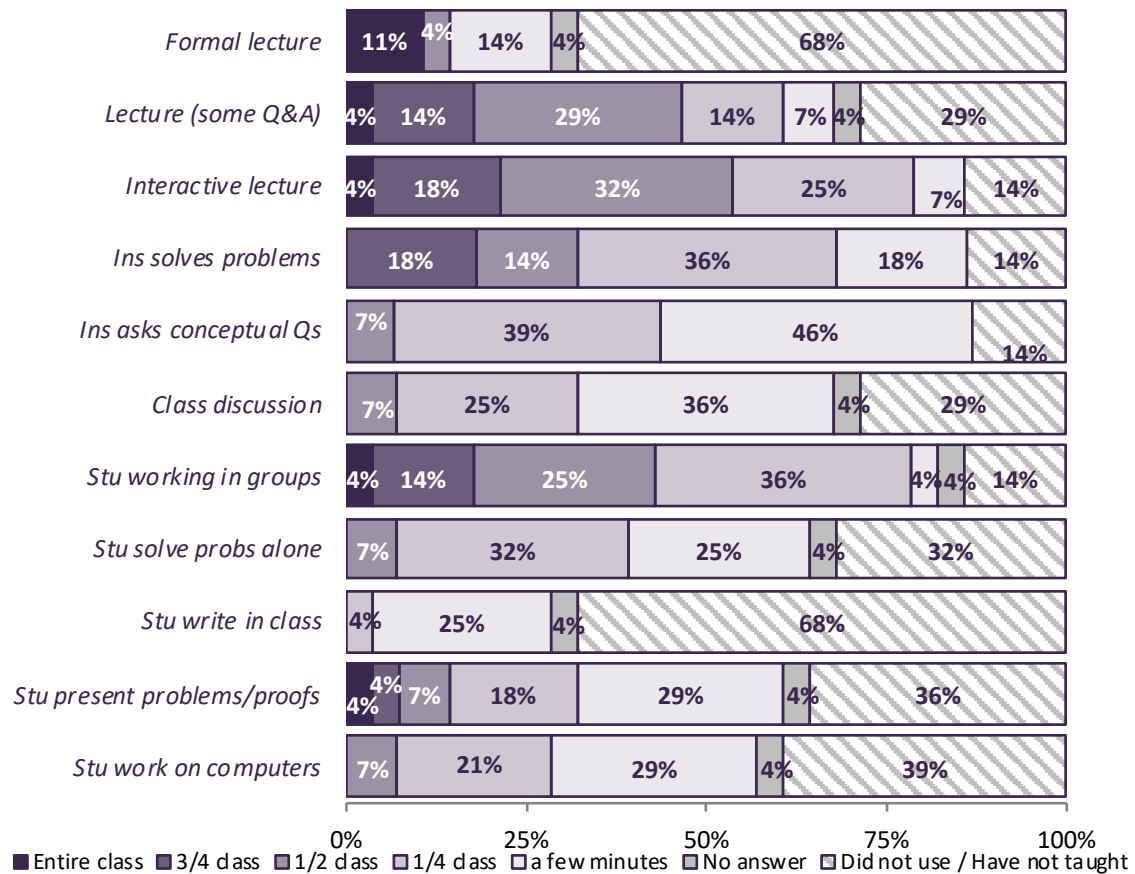


Minority-serving institution



Years of teaching experience*Previous experience with IBL***Initial Teaching Practices for Target Course***Taught class before? ("No" responses skip frequency & duration questions below)**Frequencies*

Durations



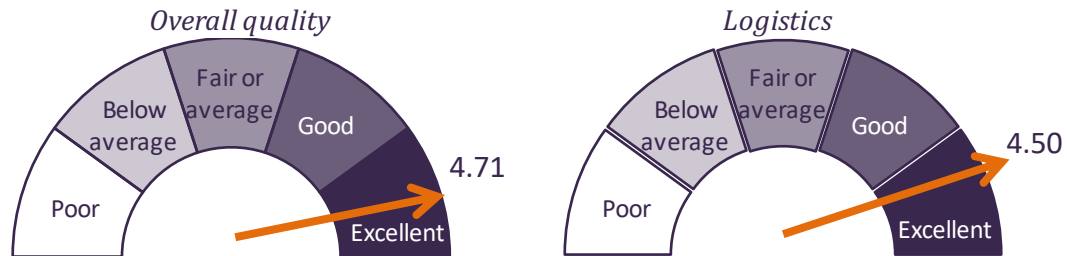
Participants were diverse in terms of teaching experience and institution type. Nearly 80% of participants said they had experience with IBL as a student and/or teaching prior to the workshop.

Based on frequencies and durations of teaching practices in target courses, participants were already making some efforts to use more student-centered techniques. Instructor presentation of problems, and interactive lecture were common, but participants also reported using small group work, class discussions and students solving problems alone.

Post-Workshop Surveys

Bulleted lists in this section are from open-ended prompts. They list the most frequent responses and the number of participants (in parentheses) who mentioned each item.

Quality of the Workshop



- Good scheduling: breaks, organization, structure (10)
- Scheduling negatives: could use more breaks (4), overwhelming/too much information (4)
- General positive feedback, e.g. "It was great!" (7)
- Great content/learned a lot (6)

Workshop as a Learning Experience

Best aspects

- Facilitator knowledge and availability (7)
- Content sessions (6)
- Combination of practice and theory (6)
- Structure and planning (6)

Needs improvement

- Equity & inclusion: dive further into equity in content (2), accommodations (2), gender dynamics among participants (2)
- More time to process/more breaks (6)
- More examples of IBL (4)
- Content sessions: more time to work on course plan (3)

The majority of workshop feedback was positive, with some suggestions for improvement both logistically and within certain sessions. Participants greatly appreciated the knowledge and helpfulness of facilitators as well as the abundance of information and practical experience they offered. One participant said it was “by far the most interesting and insightful conference I have attended.” Similarly, participants appreciated the overall structure and cohesiveness of the workshop, noting that the different sessions “all had solid purposes and worked together in aggregate,” while others emphasized that being in different groups throughout the week allowed them to “meet as many people as possible and connect with them.” Participants additionally highlighted the course content sessions, appreciating the opportunities to practically apply the information they had learned.

Participants appreciated the smoothness of the logistics, but some noted that the pace of the workshop sometimes felt rushed and overwhelming. Several people noted that lunch time was used for workshop activities rather than providing a break, and that more breaks were needed for the amount of information being presented. There were several comments related to equity and inclusion, primarily within the actual workshop experience. One participant said that “some gender dynamics arose in this workshop with a few participants that were not beneficial to the group,” and another similarly noted that “I felt some of the male participants defaulted to role of mentor/helper when talking to me— assuming they have more experience than me.”

Additionally, two participants indicated the desire for accommodations. One stated that “there are lots of mathematicians with invisible disabilities, esp. mental disabilities” and suggested the workshop structure should be mindful of this, while another said that “the facility was good and accessible, though more space for those with disabilities would have been nice.” However, neither comment provided additional details on what specific accommodations would have been helpful.

Concerns About Implementing IBL

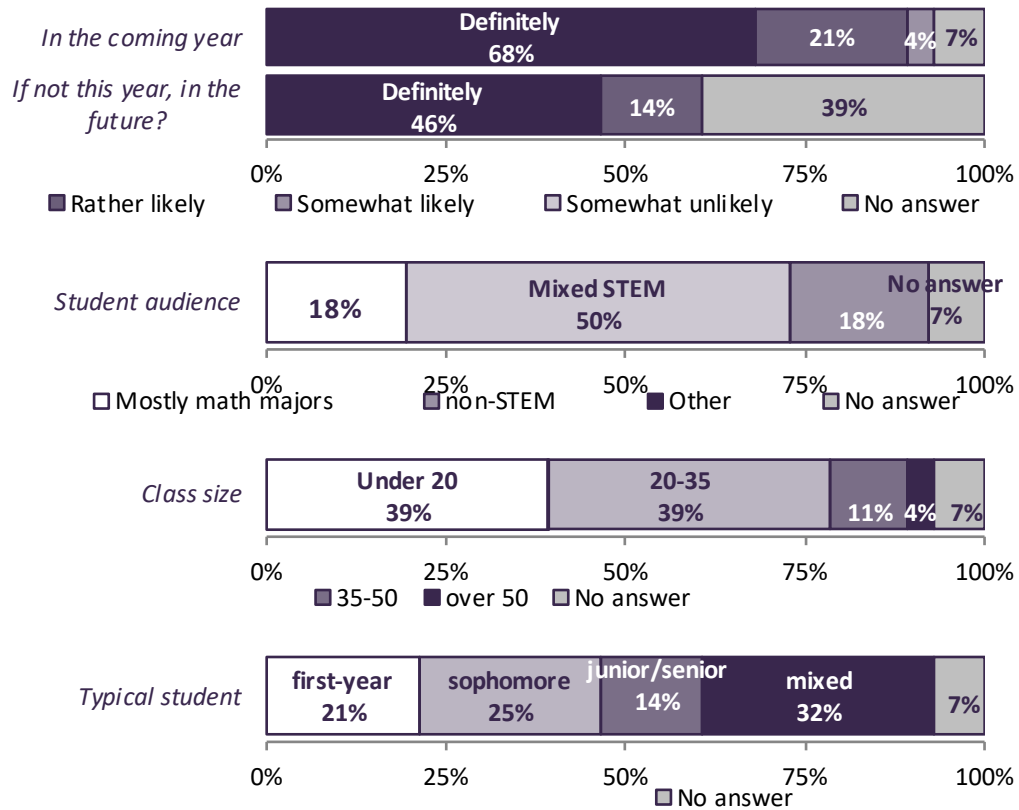
Participants shared concerns on both pre- and post-workshop surveys. Raised concerns were mentioned on post- but not pre-, Dispelled concerns were mentioned on pre- but not post-, and Lingering were mentioned on both.

