

Active Learning Professional Development Series for Both Experienced and Inexperienced
Instructors

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The poster describes a pilot study following the outcome of a three-part professional development workshop to promote active learning in STEM classrooms for instructors with a wide range of teaching experience. The series introduced strategies and benefits of active learning and had participants workshop their own strategies. We share the results of an exit survey given to participants and additional observations. The survey seeks to find what kinds of faculty participate and whether the professional development series motivated instructors to use more active learning in their classroom.

Keywords: Active Learning, Professional Development, Post-Secondary Education, STEM

How do we design professional development opportunities, including those that are discipline specific and promote active learning in STEM for an audience of both experienced and inexperienced instructors? We share observations and survey results from a pilot study following a three-part professional development workshop to promote active learning in STEM classes at a university in the Northeastern United States.

The three-session workshop took place over the course of 6 weeks. In order to be flexible, each session included information and activities that built on the previous meeting but were presented in an independent way so that instructors weren't required to attend each session. The College Mathematics Instructor Development Source (CoMInDS) Library on MAA Connect was used to generate activities, including the classroom practices found in (Yee, 2021). An article about shifting the focus from the teacher to student (Webel, 2010) was used for a discussion.

Information for this study was collected through post workshop observations and participant survey questions. There were 16 participants in the three sessions, with no participant attending all three. The six-question survey asked participants about their teaching experience, their professional development experience, and their experience using active learning.

Six faculty members responded to the survey. A majority of the respondents had 6 or more years of teaching experience. While most respondents attend professional development sessions more than once per year, the majority of professional development attended was not designed specifically for teaching in STEM fields. After the workshop, most instructors said they would likely use active learning in their classrooms. Teaching responsibilities was an obstacle to participating, with many instructors arriving late or leaving early due to class schedules. While the sessions were offered in a hybrid format, most instructors preferred the online option. We found that many instructors had trouble working on open ended projects to develop their own active learning examples during the workshop.

From these results, we consider the following future questions. What scheduling incentives, and structure could be implemented to improve attendance? What improvements in the workshop structure could be implemented to improve engagement and better promote active learning? In addition, we would like to investigate ways to better integrate the different experiences, backgrounds, and variety of fields represented by the participants to improve professional development for a wide audience.

References

- Webel, Corey, Thomas A. Evitts, and Karen Heinz. "Shifting Mathematical Authority from Teacher to Community." *The Mathematics Teacher* 104, no. 4 (2010): 315–18.
- Yee, Sean. (2021, January 30) Active Learning Instructional Resource: Classroom Practices, CoMInDS Library, <https://connect.maa.org/viewdocument/active-learning?CommunityKey=cc0d52e1-9a32-429c-8f97-d5f71a6d9b54&tab=librarydocuments>

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Purpose

Share observations and survey results from a pilot three part professional development workshop to promote active learning in STEM classes. The workshop was designed to be flexible, for both novice instructors and veterans, as well as instructors with varying levels of experience using active learning.

Resources and Literature

- College Mathematics Instructor Development Source (CoMInDS) Library on MAA Connect.
- Active Learning Instructional Resource: Classroom Practices from the CoMInDS Library (Yee, 2021)
- Group Reading: “Shifting Mathematical Authority from Teacher to Community.” (Webel, 2010)

Research Question

How do we design professional development opportunities, including those that promote active learning in STEM classes, for an audience of both experienced and inexperienced instructors?

Methods

- Survey Questions
- Post Workshop Observations

Workshop

The workshop had three sessions which took place over the course of 6 weeks. Instructors were encouraged to attend as many sessions as possible. While each session included information and activities that built on the previous meeting, they were presented in an independent way so that instructors weren't required to attend each session.

Survey Questions

Survey questions asked about the following:

- Teaching Experience
- Professional Development Experience
- Experience using active learning.

