

## TRADITIONAL AND ONLINE STUDENT REACTIONS TO THE VIDEO TUTOR COMPONENT OF MYMATHLAB

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Developmental mathematics students in both traditional and online environments have used the computer-based MyMathLab environment for assistance in learning basic algebra skills. Ten students and three instructors using this environment were observed and interviewed in a qualitative study, the overall purpose of which was to explore learners' experiences in computer-based mathematics learning environments. The literature provides an abundance of quantitative studies addressing the relative effectiveness of computer-based and traditional mathematics learning environments (e.g., Christmann, Badgett, & Lucking, 1997; Ester, 1994; Khalili & Shashaani, 1994); gender differences in these environments (e.g., Light et al., 2000); and implementation strategies that mediate the effectiveness of these environments (e.g., Clariana, 1996). The present study was intended to deepen and enrich researchers' understanding of these quantitative findings and heighten educators' awareness of how students interact with and respond to computer-based learning environments, thereby fostering more effective teaching strategies with computer-assisted mathematics instruction.

One component of MyMathLab is the video tutor, which is a computer-based series of video clips featuring an instructor who explains and demonstrates how to work various exercises in the section being covered. One facet of the present study was to determine students' reactions to the video tutor in particular; these are the findings reported here.

The research goals were best addressed with in-depth descriptions of learner experiences and perceptions, including descriptions of how and why these experiences and perceptions exist. A chief aim of qualitative research is to address questions of "how" and "why" (Yin, 1993). Further, this study was concerned with the process of computer-based instruction rather than merely its end result. The focus of qualitative studies is often the process by which outcomes are achieved rather than the outcomes themselves (Maxwell, 1996). Therefore, a qualitative research design was well suited to explore the nature of learner experiences in computer-based mathematics learning environments.

This case study was conducted in four mathematics classes at a state-supported two-year college in the Southeast. The classes for the case study were two sections each of Elementary Algebra and Intermediate Algebra, which comprise the sequence of developmental mathematics courses at this college. All four classes used the same textbook, Beginning and Intermediate Algebra (Lial & Hornsby, 2000) and the same

courseware, MyMathLab, designed for use with that text. One section of each course (Elementary Algebra and Intermediate Algebra) was taught as an on-line class that did not meet for traditional instruction but relied solely on the textbook and courseware for students to learn the material. One section of each course was taught through traditional in-class instruction with courseware used as an optional supplementary learning tool. Traditional students had access to the same courseware features as did the online students, although traditional instructors did not require any specific online assignments.

Data for this study were gathered through a combination of student interviews, teacher interviews, classroom observations, and observations of students using MyMathLab. Five students were online students (3 women and two men); five students were traditional students who reported using the MyMathLab environment (4 women and 1 man). One instructor taught only a traditional class, another instructor taught only an online class, and a third instructor taught one section of each. All three instructors were women.

All five of the traditional students who used MyMathLab reported using the video tutor regularly; in fact, all five perceived the video tutor as the most valuable feature in the MyMathLab environment and cited the video tutor as the primary reason that they used the software at all. For instance, when explaining the ways that she found the software helpful, one student stated, "There's nothing else. Besides the videos." The favorable attitude toward the video tutor is also exemplified in the following student's quote:

The online video surprised me; I didn't expect it to be someone actually on there, you know, working the problems out or whatever, that really surprised me...People have asked me about [the software] before, and I'm like, "yeah you should check out the man, you know the online video part of it...it goes through all the steps...there's an actual tutor on there."

All five of the online student participants had tried using the video tutor; however, only two of the five continued to use this feature regularly after trying it. The two online students who elected to continue using the video tutor described it as a viable substitute for in-class instruction. One student indicated, "[Video lecture] is a big plus...I feel like it's pretty much the same thing as having the teacher there." The other student expressed a similar sentiment, saying, "The way the software explains it...it's not really much that much different" from a human instructor.

Among the online students who chose not to continue using the video tutor, reasons for the decision varied. One student noted that watching the videos was too time consuming, and she found it both easier and faster to read the book. Another student described the tutor's pace as too slow, and consequently, boring. This student also observed that the examples worked on the video were only the elementary types of problems in the section, rather than examples of the more advanced exercises. This characteristic of the video limited the usefulness of the video and made the time investment to watch the videos less

worthwhile for some students. Finally, one online student indicated that the video tutor seemed “artificial;” she expanded on this impression, saying:

I found it a little bit annoying at first...when you go in there and you look at the guy trying to teach you something, it's like, you know they have that poker face, and it's just like, it's kind of, you don't draw any...it doesn't GET you, you know?