<i>Concern</i>	<i>Raised</i>	<i>Dispelled</i>	<i>Lingering</i>
Confidence/skill in implementing IBL	8	4	3
Time: preparation and pacing	5	4	4
Success of specific students	4	3	1
Student resistance	3	4	1
Content coverage	1	5	0
<i>Totals</i>	21	20	9

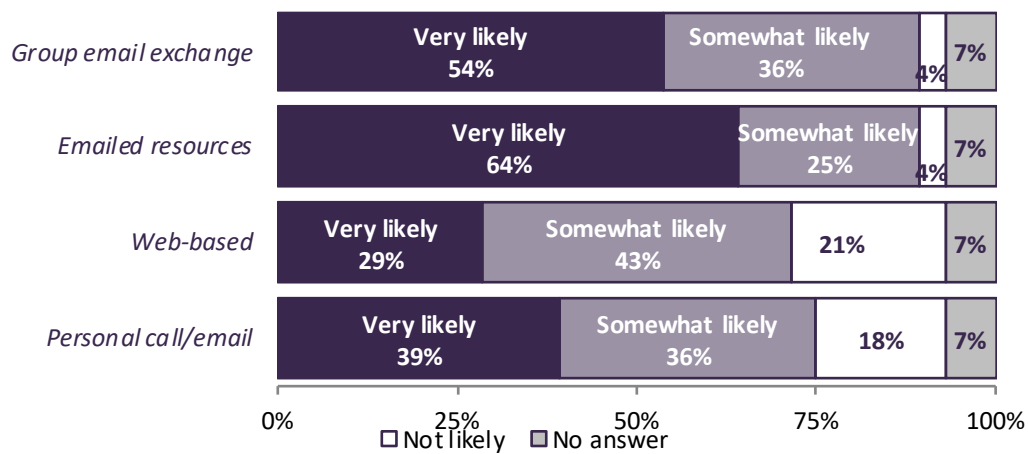
The highest proportion of concerns were reported after the workshop (raised and lingering), which is typical across workshop feedback. Raised concerns in particular may indicate participant learning rather than a fault of the workshop, because as participants gain knowledge, they become more aware of nuances and pitfalls. This is evidenced in the most frequently reported raised concern, participants' ability to implement IBL in the classroom, including knowing when to step in and responding to perceived failures. One participant reflected that because "IBL requires a somewhat nuanced handling of social situations, I know I will mess up some at the beginning. I think I will start incrementally, and it will be worth it, though." Participants also expressed concerns about the effect of IBL on specific students, such as those with anxiety, and with creating an equitable classroom environment in general and within group work specifically. One participant expressed their fear of "hurting students' feelings by unconscious choices that put students in groups that don't fit their needs/skills."

Notably, many more concerns were dispelled, indicating that the workshop was beneficial in alleviating many of the concerns that people had prior to attending. The most common lingering concern was the amount of time needed from the instructor, both at the beginning and throughout the semester. Besides personal concerns about implementation ability, there were few if any concerns about IBL as a practice. One participant noted that the workshop provided them tools for success by "sharpen[ing] my existing skills and giv[ing] me new ones."

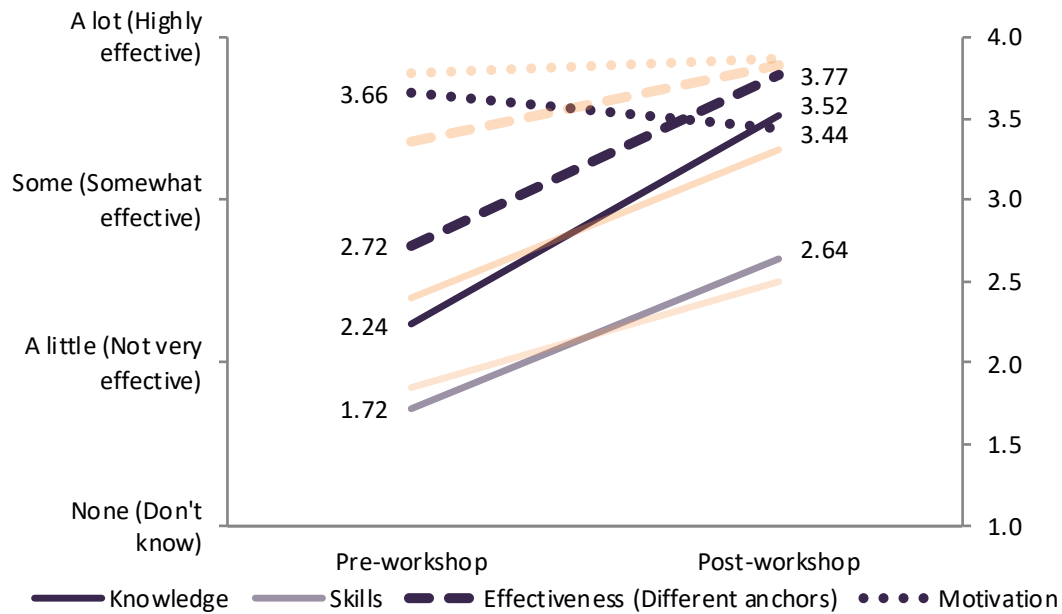
Plans for Implementing IBL



Support and Keeping in Touch



Pre-/Post- Comparisons

Immediate Workshop Outcomes

Results for this workshop are shown in purple, with numerical values labeled. For comparative purposes, cumulative SPIGOT averages are shown in orange with no numerical labels. Following the workshop, IBL knowledge, skill, and belief in the effectiveness of IBL rose significantly. Motivation to use IBL decreased, but not significantly and remained relatively high. Most participants were already highly motivated to use IBL prior to the workshop. This is expected, given that they have committed a week to attend the workshop in order to learn how to implement IBL.

Conclusion

Feedback from workshop participants was strongly positive and well aligned with the intended workshop design: coherence and content of the workshop sessions, modeling by facilitators of IBL teaching strategies, and intentional community building. Participants especially appreciated the facilitators' knowledge, helpfulness, and experience.

Comments regarding structure and time were generally positive, but some participants felt there could have been additional time for breaks to help digest information. Additionally, some participants would have liked more time to work on course plans, and had more examples of IBL presented. Regarding logistics, two participants expressed a need for accommodations for disabilities.

We do not see red flags in the concerns that are raised or lingering: while the workshops show increases in confidence and skill in using IBL, it should be expected that some participants should still have concerns in these areas after only four days. Concerns related to IBL confidence and skills may dissipate after participants have a chance to further prepare for and implement IBL. These topics are good ones for follow-up on the email list and can be introduced or refreshed in threads now.

Collaborative Research: PROfessional Development and Uptake through Collaborative Teams (PRODUCT) Supporting Inquiry Based Learning in Undergraduate Mathematics

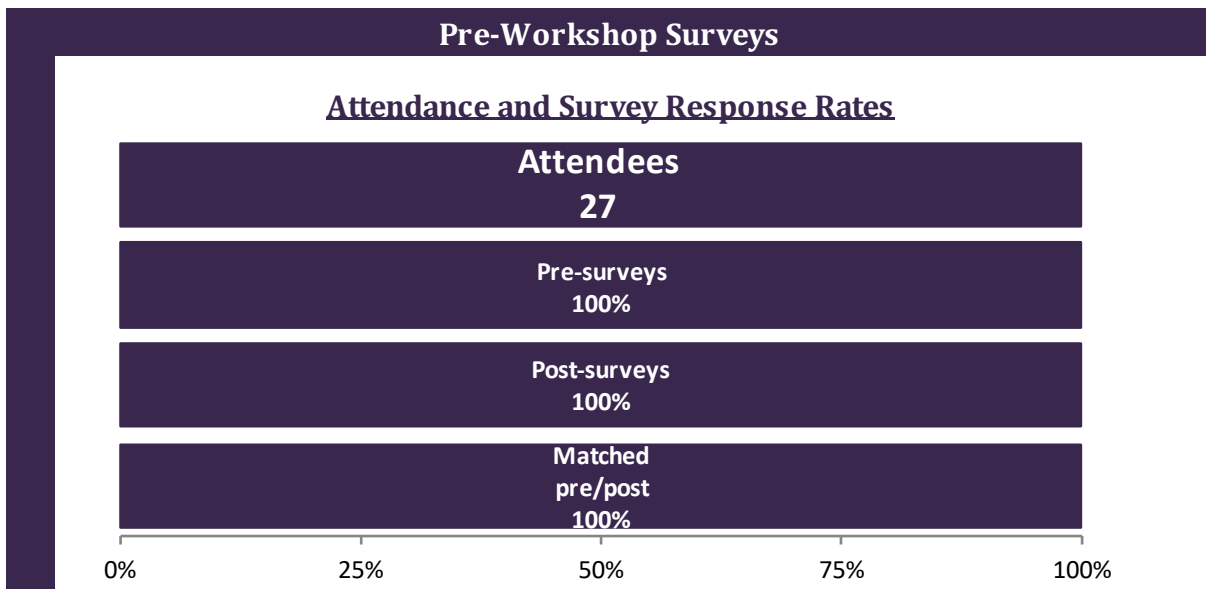
Evaluation Report 10: Workshop 10, Paramount Hotel, Portland, OR, June 25-28, 2019 March 2020