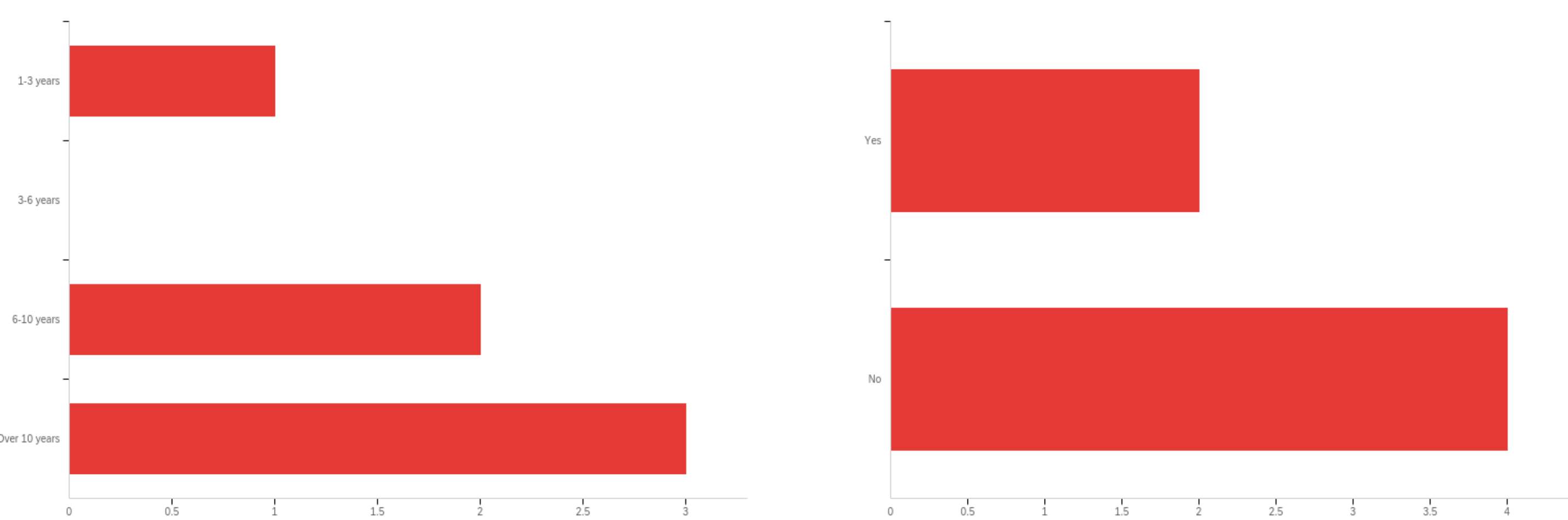
Participants

There were 16 participants in the three professional development sessions. No participants attended all three sessions, with several attending two sessions. Many participants only participated for parts of sessions due to teaching schedules.

Survey Questions and Results

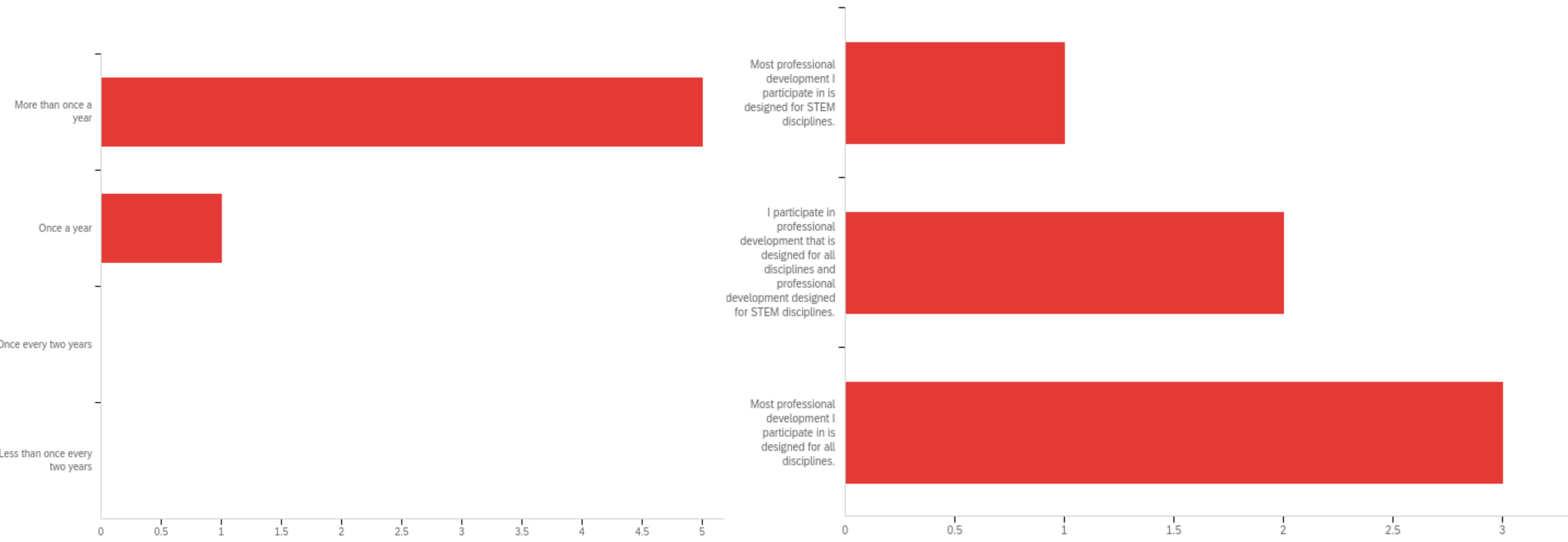
Question 1: How many years have you taught?

