Dissecting Video Discussions and Coordination Strategies

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Abstract: Video technology has become one of the most powerful instructional techniques in modern E-learning. In this paper, we report a classroom study on using online video discussions with various coordination strategies. We not only reconfirmed that video-mediated conversations with coordination strategies were effective and aligned with the literature, but also investigated the pattern differences of the coordination strategies on students' engagement with online video discussions.

Introduction

The use of web based video technologies in education has increased dramatically in the past decade. These applications are being adopted in an increasing number of educational contexts, including traditional face-to-face classes, teacher blogs, school websites and distance learning courses. Benefits of using web-based video technologies have been reported. They range from a) the opportunity to manipulate and interpret principles and processes situated in the video b) linking content and concepts to everyday experience c) self evaluating, modifying, testing and revising one's own knowledge, d) learning from errors, evolving deep understanding from initially flawed beliefs (Hannafin, et al., 1999) and e) increasing student motivation (Koumi, 2006). One of the biggest challenges in current online web-based video publishing and commenting tools is encouraging persistent collaboration and active knowledge construction in distributed environments (Soller, et al., 2005). However, most online video collaboration tools only support posting comments on a discussion board that reference the entire video instead of specific points within the video. This makes it difficult to understand other users' comments due to the absence of context in the video and/or the conversation thread. Moreover, the task of facilitation in these applications is difficult because 1) there is no facilitator, 2) the discussions are open to everyone, and 3) there are no access/privacy controls to build a discussion for a particular group of people. In many cases the purposes of the discussions and the expectations of the participants are not clear. This makes these applications inappropriate for having a quality discussion, giving rise to inappropriate comments, unhealthy interactions and uncontrolled conflicts in the community.

In this work, we study an interactive, collaborative online video discussion tool called Vialogues. Vialogues is a video discussion tool that leverages videos for learning by adding group interaction as part of the viewing experience. Users can create "Vialogues", which are focused discussion environments that include comments time-coded to different parts of the video. The design and case studies have been presented in (Agarwala et al., 2012). In this paper, we design a semester long study to explore the effects of various coordination strategies on students' discussion/participation patterns.

Vialogues

Vialogues allows users to comment directly on specific portions of a video, rather than posting comments in discussion board fashion which reference the entire video. The video and threaded discussions are organized on the left and right side of the screen respectively (Figure 1). All the comments are time coded to a specific point in the video. They are mutually referenced and represented in the visualization, which addresses the problem in many existing video-discussion tools where users are often unable to understand others' comments due to the absence of context in the video and/or conversation threads. Vialogues provides a set of pedagogical tools to assist teachers in flexibly designing and monitoring learning activities as well as receiving feedback from students based on instructional needs. Teachers can either ask survey questions, or devise poll questions at any given moment in the video. Vialogues are also embedded with privacy control for moderators to effectively control the quality of their discussion or tailor a discussion for an intended group of students. Vialogues are also embeddable for external systems (i.e. personal blogs, learning management systems etc). It increases flexibility in diverse settings to adapt to the relevant social, cultural, and pedagogical contexts.

Figure 1. Vialogues, http://vialogues.com

Evaluation & Discussions

To explore the effects of various coordination strategies on students' discussion/participation patterns, we set up 4 coordination strategies used throughout the semester in a graduate course entitled "Sociology of Online Learning". For each class meeting, a set of readings and a Vialogue are assigned in the syllabus. Students are advised to read the material in advance and encouraged to watch and discuss it on the assigned Vialogues. The 4 coordination strategies are: 1) Natural discussion: the instructor does not intervene in the student discussions. 2) Pre-structured discussion: instructor provides guidelines for the discussion but does not intervene in the discussion process. This is done by having the instructor pre-plant the questions at different points of the video. 3) Coordinated discussion: the discussion is not pre-structured but the instructor coordinates student discussions by responding to students' questions about the video, providing extended resources based on the discussions, further prompting students to think and engage in the material. 4) Pre-structured and coordinated discussion (Mixed): the discussion is both pre-structured and coordinated by the instructor. Based on (Salmon, 2000), we hypothesize that coordinated and mixed conditions would achieve better learning effects, measured in terms of discussion quality and quantity.

We found that with coordination strategies, students were more engaged in the video discussions. Students elaborated more for all three coordinated discussion strategies. This was as predicted, as the literature shows that providing moderation during collaboration encourages more contribution. Our major goal in this study is to understand how the coordination strategies work by analyzing the patterns of differences of students' engagement. For 3) coordinated & 4) mixed conditions, the discussion lifetime was longer than the weekly meeting of the class, regardless of the length of the video. On the other hand, discussions using 1) natural & 2) pre-structured coordination happened only during the week of the class in which the material was assigned. For 2) pre-structured discussions, the coordination still had influence to some extent. However, the whole discussion was not coordinated in an *engaging* way. Therefore, it did not yield a continuum discussion over time. Is a longer discussion better or shorter one is better? We have to evaluate the content of the discussions.

To assess the discussion quality, we applied a linguistic text analysis package, LIWC (Pennebaker et al., 2007), to gauge students' emotions, cognition and structural components based on the categories of words they used. We only considered the major psychometric categories and discarded the linguistic & personal processes. We particularly focused on the *social, affective* and *cognitive* processes. The results showed that 4) mixed coordination provided the most *social* discussion environment, while the other coordination strategies did not differ from no strategies at all. It confirmed that the mixed strategy (pre-structured and coordinated strategies combined) created the highest engagement. For *affective* processes, we found that the 4) pre-structured strategy yielded a more neutral discussion. Students showed less positive and negative emotions. The possible explanations could be the discussions were explicitly structured to begin with, so students were focused from the beginning. On the other hand, the rest of the conditions provide more room for students to explore in the discussions. For *cognitive* processes, coordination strategies 2), 3), and 4) yielded similar results to 1) a natural discussion. Thus, regardless the coordination strategy, the time-coded discussions around videos solicited a substantial amount of insight around the discussion topics.

Based on these preliminary results, in addition to reconfirming that video discussions could be successfully facilitated by appropriate moderation, the findings also revealed that a pre-structured strategy was effective for short-term focused setting. A mixed strategy was effective for long-term social settings. It boosted high social energy among users and contributed to the high engagement in the discussion. In addition, the discussion can be carried over past the assigned week of the material. Finally, a coordinated strategy successfully carried the discussion over than a regular course week. However, it did not appear to be either social or particularly focused in our observation.

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