Tim Archie, Devan Daly, and Sandra Laursen
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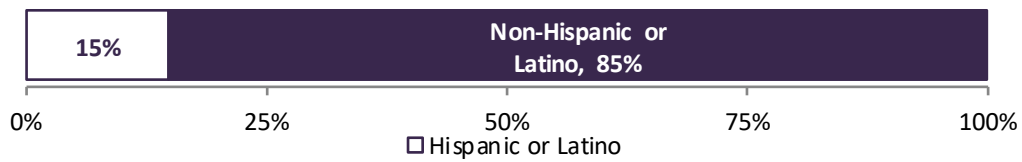
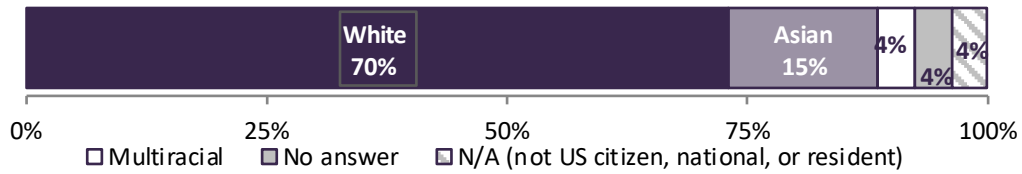
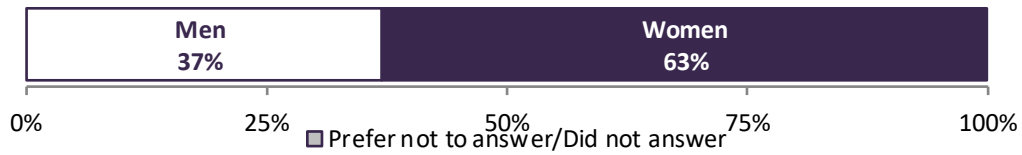
This evaluation report covers data from pre- and post-workshop surveys from the 10th ProDUCT workshop, held June 25-28 at the Paramount Hotel in Portland, OR. Participants were asked to pre-register online and complete a brief survey; a similar survey was administered on the final day of the workshop. For a full description of data collection and analysis methods, please see the "ProDUCT Project Methods" document (available from the authors). One evaluator (Tim Archie) attended as a participant observer.

Context

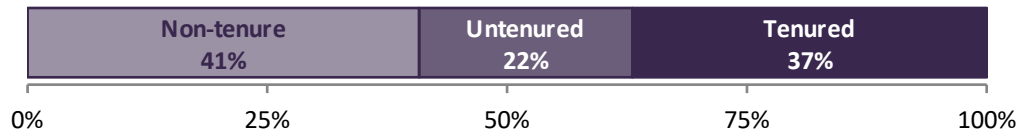
This tenth ProDUCT workshop served 27 participants. The workshop used the model developed during the previous SPIGOT project. It includes 4 main types of sessions: (1) Literature to Practice - where participants read and discussed research about IBL and active learning, (2) Video sessions - where participants watched and analyzed IBL classes, (3) Nuts & Bolts sessions - where participants and staff discussed how to structure and run an IBL class, and (4) Course Content sessions - where participants worked in small groups, along with staff guidance, to develop materials to use in their own courses. The facilitation team included: Amy Ksir (Literature to Practice), Stephanie Salomone & Dana Ernst (Video), Gulden Karakok (Nuts & Bolts), and Phil Hotchkiss (Course Content). Stephanie Salomone provided facilitation support.