Question 2: Before becoming the instructor of record of a course, did you have any experience being a graduate or teaching assistant?



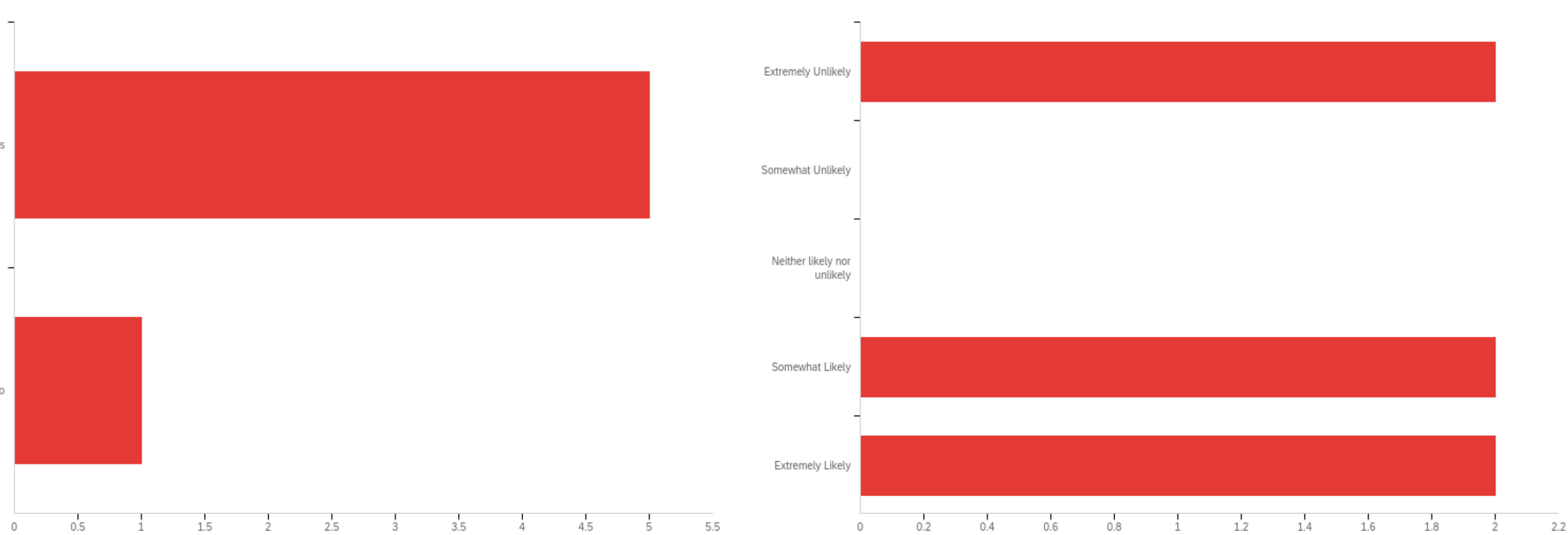
Question 3: Approximately how much professional development in teaching do you participate in?

Question 4: Which of the following describes the professional development you participate in?



Question 5: Have you used active learning in your classes before?

Question 6: How likely are you use active learning in your classes in the future?



Findings & Discussions

Survey

- A majority of instructors attending these development sessions had 6 or more years of teaching experience.
- A majority of participating instructors did not have experience as a graduate or teaching assistant.
- Most instructors participate in professional development more than once per year.
- The majority of the professional development that the instructors attend is not designed primarily for teaching in STEM fields.
- Most instructors believe they will likely use active learning in the future.

Observations

- Teaching schedule was an obstruction to participating. Multiple instructors either could not participate or could only participate for part of the sessions due to this obstacle.
- While the sessions were available in a hybrid format, both in-person and online, most instructors participated online.
- Instructors had trouble working on open ended projects to develop their own active learning classroom activities during the workshop.

Future Research

- What scheduling, incentives, and structure could be implemented to improve attendance?
- What are improvements in the workshop structure that could be implemented to improve participation and better promote active learning?
- Investigate ways to better integrate the different experiences, backgrounds, and variety of fields represented by the participants to improve this type of professional development in STEM fields.

Acknowledgements

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References

Webel, Corey, Thomas A. Evitts, and Karen Heinz. “Shifting Mathematical Authority from Teacher to Community.” The Mathematics Teacher 104, no. 4 (2010): 315–18.

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