Lessons Learned doing Secondary Data Analysis in Engineering Education Research (EER)

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Introduction

Project Goals
This project has drawn together a team of researchers to explore ways to overcome obstacles for conducting secondary data analysis (SDA) in engineering education research (EER).

The project aims included:
- Sharing data both informally and formally
- Putting datasets in the public domain
- Creating combined datasets
- Performing secondary analyses of both qualitative and quantitative data
- Publishing and disseminating these analyses
- Securing funding to support this work
- Valuing and validating this work within the field

Year 1: Generative Workshops
- Workshop 1: Exploring SDA
- Workshop 2: Generation of Potential Projects
- Workshop 3: Test Project Launch

Year 2: Dissemination and Reflection
- Virtual Gathering – September 2022: Interim reports from project teams
- In-person Writing Retreat – January 2023: Synthesizing individual and collective findings; writing for dissemination
- Wrap-up – May 2023: Lessons learned, next steps

NSF EEC Grantees Conference Workshop Discussion

Key Issues and Questions that Surfaced:
- Working with vulnerable populations – what is our duty to participants? What does it mean to “do no harm”? We were able to share the approaches we used in Mini-project 2.
- Data quality – Could this create vulnerability for the new researchers who had collected these original data?
- De-identification of data – How and by who should de-identification be conducted?
- Familiarity with context – What happens if researchers not familiar with the context of your project do things with the data that you don’t agree with? Secondary researchers may not have familiarity with the context.
- Publishing SDA – Participants felt that journal reviewers do not seem to like secondary data analysis and this may not be a popular choice for Ph.D. dissertations.

These challenges are common to qualitative data; continued work & discussion will be needed.

Acknowledgements

Founding
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Notes
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References

Project 1: SDA as a Mechanism for New Insights and Future Researcher Preparation

Goals:
- Explore the potential of SDA for training of newer researchers to the field
- Anticipated benefit: An unexpected benefit for the undergraduate researchers, who derived personal as well as professional growth from conducting this work.

Key Findings:
- Research ethics should be at the forefront of any SDA work
- The projects we worked with were not initially created for SDA and required significant IRB negotiations
- In the planning stages, researchers could consider whether the data could and should be available for SDA
- Defining scope and documentation
- Participant consent of initial and secondary data usage

Project 2: Diné Sovereignty

Goals:
- Conduct SDA on a dataset that had involved the participation of marginalized populations, in this case American Indian engineers
- Anticipated benefit: This project offers significant guidelines for conducting SDA with marginalized populations, and engages deeply with emerging ethical questions, such as those involved when choosing to return to participants for further consent. The research design of the SDA project was presented at the American Indian Science and Engineering Society (AISES) National Conference [2]. The importance of positionality of the researchers is further explored in [3].

Key Findings:
- De-identification of data – How and by who should de-identification be conducted?
- Familiarity with context – What happens if researchers not familiar with the context of your project do things with the data that you don’t agree with? Secondary researchers may not have familiarity with the context.
- Publishing SDA – Participants felt that journal reviewers do not seem to like secondary data analysis and this may not be a popular choice for Ph.D. dissertations.

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Conclusion

SDA can be useful approach to generate new insights and honor the efforts of the participants who gave of their time for the original data.

With careful use, SDA has strong potential for strengthening EER capacity and the quality of our work.