Course Goals

This course will look at a diverse set of issues related to visual representation and learning. We will look at methods for capturing processing of teaching and learning ranging from classroom video methods to the use of mobile eye-tracking methods to record the experience of teachers and learners. We will also look at what's involved with learning from these techniques, as well as what they can tell us about the cognitive processes that underlie teaching and learning.

Students will gain hands-on experience working with a range of methods for capturing and analyzing teaching and learning processes. I hope that they will emerge with a familiarity with different ways of using these increasingly prevalent techniques, as well as how to incorporate them into their own research.

No previous experience with either video or eye-tracking methods is assumed, but contact Kevin Miller (kevinmil@umich.edu) if you have any questions about this seminar.

Requirements

This is a discussion-oriented seminar, and everyone will be expected to read the articles assigned before the class period and to actively participate in class discussion. The seminar will also include some brief lectures and student presentations.
**Reaction Papers** (30% of grade). In order to facilitate discussion, students should turn in brief (one page) reactions (not limited to, but perhaps including summaries) of the readings as well as three or more questions to discuss in class. The questions can be anything from definitional questions (What is self-regulation?) to deep and more involved ("For the following reasons, I do not agree with the authors’ argument that X. Do the other participants concur?). The reactions and questions should be posted to the CTools site by 9 p.m. Monday before the weekly meeting. They should be posted on the course CTools site under the “assignment” feature – there will be one for each week.

"Get out of jail free card" – If you get busy with other work, you may skip one (and only one) reaction paper without impact on your course grade, but please still come to class.

**Research Proposal** (50% of grade). You will propose a study using either video or eye tracking techniques. You will then write a research proposal, with an introduction, hypothesis, and describe a study that would address this question, as well as the kind of data you might collect and the significance of the study.

**Class Presentations.** (20% of grade). You will give an initial presentation on the topic of your project and a final presentation of your proposal at the last class meeting.
1/7. Preschool in three cultures - Round 1 (online assignment)


(Chapter 1: Introduction & 2: Komatsudani: A Japanese Preschool)

(Watch video selections online)

1/14. Preschool in three cultures - Round 2


(Watch video selections online)


(Chapter 1: Introduction & 2: Komatsudani: A Japanese Preschool)

(Watch video selections online)

1/21. Foundations of looking - from the eyes up


London: Springer.


1/28 Classroom Processes & the TIMSS Video Project


2/4. The Learner’s Perspective Study


Clarke, D.J. Xu, Li Hua, & Wan May Ee Vivien (2013). Students speaking mathematics: practices and consequences for mathematics classrooms in different countries, in Kaur, Berinderjeet; Anthony, Glenda; Ohtani, Minoru and Clarke, David (eds), Student voice in mathematics classrooms around the world, pp. 33-52, Sense Publishers, Rotterdam, Netherlands

2/11. Introduction to eye tracking methods


2/18. Reading


2/25 2 million minute project


3/11 7 up


3/18. Expert looking


3/25 Learning from video and eye tracking materials


### 4/1. Mobile & dual eyetracking


### 4/8. Virtual reality & the future


### 4/15. Presentation Of Research Proposals