

Opening access to professional development: Outcomes of teaching-focused online workshops

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Introduction

Professional development (PD) workshops on teaching have been shown to effectively increase undergraduate math instructors' use of research-based instructional strategies (Archie et al., 2022). However, face-to-face PD is not accessible for all math instructors, including those with young families, those at under-resourced institutions, and those concerned about the environmental impacts of travel. In response to these constraints, the Mathematical Association of America (MAA) sponsored a series of nine online PD workshops in summer 2022. The MAA solicited proposals and selected teams to lead workshops on a variety of mathematics teaching topics. These teams participated in planning sessions in winter 2022 to prepare their workshops and implement best practices in workshop design (Daly et al., 2021). The workshops served 25 participants each over 24-27 contact hours, conducted via Zoom in two formats: a one-week intensive model and a mini-course format spread over three weeks. The purpose of this preliminary research was to explore the outcomes of the 2022 workshops.

Methods

Participants completed surveys about one month before their workshop (pre), immediately after (post), and 12 months later (follow-up). Survey measures probed instructors' current capacities (knowledge, skill, attitude, and motivation) related to the workshop topic (pre, post), perceptions of workshop quality (post), planned implementation (post) and implementation at one year, and what workshop features helped them learn (post). 119 instructors responded to all three surveys, out of 203 instructors who completed workshops.

Results and Discussion

Overall, participants rated the workshops favorably and reported strong gains in knowledge and skills related to the workshop topic. Most (83%) indicated they would likely implement what they learned in the workshop. Indeed, at the one-year follow-up, 84% of respondents reported some degree of implementation, which is comparable to implementation after face-to-face workshops (Archie et al., 2022). When survey non-responders are included in the total, the self-reported implementation rate drops to 50%. As a group, participants identified the atmosphere, their interactions with others, practical examples, facilitator modeling, and working and connecting with other participants as workshop features that helped them learn the most. Together, these findings suggest that well-designed online professional development can help instructors implement what they learned at the workshops.

Acknowledgments

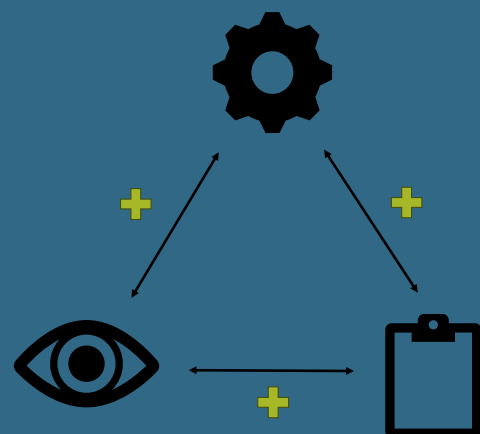
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References

- Archie, T., Hayward, C. N., Yoshinobu, S., & Laursen, S. L. (2022). Investigating the linkage between professional development and mathematics instructors' use of teaching practices using the theory of planned behavior. *Plos One*, 17(4), e0267097.
- Daly, D., Ethnography & Evaluation Research, and the Academy of Inquiry Based Learning (2021, June). *AIBL Handbook for Online Professional Development: Lessons Learned from PRODUCT Workshops*. Boulder, CO, and San Luis Obispo, CA: University of Colorado Boulder, Ethnography & Evaluation Research; and Academy of Inquiry Based Learning. <https://tinyurl.com/AIBLHandbook>

Participants implement what they learned from online professional development

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Observations and surveys show that online workshops support implementation

Need

Professional development (PD) workshops have been found to effectively increase undergraduate math instructors use of research-based instructional strategies¹.

Benefits of online PD

- Under-resourced institutions
- Instructors with young families
- Environmental impact of travel

Workshops

During the Summer of 2022, the Mathematical Association of America (MAA) sponsored a set of eight virtual PD workshops to address these needs.

