

EDUC 897: Independent Study Proposal: Instruction for

EDCI 552 “Mathematics Methods for the Elementary Classroom” and Research on Student

Perceptions of Mobile Learning Apps

This proposal describes the independent study course I would like to participate in during the Fall 2018 semester to instruct one section of EDCI 552: Mathematics Methods for the Elementary Classroom and to conduct research on student perceptions of mobile learning apps. In the Spring 2018 semester I conducted an ethnographic study as an advanced internship (EDUC 994) of prospective preservice teachers in their mathematics content course for elementary school teachers. The purpose of the ethnographic study was to gain an understanding of this population to inform the design of a mobile phone application to support their mathematics learning. The purpose of this independent study will be to expand my understanding of preservice teachers’ learning needs as they make their way through their professional teacher training in mathematics education.

Research Goals

I am currently entering my fourth year as a PhD student in the Mathematics Education Leadership program. Prior to entering the program my experience with mathematics education was as a middle school mathematics teacher and as a high school and undergraduate mathematics tutor. I had no prior experience working in elementary education as either a teacher or an instructor of teachers. During the course of the ethnographic study of prospective preservice teachers in the Math 271 Math for Elementary School Teachers course I was able to observe and document the learning processes of undergraduate students who intend to become elementary school teachers in the mathematics content course. I emerged from the experience both more

compassionate toward these students and curious about how these future teachers would apply the knowledge gained in the content course in their methods course in mathematics. Gathering data for ethnography allowed me to see in practice the beginnings of the process that turns undergraduates into teachers.

The mathematics knowledge that teachers need to successfully teach mathematics to students has been described as two major types of knowledge ([Hill, Ball, & Schilling, 2004](#); Shulman, 1986): content knowledge, the facts, procedures, and relationships within mathematics; and pedagogical content knowledge, the specific forms of content knowledge related to how mathematics is taught. Collecting data for the ethnography allowed me to observe only the development of content knowledge in prospective preservice elementary teachers. This proposed independent study instructing EDCI 552: Mathematics Methods for the Elementary Classroom will allow me to participate in the development of the pedagogical content knowledge of preservice teachers and enrich my understanding of their learning processes.

Though I have studied the literature about the pedagogical content knowledge acquisition of preservice teachers in my specialized mathematics education courses (EDCI 855, EDCI 856, EDCI 857, EDCI 858, and EDUC 896) I have a lack of practical understanding of how these skills are developed in preservice and novice teachers. This independent study will give me the opportunity to work directly with these students as they develop their understanding and their skill. I hope and anticipate that this experience will strengthen and enrich my work as an educator and as a researcher in mathematics education.

There is a lack of research about the use of mobile phones for learning in current college students. Working with these students will allow me both to observe and to discuss this topic with the students as work with them.

Schedule with Instructor and Evaluation Procedures

The activities and duties of this independent study will include working closely with Dr. Suh to prepare and present lessons for each session. Dr. Suh and I will meet weekly to reflect on previous class sessions, discuss class readings, and to plan for the upcoming classes. Additionally, I will support to Dr. Suh as needed to provide feedback on student assignments and projects.

Evaluation of my work will be conducted by Dr Suh through ongoing feedback as the course and the research progresses.

Research Design:

Two questions will be addressed in this research:

- How do these students apply the mathematics learned in their content course to the development of their pedagogical understanding and skills?
- Do these students use mobile phones as learning tools? In what way

In my previous ethnographic study I was an observer only, documenting students comments, interactions, and responses in the course. This environment will allow me to conduct research as a participant observer. I will document my experience throughout the semester by regularly making field notes and memoing my reflections on both the experience of teaching this course and students responses to the coursework. I found that reflection helped me to both place what I observed with my existing knowledge of educational constructs and expand my

understanding of how those concepts apply to a living classroom. The content of the observations, reflections, and memos will be coded and analysed for emerging patterns. In addition, semi-structured interviews will be conducted with students regarding the research questions.

References

- [Hill, H.C., Ball, D.L., & Schilling, S.G. \(2004\)](#). Developing measures of teachers' mathematics knowledge for teaching. *Elementary School Journal*, 105(1), 11-30.
- [Shulman, L. S. \(1986\)](#). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14.