Work In Progress Research Opportunities For Educator Who Don't Do Research

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Huggins currently works for the Fundamentals of Engineering program at West Virginia University. She is working on her PhD in Education, a lifelong dream. Huggins is an advocate of STEM learning in the K-12 arena as well as a proponent of after school programing to help build the workforce of the Technological Revolution. She is particularly interested in Appalachian kindergarten teachers' perceptions of STEM.

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Akua Oppong-Anane is a Teaching Assistant Professor in the Fundamentals of Engineering Program at West Virginia University. She has a Bachelor's degree in Chemical Engineering, a Master's degree in Chemistry and a Ph.D. in Environmental Engineering Sciences. Her research areas are in engineering education, retention and persistence of first-year engineering students, mentoring, advising and environmental engineering.

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Mo, Wen Juan (Helen) currently serves as a Graduate Teaching Assistant in the Fundamentals of Engineering Program at Benjamin M. Statler College of Engineering and Mineral Resources. She is a Ph.D. candidate in the Educational Theory and Practice Program at the School of Education, College of Applied Human Sciences, West Virginia University (WVU). She holds two M.A.s in Linguistics and Teaching English to Speakers of Other Languages (TESOL) from WVU and a B.A. in Education with an emphasis in English literature from Central South University in China. She brings a wealth of diverse working experience to her role in Statler. She has extensive teaching experience and has taught ENGR140, ENGR191, C&I 311, Chinese 101, 102, 203, and 304 courses. She worked as a schoolteacher in the United States and China for 17 years. This diverse experience has honed her adaptability and versatility in different educational settings. Her research interests include critical engineering education, place-based education, and curriculum design.

Work in Progress - Research Opportunities for Educators Who Don't Do Research

MOTIVATION AND GOALS

Many non-tenure-track faculty positions, primarily focused on teaching (80%) and service (20%), lack a research component, which may raise the question: Why engage in research if it's not required? This work addresses that question and offers guidance on pursuing educational research. It also identifies the benefits for teaching-focused faculty, provides examples of educational research projects, suggests ways to use the classroom to inspire research projects, and outlines potential funding opportunities to support educational research. As promotion for teaching-track faculty typically depends on teaching effectiveness as defined and assessed by each institution, engaging in educational research can support career advancement by fostering the exchange of best teaching practices.

FOUNDATIONS FROM THE LITERATURE

Faculty positions with teaching-focused roles—such as teaching professors and professors of practice—have been increasing steadily at colleges and universities across the United States. Despite this growth, most teaching faculty primarily focus on instruction and service to their home institutions. Although many teaching faculty recognize the importance of educational research, only a limited number actively engage in it. This research, including engineering education research, is a rigorous and interdisciplinary field that draws on methods from education and the social sciences to explore and address a wide range of issues relevant to teaching and learning [1-3]. Although the reasons that relatively few faculty engage in educational research are not fully understood, it is widely recognized that advancing educational reform through this type of research requires several key supports: meaningful training for interested faculty, incentives to encourage participation, and formal recognition of these efforts in promotion processes.

METHODOLOGY

A mixed methods approach was used to analyze the quantitative and qualitative data regarding faculty opinion on the value of educational research. A survey using a Likert scale (1 for strongly disagree to 5 for strongly agree) for quantitative data and open responses for qualitative data was created and distributed by email to teaching faculty at West Virginia University. A small sample of about 10 faculty was selected, with 7 initial responses for this WIP. The quantitative Likert-scale questions focused on the benefits of educational research to the instructor's teaching, the value of conference attendance, and institutional support. The five open-response questions asked were:

- How and why did you start doing educational research, or why are you interested in starting?
- How can engaging in educational research improve teaching effectiveness among non-tenure-track faculty?

- What are the primary barriers that non-tenure-track faculty face when trying to engage in educational research, and how do you overcome them?
- What are funding opportunities for non-tenure-track faculty interested in educational research?
- Are there any additional comments you would like to make?

RESULTS AND DISCUSSION

Results from the eight (8) Likert scale questions are presented in Figure 1, below. The questions relate to the respondent's beliefs on the value of engineering education research. Respondents for this survey were teaching faculty at West Virginia University, an R1 land-grant university in the mid-Atlantic region. Most of the respondents also already conduct engineering education research. Options for each of the questions ranged from Strongly Disagree to Strongly Agree.