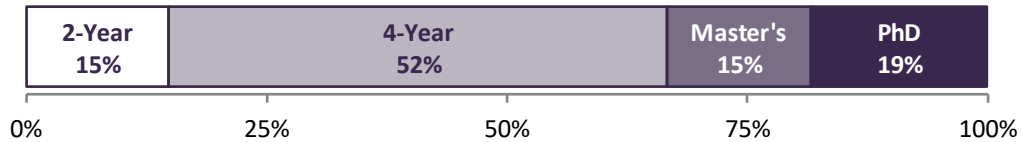
Demographics



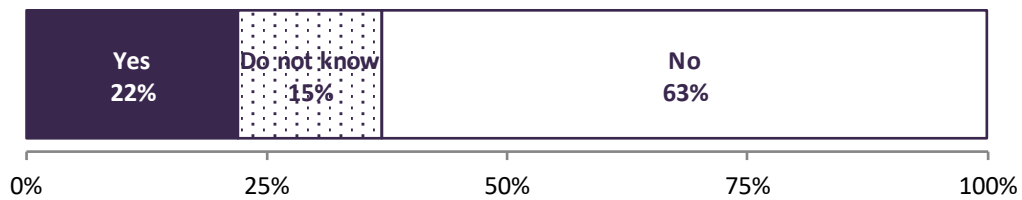
Appointment



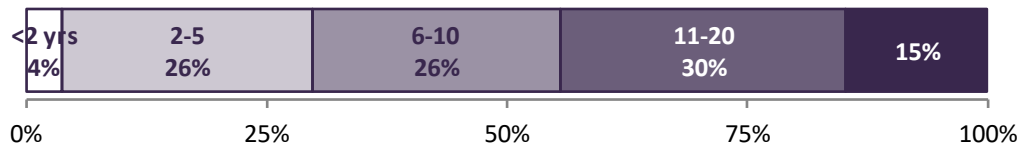
Institution type



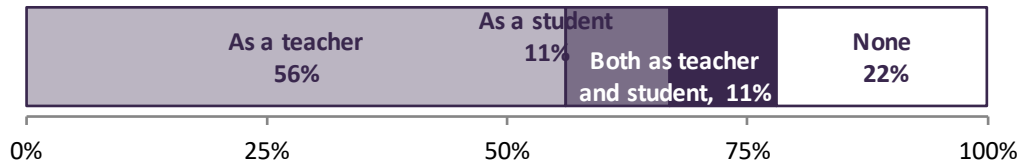
Minority-serving institution



Years of teaching experience

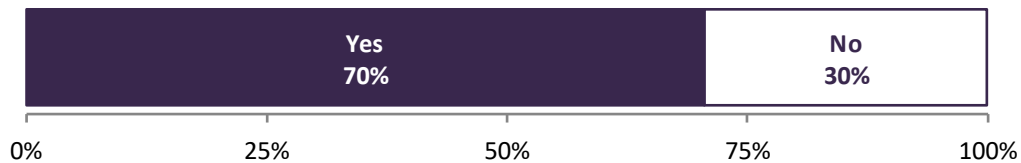


Previous experience with IBL

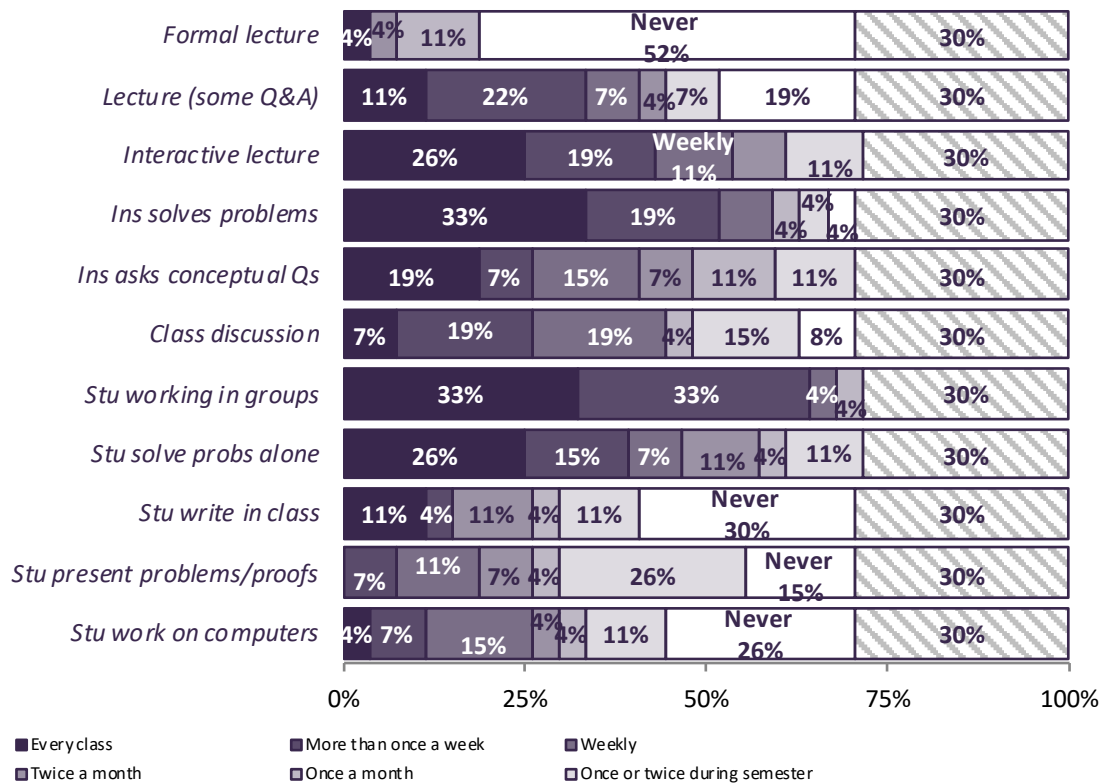


Initial Teaching Practices for Target Course

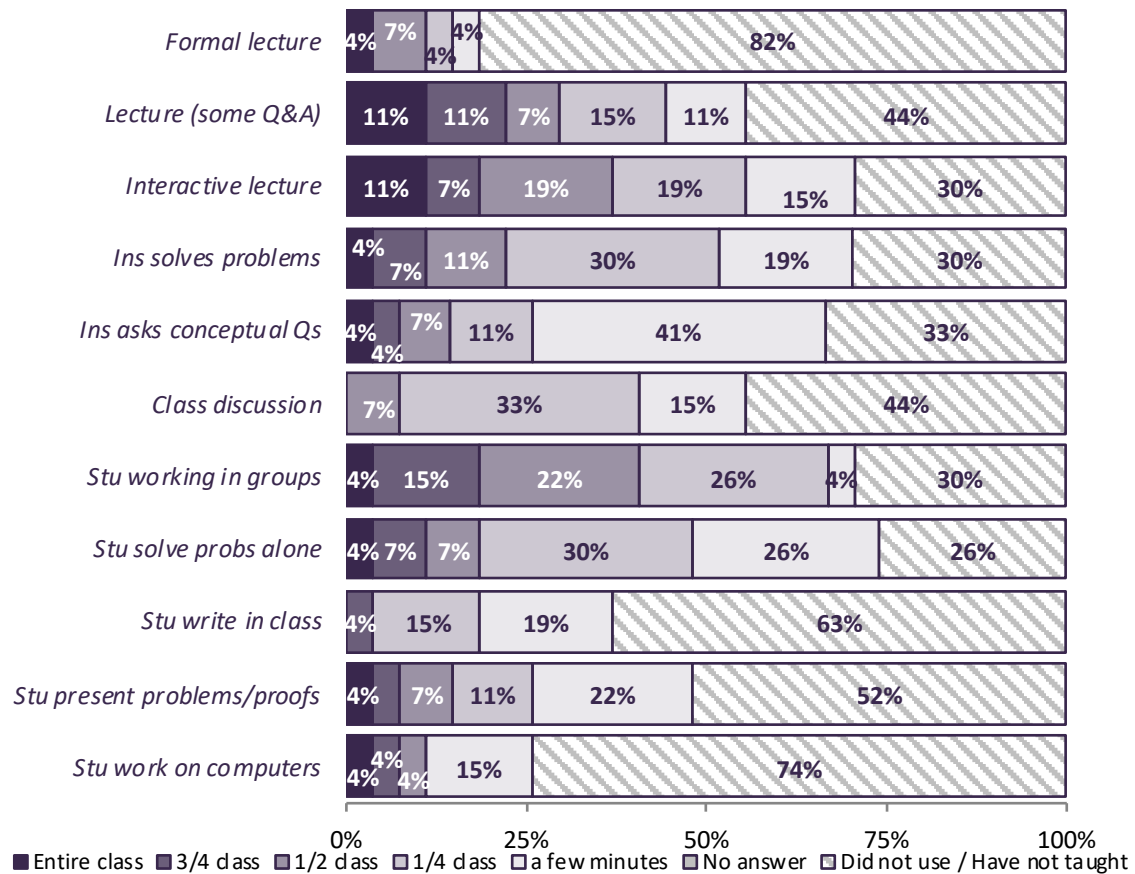
Taught class before? ("No" responses skip frequency & duration questions below)



Frequencies



Durations



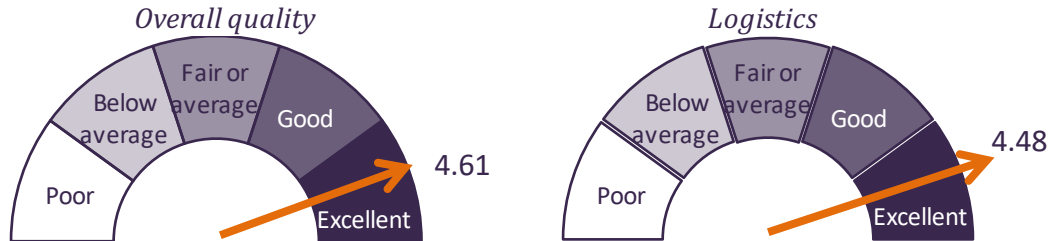
Compared to other workshop cohorts, there were more women at this workshop. Participants were more experienced as teachers than most other cohorts; approximately 70% had over 5 years of teaching experience. Nearly 80% participants said they had experience with IBL as a student and/or teaching prior to the workshop.

Based on frequencies and durations of teaching practices in target courses, participants were already making some efforts to use more student-centered techniques. Instructor presentation of problems, and interactive lecture were common, but participants also reported using small group work, class discussions and students solving problems alone.

Post-Workshop Surveys

Bulleted lists in this section are from open-ended prompts. They list the most frequent responses and the number of participants (in parentheses) who mentioned each item.

Quality of the Workshop



- Facilities negatives: meeting room too small (9), bathroom far (2)
- Well-planned and structured, good timing and breaks (9)
- General positive: e.g. "Everything was great!" (8)
- Good hotel and rooms-except the meeting room (6)

Workshop as a Learning Experience

Best aspects

- Facilitator interaction and organization (8)
- Video session (6)
- Resources and materials (5)
- Modeling of IBL (5)

Needs improvement

- Nuts and Bolts: less lecture/more active (6)
- Content sessions: more time, too big picture (4)
- Incorporate more participant sharing (3)
- Inclusion and diversity: more diverse participants in videos (1), more attention to equity (1), expand to more faculty (1)

The majority of workshop feedback was positive, with some suggestions for improvement both logistically and within certain sessions. Participants greatly appreciated the support and planning of facilitators as well as their modeling of IBL. Comments relating to the structure of the workshop were positive; for example, one participant stated that the preparation and coordination of facilitators “instilled confidence and I never felt any time was wasted.”

Most comments about logistics were positive. However, in regards to the facility itself, more than 40% of participants noted that the meeting room was too small for the size of the group. One participant further explained that the tight quarters triggered their anxiety and another felt it was difficult to get work done in the space.

The video session received a number of positive comments with participants noting the benefit of seeing practical techniques in action. One participant expressed a desire to see more diverse participants within the videos and additionally suggested a “discussion about how systemic racism impacts [students’] locus of control and desire or motivation to learn.” The Nuts & Bolts session received some criticism for being too lecture-heavy and passive. Four participants expressed concerns with the content sessions: they felt rushed, and that the first session was too “big picture” to be practically beneficial. In general, three participants suggested that they would like more time to share and hear about other participants’ experiences throughout the workshop, which echoes the general trend of emphasizing practical takeaways.

Concerns About Implementing IBL

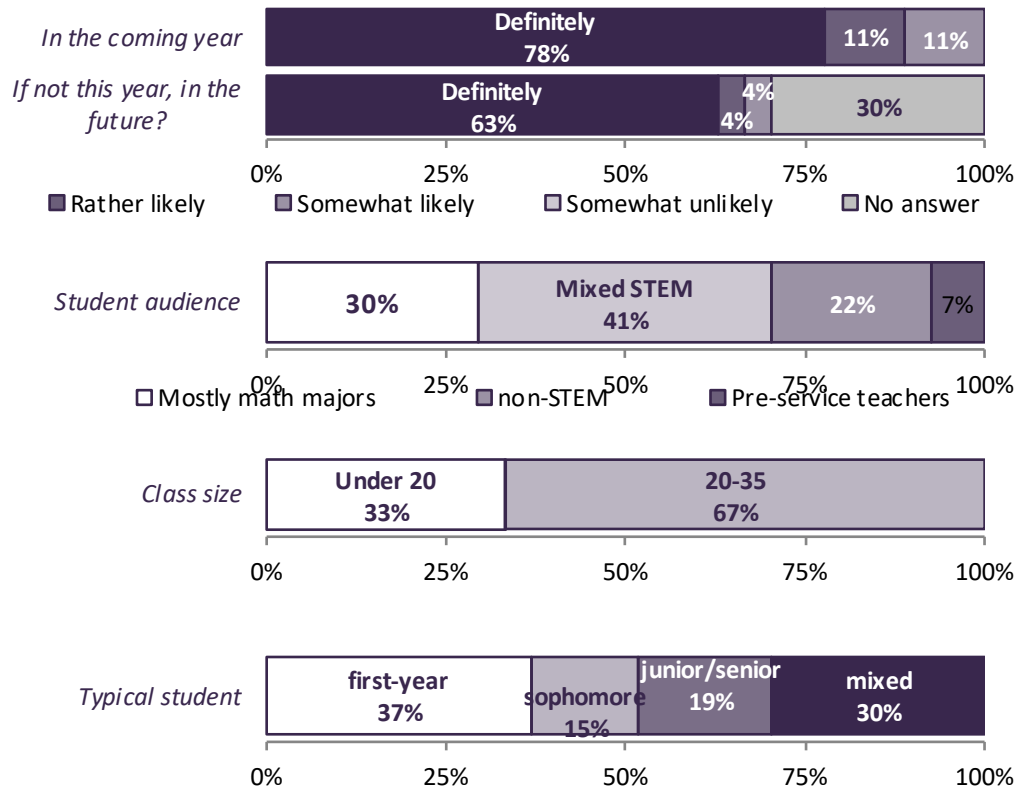
Participants shared concerns on both pre- and post-workshop surveys. Raised concerns were mentioned on post- but not pre-, Dispelled concerns were mentioned on pre- but not post-, and Lingering were mentioned on both.

