Using the Video Mosaic Repository for Creating Multimedia Artifacts with the VMCAgentinal

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Abstract
The Video Mosaic Collaborative (VMC) is a collaboration portal that integrates the Robert B. Davis Institute for Learning Video Collection, that captures mathematics learning experiences across a range of grades, schools and a time span of 20+ years, with a collaboration platform and tools designed to transform mathematics research, teaching and learning. The VMC combines research into teaching and learning process with videos and tools that enable teachers, teacher educators and researchers to analyze and use the videos to make new discoveries in math education and the learning sciences. The VMC provides opportunities for teaching and learning through using the VMCanalytic tool to create multimedia artifacts. This poster will illustrate the design of the VMCanalytic technology and the preliminary analysis of defining a framework to study the multimedia artifacts created.

VMCAnalytic Tool

The VMCanalytic tool (available at http://videomosaic.org) allows users to edit and annotate videos. The tool has the ability to provide a new means for engaging learners with video as collaborative project work. It also provides new and powerful opportunities for learners to create artifacts that are tools to think with. Participants in this study used the tool to explore ideas in mathematics.

Methodology

- Data collected for 63 participants across 7 courses.
- VMCAgentinals were graded by two coders (IRR=.89-.88%) on an integer scale from 0 to 3 on two levels: a local individual event level and a global level.
- VMCAgentinal consists of multiple events played one after another. Individual events were graded on the relevance of the event in relation to the VMCAgentinal.
- An event consists of a section of video with accompanying video image text. High scoring events included text that explained how the video lent support to overall description.
- On the global level VMCAgentinals were rated on:
  - Overall description - we considered their overall argument and how well they supported it with the literature.
  - How well the events connecting meaningfully to each other - higher scores if the events were in a logical sequence that built on each other.
  - Are the claims made being backed with evidence - higher scores for VMCAgentinals that backed all the claims in overall description with evidence.
  - Overall clarity and coherence - how well the author was clear about their VMCAgentinal purpose and expressed themselves coherently.
- Mathematical and learning sciences depth - how well their VMCAgentinal built on the literature in the learning science and mathematics education domain.

Results

- "Just knowing that this is here (the VMCAgentinal tool), I think that it is important for someone like me who currently does not have the opportunity to do research in an elementary classroom, but I want to do research related to that. So to have the opportunity to see an actual classroom is really helpful. The ability to pause, rewind, and re-watch the videos is really useful. When I would watch a video for the 3rd or 4th time I would notice things I did not see the first couple of times." - Author of the VMCAgentinal

Example VMCAgentinal

"The process of creating the analytic while being interviewed was interesting. I found that the opportunity to think aloud and provide justifications for my selections actually helped me think deeper about those selections. The process of justifying to another person coaxed me into articulating my own reasoning in a more elaborated way and forced me to take a little closer look at some of the theoretical framework I was bringing to bear on the problem." - Ph.D. student in Learning Sciences

Feedback from VMCAgentinal Users

"For the construction of the analytics, there were at least two important components that I recognized during the process. The first is that if you go into the process with the intent to have a particular focus for the analytic, it can develop into another where you critically search the media for points that validate that focus and attest to it. With analytics, it is almost critical to remember that many perspectives exist. No two people will look at the same data in the same manner or to the same degree - this is a fact that translates similarly to teaching students, as we learn that no two students are built or think the same way - we have to account for their individuality and unique styles of mathematical reasoning." - Undergraduate student pursuing a degree in Secondary Mathematics Education

Discussion

The VMCAgentinal shows promise of being a useful tool in a system of formative and summative assessment. It makes thinking visible and open for discussion and revision. However, equally important is the kinds of structures and scaffolds provided by the instructor as the case study shows. The rubric provides clear expectations and a roadmap for students in the creation of the multimedia artifact. For instructors, students evolving understanding is transparent and provides opportunities to see student’s intellectual journey in thinking critically about children’s mathematical thinking.

Related Publications


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