Both online and traditional students explained their perceptions of the advantages of the video tutor. The most common advantages cited were associated with being able to pause, back up, and replay the videos as many times as needed. Although some students referred to this feature primarily as a convenience, others observed that the ability to play and re-play the videos at their own pace resulted in substantially lower levels of pressure than they typically felt in a classroom environment, under the scrutiny of both instructor and classmates. As one student explained:

When you don't understand it, you can just do it again. ... And do it again, and do it again, and do it again, and you're not agitated by anyone saying, “well you should have this,” you know.

In fact, the advantage of pacing oneself with the video worked both ways. Students also noted that they could accelerate the pace of topics they understood readily, whereas in class they might have to wait for the instructor to help students who did not understand yet. Students were happy to avoid this scenario, as one student described:

You know, someone will be asking a question about something else...you understand, but yet still that's valuable time that's ticking, because that person doesn't understand. It might not be you all the time, it's just you know, “man, we have gone over that five times already...”

Another common advantage cited to the video tutor component of the software was the ability to hear the explanation— a feature that other software components did not share. As one student pondered his experience of the video tutor, he finally attributed its usefulness directly to the sound:

I'm more of a...oral learner...because when I hear something and I...there are times when I can learn just by looking at something...but when it comes to mathematics, it's just kind of above me...It's the sound, right. Just hearing it.

Likewise, another student indicated that the combination of seeing and hearing the explanation simultaneously was essential to the video tutor's effectiveness, noting that “If I can see it and hear it at the same time, that really works for me.”

However, attributing the video tutor's usefulness to students' ability to hear explanations did not seem to capture the full story. When asked to compare the video tutor to a hypothetical environment where the student could still hear the explanation and see each step of the problem displayed on the screen without a person present on the video, a number of students indicated they would not find such an environment as helpful as the video tutor. This response suggests that the human presence on the video contributed some value beyond the auditory component. Students confirmed the importance of the human presence in the video tutor; one student indicated that the human in the video was more valuable than simply a sound file in the software, explaining that "it still feels like the teacher is right there." Another student expressed a similar sentiment:

I don't know, I just have this thing about I need to see the person there too. [In] tutorials where the arrow moves from block to block...I find those difficult to follow if there is not a person.

When students were asked how they might improve the video tutor, three primary themes emerged. The first was some students' desire to have the video tutor more fully integrated with the rest of the software, so that when a student struggles with a concept in an online practice problem, the relevant tutorial video would play automatically. It should be noted that the software does offer a study guide based on which problems a student has missed, and the relevant videos are available through that study guide. Thus, this student preference reflects the same propensity among students that instructors find in many learning environments— a desire to have more "hand-held" guidance. It is not clear whether such a software feature would benefit students, as it would involve the students taking a less active role in and less responsibility for their own learning.

The second student suggestion for improvement was for the examples worked in the video tutor to reach a higher level of complexity. Students noted that the material presented in the video tutor only tended to focus on introductory concepts in the section and only the most basic types of exercises were demonstrated. Again, this suggestion may reflect students' reluctance to take more full ownership of the material once it has been introduced and apply it in a context that has not been explicitly shown to them.

Finally, some students observed that the different instructors used in the video tutor made a difference in how helpful they found the feature. Some described certain instructors as easier to understand; others characterized the difference as "easier to listen to". In both instances, students had difficulty articulating why this was the case, but stated a preference for video lectures with some instructors over lectures with others.

Some of the student comments about their experiences and preferences reflect possible gender differences that may merit further study. Among the online students, those who chose to use the video tutor were only the men, whereas those who chose not to use the video tutor were all of the female online participants. It is interesting to note that these female students were willing to take the online class, but all perceived the video tutor as

artificial or too slow. By contrast, the male online students found the video tutor comparable to a human instructor.

Another potential gender difference relates to the importance of a human presence in the video tutor. Several students stated an explicit preference for human presence in the video (rather than only an audio file to explain the material while the video displayed the steps); all of the students who articulated this preference were women. However, all of the male students concluded that an audio file with a visual solution would be a comparable and acceptable alternative to the video tutor featuring a human instructor.

Students' responses to the computer-based video tutor in MyMathLab often varied depending on the individual student. It could be helpful to examine which features appeal to which students and determine what student characteristics are associated with student acceptance of and use of particular software features. Researchers, educators, and courseware developers all have reason to further investigate the results reported here and the potential issues these results represent. The collaboration of these three groups would not only be mutually beneficial, but should benefit future mathematics students as well.

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