<i>Concern</i>	<i>Raised</i>	<i>Dispelled</i>	<i>Lingering</i>
Student resistance	6	4	5
Classroom control, e.g., when to step in	3	3	5
Success of specific types of students	4	2	3
Confidence/skill in implementing IBL	5	3	1
Time: preparation and pacing	3	2	2
Content coverage	2	4	0
Course materials	1	4	0
<i>Totals</i>	<i>24</i>	<i>22</i>	<i>16</i>

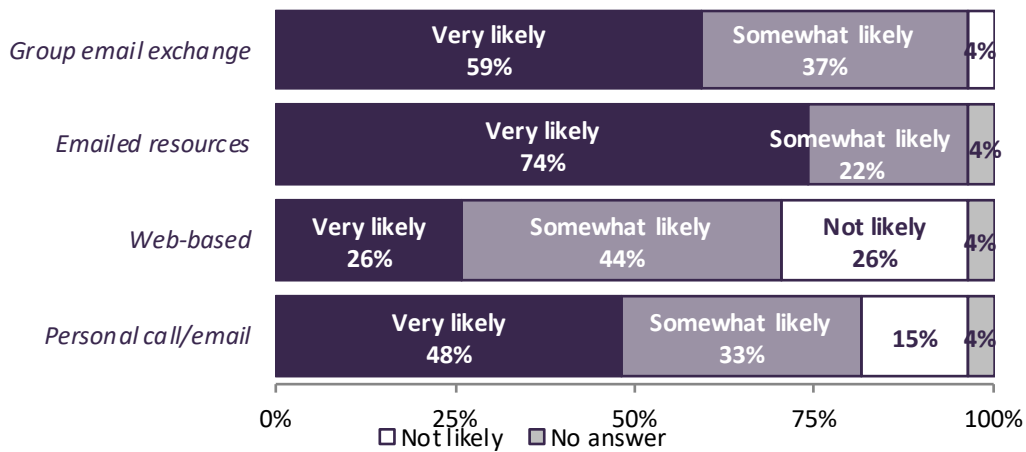
The highest proportion of concerns were reported after the workshop (raised and lingering), which is typical across workshop feedback. Some raised concerns may indicate participant learning rather than a fault of the workshop, because as participants gain knowledge, they become more aware of nuances and pitfalls. This is exemplified in the increase in concerns over course specifics such as creating rich materials.

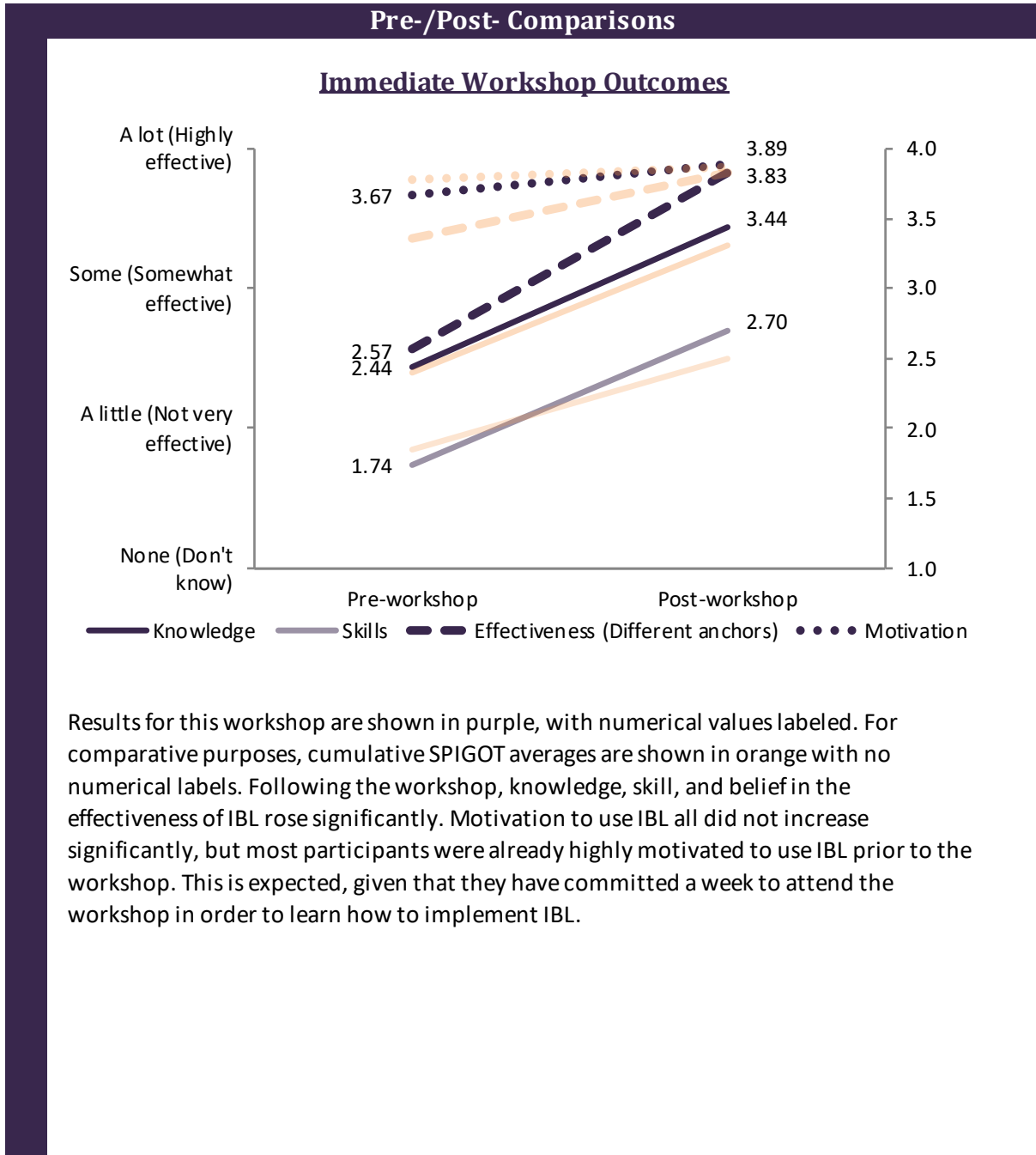
The greatest lingering concern was student resistance, with one participant expressing concern that by “making them figure things out... students will shut down... or feel... attacked.” However, a similar number of concerns about student resistance were dispelled after the workshop. While the number of lingering concerns was higher than most previous workshops, the number of raised and dispelled concerns were nearly equal, indicating that the workshop was beneficial in alleviating many of the concerns that people had prior to attending.

Plans for Implementing IBL



Support and Keeping in Touch





Results for this workshop are shown in purple, with numerical values labeled. For comparative purposes, cumulative SPIGOT averages are shown in orange with no numerical labels. Following the workshop, knowledge, skill, and belief in the effectiveness of IBL rose significantly. Motivation to use IBL all did not increase significantly, but most participants were already highly motivated to use IBL prior to the workshop. This is expected, given that they have committed a week to attend the workshop in order to learn how to implement IBL.

Conclusion

Consistent with previous workshops, feedback from workshop participants was strongly positive and well aligned with the intended workshop design: coherence and content of the workshop sessions, modeling by facilitators of IBL teaching strategies, and intentional community building. Participants appreciated the organization and coordination among facilitators, how facilitators modelled IBL and their interactions with facilitators. Participants also identified IBL resources and materials as one of the best aspects of the workshop. While the majority of feedback on sessions was positive, some participants felt the Nuts and Bolts session could have included less lecture and more active learning. Some participants indicated the content sessions needed more time and were too big picture.

This size of the workshop room was small as noted by almost half of participants and triggering anxiety for at least one workshop participant. However, the size of the room did not seem to affect participants' overall impressions of the workshop which were overwhelmingly positive.

We do not see red flags in the concerns that are raised or lingering: student resistance is an important focus and one that participants should attend to; this feedback shows that awareness of this increased. This is a good topic for follow-up on the email list and can be introduced or refreshed in current threads.

