New tools for digital video analysis: Examining the development of K-6 preservice teachers’ science instruction

Abstract:
While many researchers acknowledge the centrality of video data when examining classroom practice, limitations in video analysis software have created barriers to exploring the full potential of video artifacts in research on teacher education. In this brief paper session, we will report on how a cutting edge video analysis tool can enhance research, and provide an example of the possible implications for teacher education programs. The presentation aims to accomplish the following goals: 1) demonstrate StudioCode™ video analysis software, which can support research in powerful ways; 2) provide an example of video analysis using StudioCode™ in a science methods course where research informs practice and vice versa; 3) and provide an opportunity for discussion of the benefits and limitations of using video analysis in teacher education.

Brief Paper:
Video analysis in teacher education has evolved over the years to sophisticated programs that allow for research enhancement. However, there are still many limitations in these programs and in many cases video becomes a contextual or quantitative tool rather than a powerful qualitative resource. Thus, video data in teacher education continues to be underused and unexplored. In general, there are limitations to video data analysis since available software typically intends for frame-by-frame analysis that is effective for noticing behaviors, but provides difficulty in coding and sequencing events, among other things. As a result, the current brief paper proposal reports on how a cutting edge video analysis tool can enhance the depth of research and provides an example of the possible implications in teacher education programs. The presentation aims to accomplish the following goals: 1) demonstrate StudioCode™, video analysis software, which can support research in powerful ways; 2) provide an example of video analysis using StudioCode™ in a science methods course where research informs practice and vice versa; 3) and provide an opportunity for discussion of the benefits and limitations of using video analysis in teacher education.

StudioCode™ is video analysis software developed from a parent product with roots in the sports industry. However, it has been modified for use in higher education contexts, thereby providing outstanding opportunities to use video data for research purposes. The software links digital video files to a timeline, which can then be coded for instances specified by the researcher. Search tools and analysis matrices make it possible to retrieve all instances of particular codes, or relationships among them, in stand alone Quicktime movies that are annotated and organized into chapters by instance. Additional features, such as the transcription tool, adds value for educational researchers. The software also allows for live video capture and coding.

Figure 1 is an example of a video timeline that has been coded. Each line can be selected to compile a video of all instances of that code, or combinations of instances can be selected across codes.
Example in Elementary Science Teacher Education
Our research centers on understanding the development of preservice elementary teachers’ knowledge and practices for science teaching. The education majors with whom we work, which are referred to as interns in this paper, are enrolled in a year-long internship in a professional development school (PDS) partnership between a large northeastern university and the local school district. The science methods course that interns take was co-developed by practicing teachers and university faculty and is taught onsite in a PDS school. The course is framed around teaching school science as argument (Author, 2005; NRC, 2007), which places emphasis on supporting science learning in ways that reflect the discourse and cultural practices of science (Author, 2007). Interns report that learning to teach science in this way is very different from how they experienced learning science in their K-14 school experience.

We have been using StudioCode™ to assist with monitoring the development of interns’ science teaching practices over time, across their internship year and into their first years of teaching. In this brief paper session, we will share some of the salient findings of research on the development of preservice teachers’ science teaching and demonstrate how this kind of research has been enhanced by powerful video analysis techniques.

References
Author (2007)
Author (2005)