Research into the Development of Mathematical Ideas  
Graduate School, New Brunswick  
Rutgers University, College Avenue Campus  
Spring 2005  
16:300:563  
Mondays, 4:50 to 7:30  
GSE, Room 211

Instructor: Arthur B. Powell  
Associate Professor, Department of Urban Education, Newark Campus  
973.353.3530 (office), abpowell@andromeda.rutgers.edu  
Associate Director, Robert B. Davis Institute for Learning, GSE  
eCompanion online course supplement: http://rutgersonline.net

I. Overview

The purpose of this course is to enable you to develop further your understanding and experience in conducting video-facilitated fieldstudy in mathematics education. Fieldstudy is a research genre in the social sciences that is also known, among other labels, as naturalistic research, ethnography, or qualitative study. A specific arena in which to hone your capacity to do ethnography will be investigating the development of students’ mathematical ideas and reasoning. This is a line of research within the Robert B. Davis Institute for Learning (RBDIL) of the Graduate School of Education, Rutgers University, that enjoys international recognition. Over the years, through many fieldstudies, an ethnographic methodology for the use of videodata has evolved within the RBDIL. It has been documented and is receiving increased attention among researchers in mathematics education. You will study documents—dissertations and journal articles—of video-facilitated research that have emerged from the work of the RBDIL. You will also read and summarize documents that report on video-facilitated fieldstudy conducted by investigators from other institutions.

Besides studying the ethnographic work of investigators in mathematics education, you will engage two of three components of fieldstudy. In general, ethnographic investigations contain three non-linear, overlapping, and interweaving components: (1) gathering or collecting and assembling data, (2) focusing or asking questions about these data, and (3) analyzing or developing and presenting evidence-based interpretations of these data. Despite having to gather data before asking questions and analyzing them, it is also the case that researchers unavoidably pose questions about and interpret their data as they gather them. In this course, you will study and implement the second and third components of conducting fieldstudy.
II. Requirements

1. Successful completion of Human Subjects Certification Program of the Institutional Review Board for the Protection of Human Subjects in Research. This can be done either online http://orsp.rutgers.edu/HSCPLetter.asp or equivalently attending both parts of the Certification Film in its entirety. The Film consists of two videotapes, each approximately an hour and 15 minutes in length. The first videotape, “Basics of Human Subjects Research”, provides a general overview of the regulations and ethical considerations that must be addressed for such research. The second videotape, “Advanced Topics”, covers regulatory and ethical guidance for vulnerable research populations, such as pregnant women and fetuses, children, and prisoners.

2. Complete all readings and associated assignments.

3. Initiate and contribute to threaded discussions at the course’s eCompanion site <http://rutgersonline.net>.

4. Read, summarize, and report on three doctoral dissertations that involve the use of video-facilitated field study. The specific format of the dissertation summary and report of method will be detailed in class. The report will focus on methodological issues related to the investigator’s use of videorecordings for gathering, focusing, and analyzing data. Dissertations are available at the following Web site: http://wwwlib.umi.com/dissertations/. You will also have access to many dissertations through our course Web site: http://rutgersonline.net.

5. Code and analyze video-portfolio data. You will have access to video-portfolio data from a current, longitudinal project, “Research on Informal Mathematical Learning” (IML) of the RBDIL, which is supported by a research grant from the National Science Foundation (REC-0309062).

6. Write a paper detailing your focusing and analyzing processes and the results of your analysis of video-portfolio data.

Required Readings


**Bibliography of Video-Facilitated Dissertation**

*From Rutgers University*


From other universities


Comparing Units of Analyses & Issues of Reform-Oriented Teaching and Equity


Articles Involving Video-Facilitated Research in Mathematics Education


Methodology Bibliography