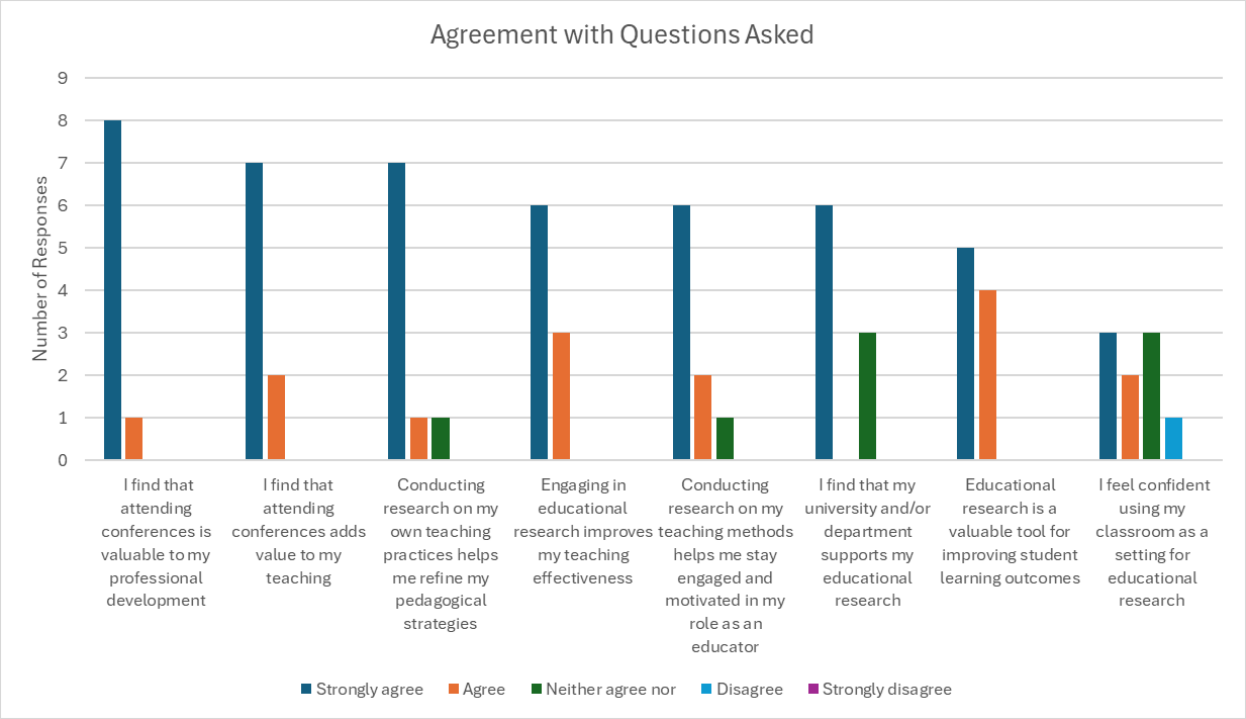

Figure 1: Agreement with Questions Asked

The results show strong agreement with most questions. Most faculty responding to the questionnaire strongly agreed that educational research not only improved their teaching effectiveness but also refined their pedagogical strategies and improved student learning outcomes. The least amount of agreement related to confidence in using the respondent's classroom as a setting for educational research. Faculty indicated that they valued conference attendance as professional development that adds value to their teaching. Some variation was evident in the support each faculty felt about the support their university or department provided for their educational research.

In the open-response questions, respondents indicated that educational research enhances teaching and professional development for non-tenure-track educators. Motivations include improving teaching, fostering collaboration, and advancing promotion opportunities. Illustrative comments include:

- *"Research can change the way instructors think about presenting material to students."*
- *"Educational research offers a framework to better understand students' behaviors and learning characteristics in the classroom."*
- *"The research informs my teaching. It helps me understand how my students learn and how I can be a more effective instructor."*

Reported challenges include time constraints, funding, and administrative support. Funding sources cited include the NSF, the Dean's office, and other entities. Despite challenges, respondents found the outcomes worthwhile. Some key representative responses are quoted below:

- *"Engaging with peers outside of WVU has allowed me to build valuable connections. These relationships have supported my pursuit of promotion, helped me connect with other researchers and the NSF, and expanded my understanding of available funding mechanisms for educational research."*
- *"I enjoy conducting educational research, as it has expanded my professional network and made me a more effective teacher."*
- *"By becoming involved in STEM education research, I have had multiple opportunities to present my work at conferences, met some amazing and talented faculty from other institutions, and learned from them. I have become a better instructor and have contacts/colleagues across the country with whom I can collaborate or ask for help if I have questions or need advice on specific teaching situations."*

CONCLUSIONS AND FUTURE WORK

These initial findings show that respondents value educational research and its effect on teaching effectiveness, although some find it challenging to incorporate methods into their classrooms. The authors intend to expand this work by including more responses from non-tenure-track faculty at this and other institutions. At the conference, the authors also intend to collect more responses from the faculty in attendance. Additional work is planned to provide more examples of how instructors implement new concepts in the classroom and how faculty benefit financially and professionally.

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