Collaborative Research: PROfessional Development and Uptake through Collaborative Teams (PRODUCT) Supporting Inquiry Based Learning in Undergraduate Mathematics

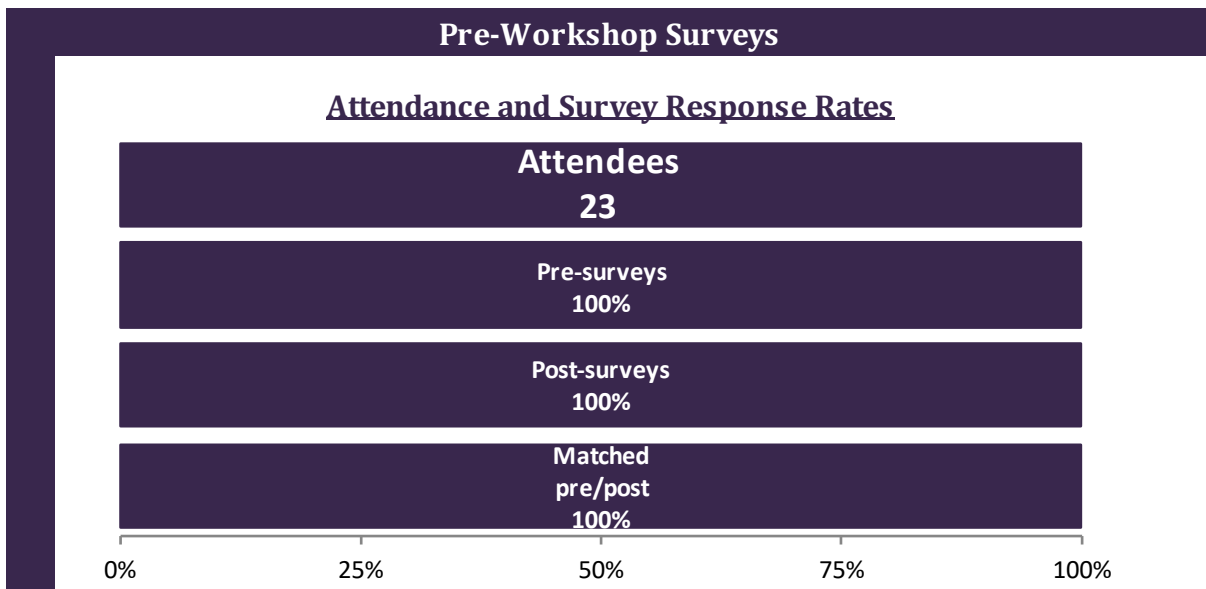
Evaluation Report 11: Workshop 11, Staybridge Suites, Torrance, CA July 9-12, 2019 March 2020

Tim Archie, Devan Daly, and Sandra Laursen
Ethnography & Evaluation Research, University of Colorado Boulder

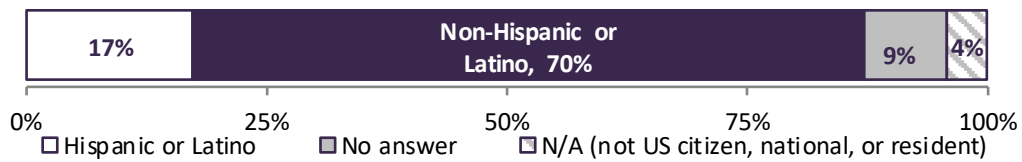
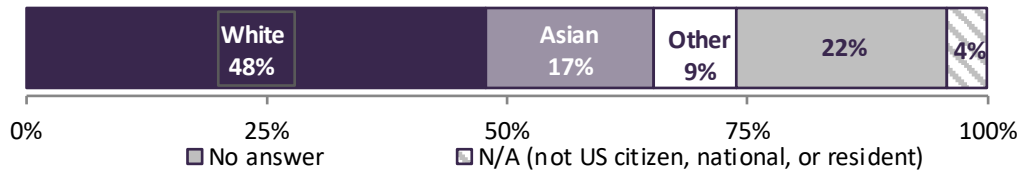
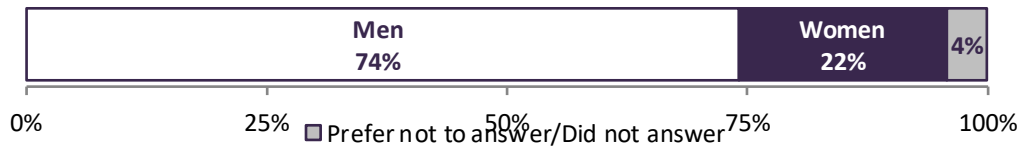
This evaluation report covers data from pre- and post-workshop surveys from the 11th ProDUCT workshop, held July 9-12 in at the Staybridge Suites in Torrance, CA. Participants were asked to pre-register online and complete a brief survey; a similar survey was administered on the final day of the workshop. For a full description of data collection and analysis methods, please see the "ProDUCT Project Methods" document (available from the authors). One evaluator (Sandra Laursen) attended as a participant observer.

Context

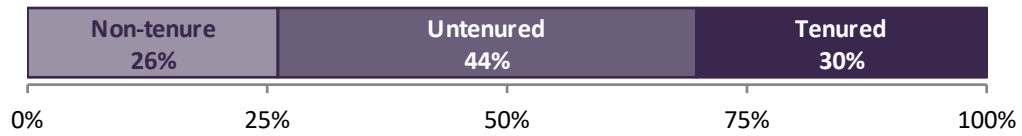
This eleventh ProDUCT workshop served 23 participants. The workshop used the model developed during the previous SPIGOT project. It includes 4 main types of sessions: (1) Literature to Practice sessions - where participants read and discussed research about IBL and active learning, (2) Video sessions - where participants watched and analyzed IBL classes, (3) Nuts & Bolts sessions - where participants and staff discussed how to structure and run an IBL class, and (4) Course Content sessions - where participants worked in small groups, along with staff guidance, to develop materials to use in their own courses. The facilitation team included: Rachel Weir (Literature to Practice), Elizabeth Thoren (Video), Matt Jones (Nuts & Bolts), and Robin Wilson (Course Content), and Jane Campbell and Katie Kahle provided logistical support.



