Institutional, Disciplinary, and Professional Service — Candidate's Statement

My service is oriented around opening up educational research. To that end, I have focused on service to my disciplines and profession, though I have also contributed appreciable service to my institution. As I discuss each of these, I highlight how I have worked to open up educational research. In the conclusion, I discuss how I plan to expand on these efforts in the future.

Service to my Profession. My service to my profession is anchored in working with science teachers to directly share advances in teaching methods. To this end, I have been a regular presenter at Knox County Schools District Learning Days, at which I have shared strategies and tools with teachers to engage their students in the science and engineering practices that are at the center of science education improvement efforts. These professional development presentations draw on my (Rosenberg et al., 2022) and others' research to address the problems teachers face: the expense and time it takes to learn new tools and the need to try new teaching methods.

In addition to developing opportunities for science teachers to participate in professional development related to teaching methods, I have also carried out professional service by providing workshops on research methods, especially those related to educational data science. To support educational data analysts, researchers, and others within the wider educational community to use data science methods in their work, I have carried out workshops focused on using the open-source and freely-available statistical software and programming language R at local (KnoxData), national (e.g., the American Educational Research Association), and international (the Machine Learning and Computer-Based Text Analysis Conference in Germany), events, some with notable reach. One of the two workshops that I carried out that was hosted by the American Educational Research Association was attended on Zoom by 926 individuals from around the world. For all the workshops I have carried out, I made an effort to share the materials in an accessible, open manner so participants and others unable to participate can locate and use them after the workshop concludes.

A final way I have served my profession is by working with students. I have worked as a mentor through the Tennessee Promise scholarship with five high school seniors by sharing support and providing encouragement as they considered trade school or community or a four-year college. I have also served as a mentor to a student interested in pursuing a career in educational data science through the Kitamba organization's Diversity in Learning Analytics and Leadership program.

Service to my Discipline. My service to my profession has primarily involved serving as a referee (in one case, a special section editor) for journal articles and grant proposals. Following my scholarship in educational data science, I am serving as an Editorial Review Board member for *Review of Educational Research,* the educational research journal with the highest citation impact according to Scopus and Journal Citation Reports. I also served a three-year term as an Editorial Review Board member for the *Journal of Research in Science Teaching,* the journal sponsored by the largest science education research association (the National Association for Research in Science Teaching) and one of the two journals in science education research with the highest citation impact. I have made an effort to open the research published in these journals by engaging in discussion with the journal editors about how more articles can be made open-access; the co-editors of the *Journal of Research in Science Teaching* invited me and two others to write a comment on how science education research can be made more open (Kessler et al., 2021). Lastly, in relation to service as an Editorial Review Board member, I served as a co-editor for a Special Section of the *British Journal of Educational Technology* on "Data Science Education Across the Disciplines". I have also carried out ad-hoc journal article reviews for journals such as *Educational Researcher* and *Educational Psychologist.*

Regarding serving as a review for grant proposals, I have served on five National Science Foundation panels, including panels for proposals submitted to the *Discovery Research K-12* and *Innovative Technology Experiences for Teachers and Students* programs. In my work on these panels, I have primarily reviewed proposals related to data science in education, but I have also played a small role in making strides to open up funded research by commenting on the open-access publication plans—or their absence in the proposed project plans.

A final way I have served my discipline was through co-chairing Division C, Section 1D (Science) of the American Educational Research Association's American Educational Research Association. In this position, I coordinated the review process—and carried out the process of making acceptance decisions—for around 100 conference proposals in each year of my service.

Service to my Institution. I served on a search committee for two Learning, Design, and Technology tenure-track positions. This search succeeded in hiring two faculty members, both of whom will be moving to the department of Theory and Practice in Teacher Education. In addition to serving on this search committee, I was highly active in the recruitment of three other STEM Education faculty members over the past two years. I believe this service is notable because of the potential for these new faculty members to collaborate with established faculty members to develop graduate and undergraduate programs that are nationally competitive.

In addition to being involved in the recruitment of faculty, I have served my institution by advancing research-related initiatives, including coordinating a STEM Education Seminar series (that has an associated course for Ph.D. students), serving as the facilitator of the college-wide quality research and scholarship working group, and organizing a quantitative methods working group. Another way I support research is by serving as the Departmental Review Committee member (focused on quantitative and mixed methods studies) for the University's Institutional Review Board. Finally, I am serving a two-year term as the college representative for the University's Data Science Faculty Committee, a group of faculty overseeing the creation of an interdisciplinary undergraduate major and minor in data science.

Conclusion. I have connected my service with my scholarship by writing publications in an open manner. For instance, I co-authored a publication with a local science teacher for *The Science Teacher* (Rosenberg et al., 2020) on using complex scientific data with students; to ensure that both teachers who were a member of the National Science Teachers Association and those who were not could access it, I shared this article as a pre-print (a version of the article to which I retained the copyright). I also co-authored *Data Science in Education Using R* (Estrellado et al., 2020). Like for other publications, I took steps to make this work accessible, in this case by negotiating with the publisher to allow my co-authors and me to publish an open, web-based version of the book. Since January 2020, this version has been accessed more than 117,000 times. In a different category of sharing in an open way, I developed the *tidyLPA* package (add-on) for R; according to Google Scholar, this package has been referenced in more than 340 publications (and cited in more than 200).

In summary, I have oriented my service work around opening up educational research, but in some respects, my service was oriented toward another aim: developing legitimacy in my profession, discipline, and institution. In the future, I plan to expand on these efforts by taking on a leadership role related to high-impact, open-access publishing in the disciplines in which I work. I also plan to expand my workshop and outreach activities by partnering with organizations such as Knox County Schools and the Society for Learning Analytics Research to develop regular, sustained, widely-accessible professional learning offerings.

References

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