

Portfolio 1 Knowledge Discussion Essay

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EDUC 800, Ways of Knowing, was my introduction into the mindset of academic researchers and the importance of the historical roots of my field. I find that I continually think back to this course and my experience in it as I move through my coursework. In developing my paper on [Intuition in Mathematics](#) I was able to focus closely on one aspect of mathematical thinking and practice and explore how the understanding of the experience of math practitioners has changed over time. Developing my major papers for EDCI 855, Mathematics Education Research, on [trigonometry](#) and [the impact of digital technologies](#) on teaching and learning; and my paper on [geometry](#) for EDCI 856, Mathematics Education Curriculum Design, allowed me for the first time to probe the historical roots of research on mathematical *educators* practice and the field of mathematics teaching and learning. I found that I gained valuable insights into current research trends as I read literature from and about past research and practices. For this reason I purposely chose a text from the 1960s along with more current texts to analyze for my EDCI 856 [empirical study of textbooks](#) so that I could investigate differences in curriculum materials both philosophically and over time.

I used quantitative methods to analyse my data in the EDCI 856 empirical study. Of the work that I have completed, this was only the second that employed quantitative methods outside of the analyses ([factorial ANOVA/ANCOVA](#), [ANOVA](#)) required for EDRS 811, Quantitative Methods in Educational Research. Though I employed quantitative methods in the early [quantitative proposal](#) I developed for EDRS 810, I did not understand much yet and it shows. The other quantitative study that I participated in was the development of a [Perceptions of](#)

[Mathematics Relevance Survey](#) for EDRS 797, Intro to Measurement and Survey Development.

Our team's struggle to obtain an adequately large sample taught me that the exacting language practiced in EDRS 811 must be supplemented with contextual information to fully convey an accurate assessment of research findings.

Though our team used quantitative methods to analyse the responses to the EDRS 797 survey, we used qualitative methods to develop content validity including interviews with experts to determine suitability of survey items and follow-up interviews with members of the target population to gain insight into their perceptions of survey questions.

I completed EDRS 812, Qualitative Methods in Educational Research and EDCI 855, Mathematics Education Research, in the same semester. With permission from both instructors I used the same qualitative data set for studies in each course. I initially conducted clinical interviews for my EDRS 812 [study](#) to compare the processes students of different ages used to solve a set of fractional and proportion problems. Starting with this data set, I used follow-up interviews to more fully explore the affective responses of the students in my [qualitative study](#) for EDRS 812.

I am learning that in spite of the parameters and conditions spelled out in the syllabus of each course and the traditions that constrain education research design, I have been free to explore topics of my choosing. This has allowed me to begin my investigations into the practices and implications of technology in mathematics education. I explored both historical and more current practices in the [Position Paper](#) for EDCI 855, the [Research Synthesis and Annotated Bibliography](#) for EDCI 857, Preparation and Professional Development of Mathematics Teachers, and the [Adaptive Learning Briefing Presentation](#) for EDIT 895, Emerging Trends in

Learning Technology. And I was able to develop possible future applications for technology in mathematics education in the [Professional Development Proposal](#) for EDCI 857 and the [Business Model Proposal](#) for EDIT 895.

While learning about historical practice and methods has been invaluable to my current understanding of mathematics education research, I think that the deliberative pace of past research approaches may not give us adequate insight into current learning environments that are being impacted by emerging technologies. I look forward to exploring methods of more rapid research design possibilities in my future coursework.