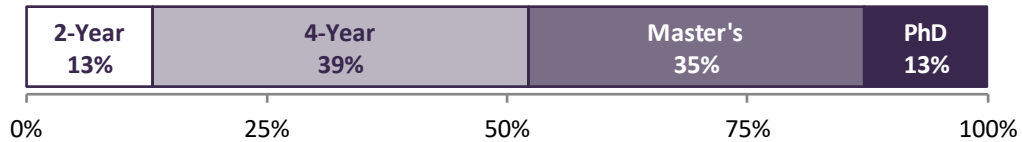
Demographics



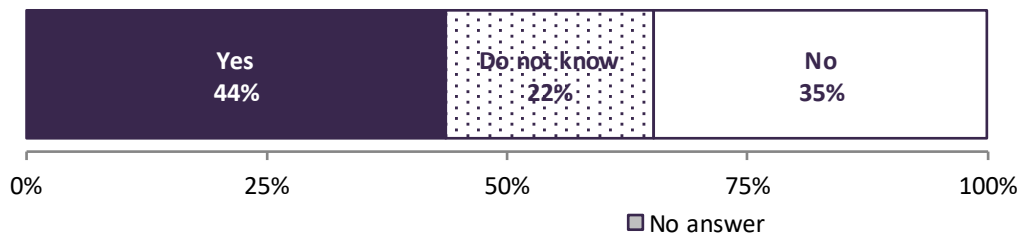
Appointment



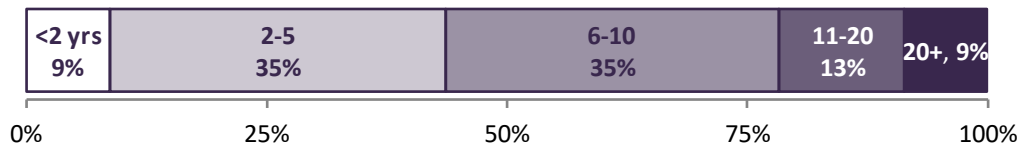
Institution type



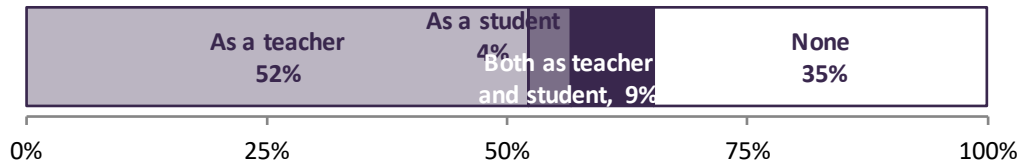
Minority-serving institution



Years of teaching experience

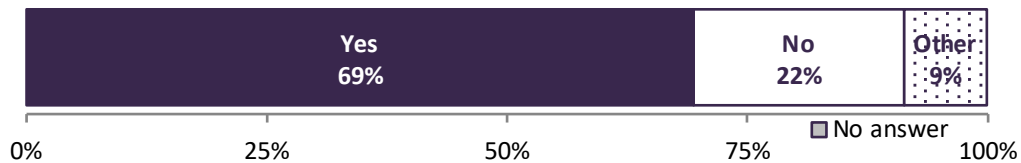


Previous experience with IBL

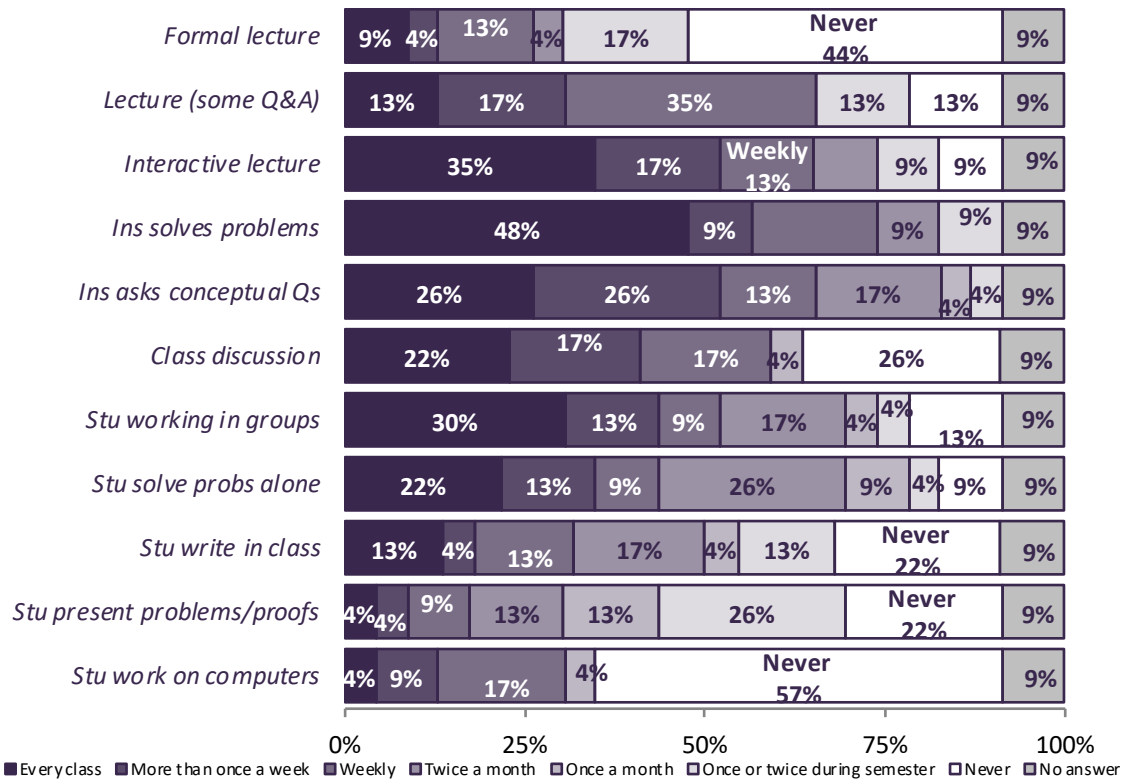


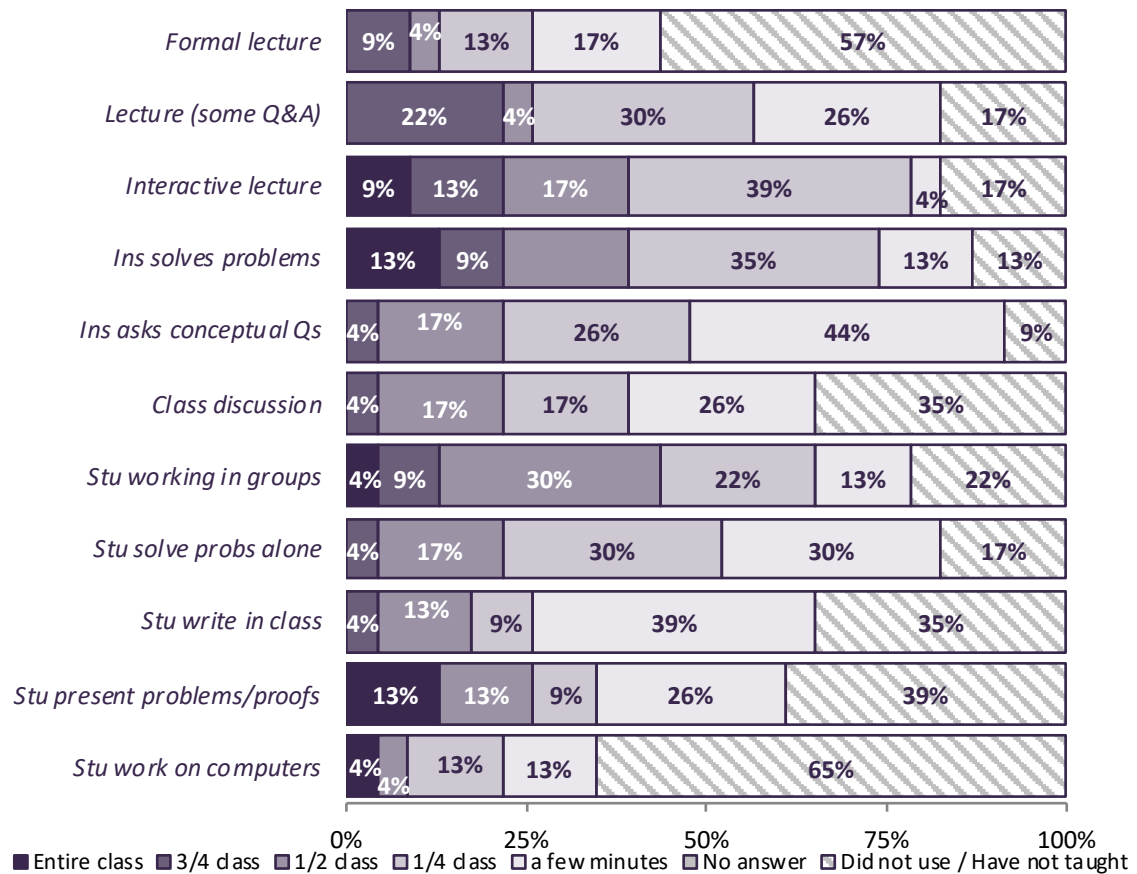
Initial Teaching Practices for Target Course

Taught class before? ("No" responses skip frequency & duration questions below)



Frequencies



Durations

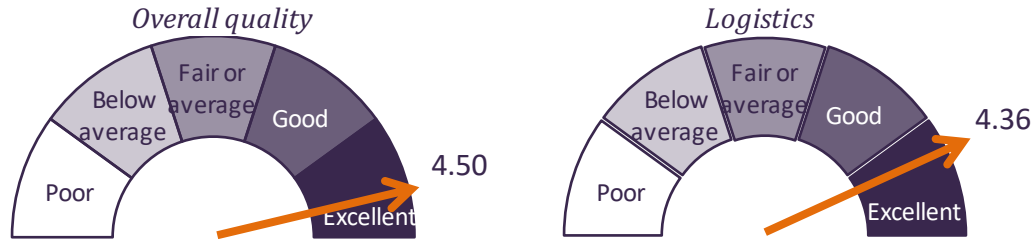
Compared to other workshop cohorts, there were more men at this workshop. Participants were more experienced as teachers than most other cohorts; over half had have been teaching 6 years or greater. More than half of the participants said they had experience with IBL methods as a student and/or in their teaching prior to the workshop. Almost half were from minority serving institutions.

Based on frequencies and durations of teaching practices in target courses, participants were already making some efforts to use more student-centered techniques. Lecture and instructor presentation of problems were prevalent, but participants also reported using interactive lectures. They also used small group work, and to a lesser extent, class discussions and students solving problems alone.

Post-Workshop Surveys

Bulleted lists in this section are from open-ended prompts. They list the most frequent responses and the number of participants (in parentheses) who mentioned each item.

Quality of the Workshop



- Good scheduling: well-organized, breaks, pacing (10)
- Beneficial content: resources, approach, good information (9)
- Food could be improved (5)
- Pacing negatives: too much information in the time (2), less time sitting (1)

Workshop as a Learning Experience

Best aspects

- Facilitator support and knowledge (8)
- Workshop community (6)
- Video session (5)
- Modeling of IBL (5)
- Course content session (4)

Needs improvement

- Video session: videos too long (3), incorporate video of things not going as planned (2)
- Timing of sessions: felt rushed, wanted more time to process (4)
- Would like the opportunity to practice IBL at workshop (4)

The majority of workshop feedback was positive, with some suggestions for improvement both logistically and within certain sessions. Participants greatly appreciated the organization and structure of the workshop. One participant said it was “the most organized and well-run [PD] workshop I have ever attended.” Additional comments focused on the “depth of content” and the amount of information conveyed over the course of the workshop. One participant described the workshop as “well organized with digestible chunks giving appropriate time to content and discussions.” Participants identified the expertise and availability of facilitators and the development of a community of like-minded peers as some of the most positive aspects of the workshop.

The video sessions received a great deal of positive feedback, such as one participant’s statement that they “appreciated not only the videos themselves but the particular order of videos throughout the week.” But two participants noted that they would like to see examples of scenarios in which the instructor addresses a lesson not going as planned, and three felt that the videos themselves were too long and suggested viewing these outside of the workshop time. Some participants said they felt overwhelmed or rushed and suggested that more time to process the abundance of information would be beneficial. Similarly, participants stated that they would like to have the opportunity to practice IBL themselves at the workshop with the rest of the cohort acting as “students.”