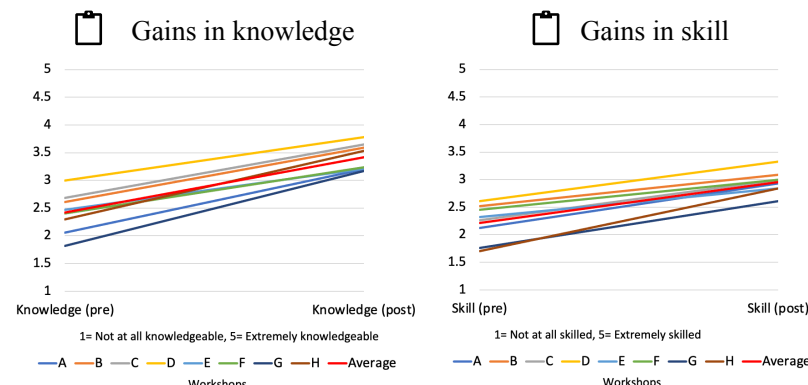
Workshop Features

- Facilitators participated in Winter trainings based on PD best practices <http://tinyurl.com/2p83ayry>
- Conducted via Zoom in two formats: one week intensive model & mini course spread over three weeks
- 25 participants / workshops through 24-27 contact hours

Method

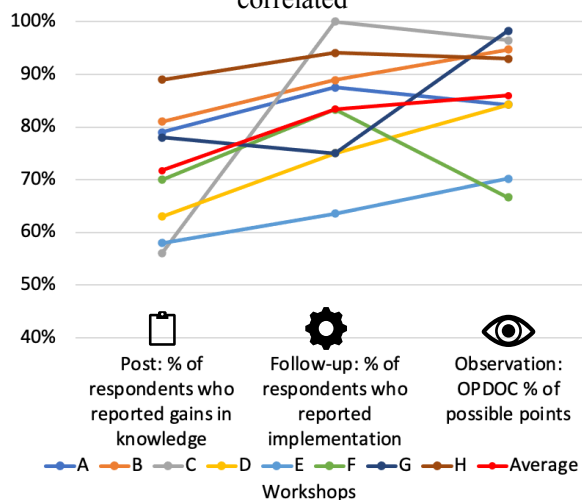
- Pre survey and Post Survey**
Instructors' current capacities (knowledge, skill, attitude and motivation) related to the workshop topic
- Online Professional Development Observational Checklist (OPDOC)**
19 item rubric that assesses workshop features and provides a quantitative score (<https://tinyurl.com/27tcrhe6>)
- 119 out of 203 instructors who completed workshops responded to all three surveys
- Follow Up Survey**
Implementation at one year

Workshop Participant Gains



Results & Discussion

Workshops gains, implementation, and observations are correlated



Takeaways

Overall, participants rated the workshops favorably and reported strong gains in knowledge and skills related to the workshop topic.

- Most helpful workshop features included: supportive atmosphere, interactions with others, practical examples, facilitator modeling and collaborating (working & connecting) with other participants
- 83% indicated they would likely implement what they learned in the workshop.
- 84% of respondents reported some degree of implementation at the one-year follow up.
- The high degree of implementation reported by participants is comparable to implementation after face-to-face workshops (Archie et al., 2022), helping to indicate that high quality online PD can be a more accessible form of PD.

References

- Archie, T., Hayward, C. N., Yoshinobu, S., & Laursen, S. L. (2022). Investigating the linkage between professional development and mathematics instructors' use of teaching practices using the theory of planned behavior. *Plos One*, 17(4), e0267097.
- Daly, D., *Ethnography & Evaluation Research*, and the Academy of Inquiry Based Learning (2021, June). *AIBL Handbook for Online Professional Development: Lessons Learned from PRODUCT Workshops*. Boulder, CO, and San Luis Obispo, CA: University of Colorado Boulder, Ethnography & Evaluation Research; and Academy of Inquiry Based Learning. <https://tinyurl.com/AIBLHandbook>

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