

# Educational Mini-Clips in Distance Learning

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## OVERVIEW

It is undeniable that distance learning has grown rapidly over the past five years. With over 12 billion dollars spent on online learning in 1998 (Burgess & Russell, 2003) and a growth rate of 30%-40% per year since then (Harper, Chen, & Yen, 2004; Hurst, 2001; Newman, 2003), it is safe to say that distance education is firmly established in many businesses and universities. One well-established advantage of distance learning is that a student controls the time, pace, and pathway of learning (Burgess & Russell, 2003; Pierrakeas, 2003). This control over learning is very appealing to a user, particularly when customized or just-in-time support is readily available (Harper, Chen, & Yen, 2004). Providing effective, timely support, though, puts considerable strain on instructors and tutors, if they are available (Harper et al., 2004; Levine, 2003; Wallace & Wallace, 2001). It is challenging to provide just-in-time help because delay is inevitable. The use of e-mail or online discussion necessitates a time lag between question and response. Instant messaging systems (IMS) are another option, however, it is cost prohibitive to have instructors and tutors available 24 hours a day, 7 days a week. Furthermore, IMS might be limited in the type of question that could be answered – complex formulas and equations, for example, are difficult to explain using this medium.

One possible strategy that could reduce the time required to address student needs in a distance learning environment is the use of educational mini-clips (EMCs). An EMC is 3-10 minute instructional video of an expert showing how to solve a specific problem in real time. EMCs have video controls enabling a user to easily pause, rewind, and fast forward a clip. More importantly, they are small, easily downloadable, and available at any time. This means if a student is having a problem, he/she can search a database of EMCs to find a model answer. EMCs could also be used to provide administrative and procedural guidance, two of the key areas where students ask for help the most

(Harper et al., 2004). EMCs have also been referred to as screencasts, whiteboard movies, and audiographs.

## THE ROLE OF EDUCATIONAL MINI-CLIPS IN DISTANCE EDUCATION

### Description and Examples of Educational Mini-Clips

As stated earlier, an EMC is a 3-10 minute video of an instructor solving a specific problem. Typically, the clip is similar to watching someone solve and explain a problem on a whiteboard, however, in EMCs you only see the board, not the person. The video controls (e.g., pause, rewind, fast forward) allow the user to determine the pace of learning. EMCs are stored in a shockwave format to reduce size and download time. Ideally, EMCs should be stored in a well-organized database so that users can easily search and find what they need.

Perhaps the best way to understand what EMCs are is to view them (see Appendix A). The examples in Appendix A are based on mathematics, primarily because, currently, this is the leading topic covered by EMCs. However, clips could be created for a variety of subjects and purposes. For example, most science-related subjects, with clearly defined problems, are suitable subject matter for EMCs. In addition, administrative EMCs explaining course outlines, format, design, and assignments can work quite well. In fact, as stated earlier, it appears that a majority of questions for distance learning are based on administrative and procedural problems (Harper et al., 2004).

### Characteristics of Good EMS

Not all explanations are equal, as you may have noted if you viewed any of the EMCs listed in Appendix A. Intuitively, most of us have a sense of what a good explanation is, but it is challenging to articulate this knowledge. In fact, little research has been done on

what constitutes good explanation (Van Gog, Paas, & Van Merriënboer, 2004).

At the University of Ontario Institute of Technology (UOIT), pre-service students in the faculty of education develop EMCs with an eye toward improving their explanation skills. The following qualities are emphasized in creating an effective explanation using an EMC:

- Context and type of problem is clearly articulated
- Key elements of the problem are explained before trying to solve it
- Important elements (terms/definitions/formulas/procedures) are written down
- All key steps and processes are articulated while they were being done (e.g., no hidden steps)
- Diagrams/pictures/tables used in the clips help organize /clarify/ illustrate key aspects of the problem
- Typical errors or problems that a student might make are identified in the clip
- The tone of the voice is engaging (e.g., was not flat or monotone)
- The pace of the clip is good for learning

It is critical to note that these qualities, while currently being tested, have not been formally validated. The important point to recognize, though, is that the quality of an EMC needs to be addressed, either informally or formally. An EMC will be of no use if the explanation provided is weak. It is critical to have the best explanations possible available to students to maximize effectiveness. Otherwise, instructors and tutors will be inundated with questions and requests for clarifications, thereby eliminating the positive effect that EMCs could have on reducing demands on time and resources.

### Advantages of Educational Mini-Clips

There are clear advantages to using EMCs for students and instructors. For students, EMCs offer five main benefits:

1. The ability to stop and start explanations and digest information at their own pace
2. Quick access to a wide range of explanations at any time
3. An alternative to detailed, text-based instructions which can be cumbersome to follow and decode
4. Access to the best quality explanations
5. Access to administrative and procedural information about a course

For instructors of distance education courses, the main benefit is markedly reduced demands on time with respect to course administration and course content. While the initial demand on time in developing clips may be extensive, EMCs can be created by tutors and shared among many sections of the same course. Once a set of clips is created for a course, it is expected that EMCs will make distance learning students far more self-sufficient. An instructor or tutor no longer has to answer the same content or administrative question over and over again. Furthermore, it is entirely possible that more students can be served in a specific course because question load on instructors will be substantially reduced.

### How to Make Educational Mini-Clips

If it were extremely difficult and time consuming to make EMCs, their use in distance education might be limited. Fortunately, based on the experience of approximately 125 pre-service teachers at the faculty of education at UOIT over the past three years, a 5-8 minute clip can be made in 40-60 minutes. Assuming one has a computer, the following additional equipment and software is needed:

- A 6 by 8 graphics tablet (\$160 U.S.)
- Headphones with a microphone (\$20 U.S.)
- Screen recording software (e.g. Camtasia or Captivate)
- Annotation Software to use the graphics tablet

The basic procedure for making any clip is as follows:

1. Plug in the graphics tablet
2. Plug in the headphone set
3. Start the annotation software so you can write using the tablet
4. Start the screen recording software
5. Record your explanation
6. Convert explanation to .swf format

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