Concerns About Implementing IBL

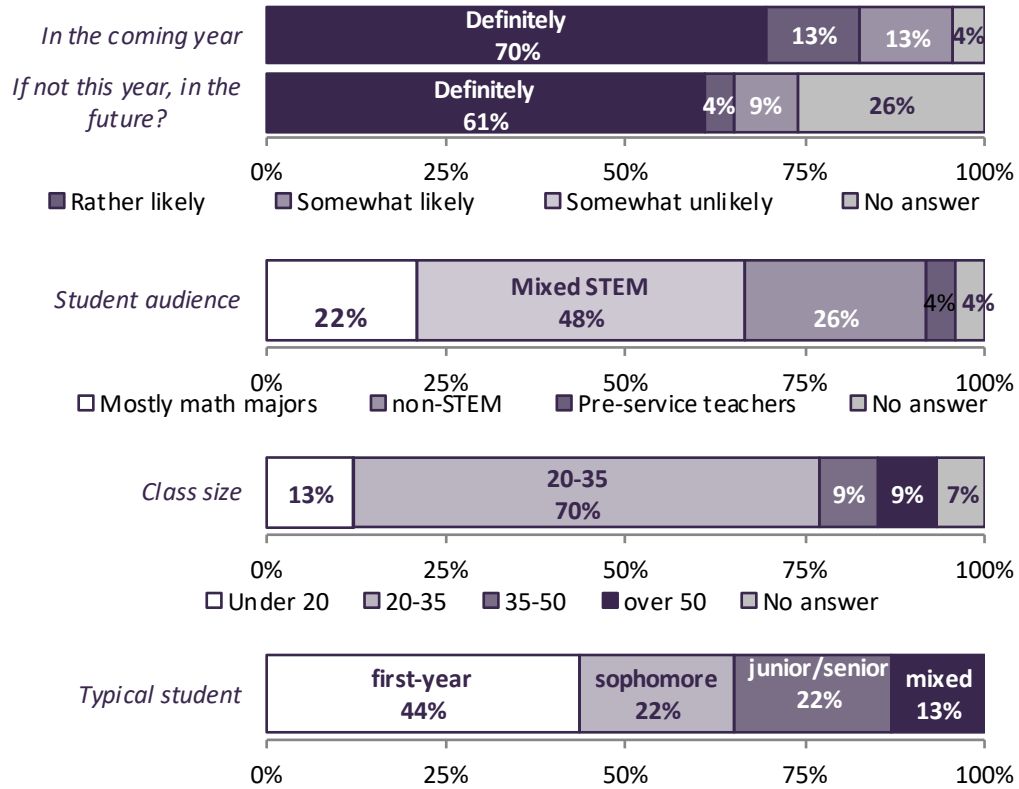
Participants shared concerns on both pre- and post-workshop surveys. Raised concerns were mentioned on post- but not pre-, Dispelled concerns were mentioned on pre- but not post-, and Lingering were mentioned on both.

<i>Concern</i>	<i>Raised</i>	<i>Dispelled</i>	<i>Lingering</i>
Time: preparation and pacing	8	1	4
Student resistance	7	4	2
Control: e.g. when to step in	1	5	0
Confidence/skill in implementing IBL	2	3	0
Materials	3	1	1
Coverage	0	2	1
<i>Totals</i>	<i>21</i>	<i>16</i>	<i>8</i>

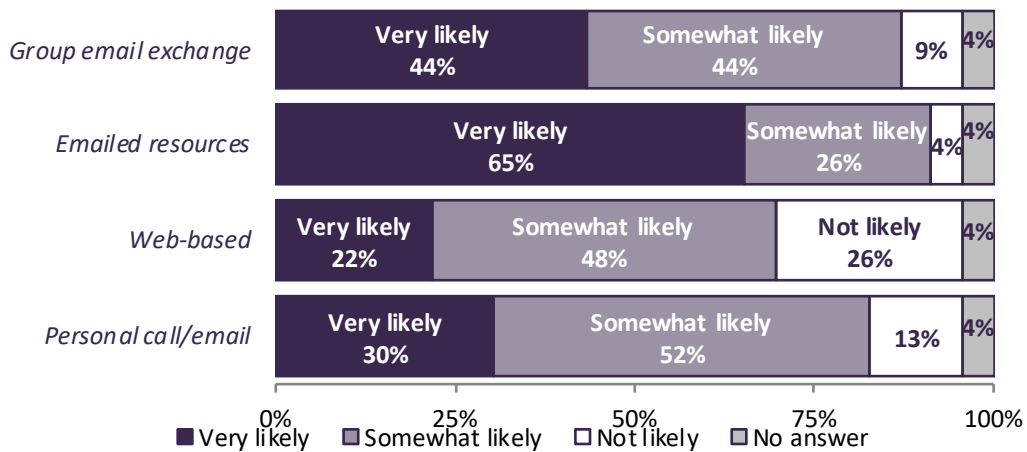
The highest proportion of concerns were reported after the workshop (raised and lingering), which is typical across workshop feedback. Some raised concerns in particular may indicate participant learning rather than a fault of the workshop, because as participants gain knowledge, they become more aware of nuances and pitfalls. The greatest raised and lingering concern was time management. In particular, participants were concerned that IBL courses take more time to develop both at the beginning of the semester and to keep up throughout the semester. Student resistance was another common concern, although for several people, this concern was dispelled after the workshop. One participant for whom resistance was a lingering concern said “whether or not I employ effective teaching strategies in class is less important than if students like the strategies.” Comments such as this may indicate a need for additional workshop time spent on student buy-in and/or further discussion in email mentoring.

Notably, there were few concerns regarding coverage of material, which has previously been a common concern for workshop participants. A higher number of concerns were dispelled versus lingering, indicating that the workshop was beneficial in alleviating many concerns that people had prior to attending.

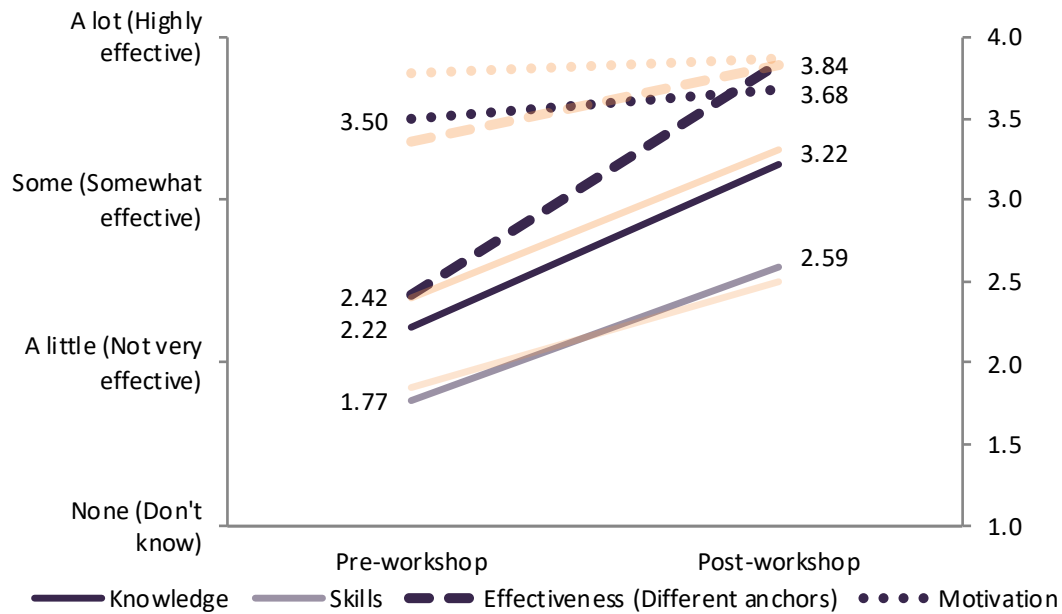
Plans for Implementing IBL



Support and Keeping in Touch



Pre-/Post- Comparisons

Immediate Workshop Outcomes

Results for this workshop are shown in purple, with numerical values labeled. For comparative purposes, cumulative SPIGOT averages are shown in orange with no numerical labels. Following the workshop, knowledge, skill, and belief in the effectiveness of IBL rose significantly. Motivation to use IBL did not increase significantly, but most participants were already highly motivated to use IBL prior to the workshop. This is expected, given that they have committed a week to attend the workshop in order to learn how to implement IBL.

Conclusion

Feedback from workshop participants was strongly positive and well aligned with the intended workshop design: coherence and content of the workshop sessions, modeling by facilitators of IBL teaching strategies, and intentional community building. Participants appreciated facilitators' expertise, availability, and efforts to create community.

Participants were largely positive about sessions: for most, timing and length of sessions seemed appropriate, while some participants felt some sessions were rushed and would have liked longer breaks to process what they had learned. Video sessions received positive feedback, however some felt the video clips were too long and that showing video of IBL going wrong may be beneficial.

We do not see red flags in the concerns that are raised or lingering: time to prepare IBL courses is something that cannot be done completely in the workshop, and is indeed a legitimate concern for those who intend to implement IBL. These topics are good ones for follow-up on the email list and can be introduced or refreshed in threads now.