

Abstract

Video-based Training: A Preliminary Study of User-Interface Compatibility

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Annotated video is an effective training tool that can, over time and given repeated viewings, effectively build the cognitive skills required for performance of complex tasks such as surgical procedures [Guerlain et al.]. Learning to use complex software also requires development of cognitive understanding and learning of procedural skills. There are circumstances under which the learner's time is limited and the need to use the software, although relatively infrequent, cannot be postponed. When this occurs, training must be accomplished quickly.

We are particularly interested in "Just-in-Time" Training (JITT) using video demonstrations lasting no longer than five minutes per learning segment to train university professors to use a plagiarism detection tool. JITT is a convergence of workflow, user modeling, and personalization [Davis et al.]. Our pilot study gave insight into how users understand the plagiarism tool's interface.

We would like to assess the interaction between participants and the viewing order of the video tutorial modules. Our goals are: (a) to join the user's understanding of the interface with the computer's understanding of the user, thereby adapting the software's model of the user in real-time to assist in the learning process, and (b) to effect this collaborative interaction unobtrusively, effectively, and in the shortest time possible. For this pilot study, five short video demonstrations were used to train university faculty in the use of the plagiarism detection tool called Turnitin, shown in Figure 1 below.

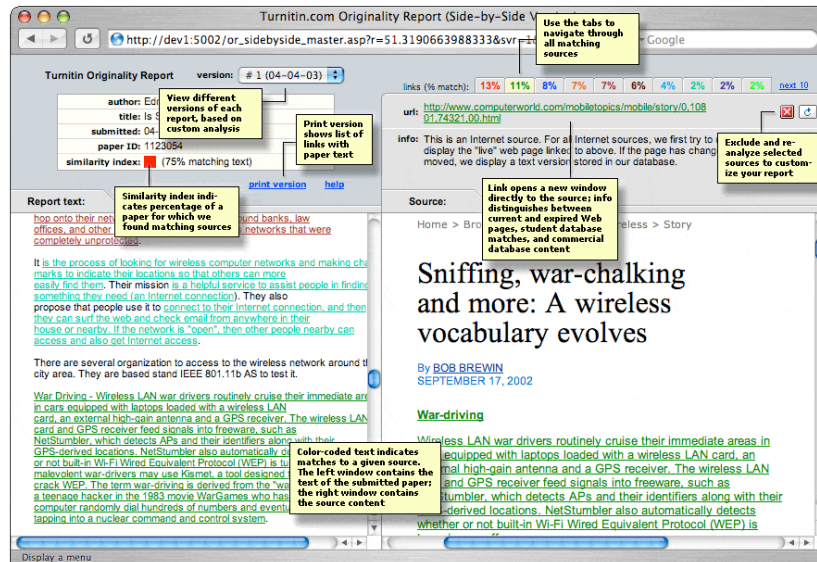


Figure 1. Turnitin by iParadigms Corporation (from www.turnitin.com)

There were five demonstration modules, each having a particular focus: (1) creating a Turnitin user profile, (2) creating a new class, (3) creating an assignment, (4) submitting a student paper, and (5) reading the originality report. Participants were self-selected, and uniformly scored high on a standard questionnaire of confidence with computers. Participants were very motivated to learn the tool and apply it to their class assignments. As indicated by the image of the Turnitin screen shown in Figure 1, the user interface is non-trivial. Because this was a pilot study, all five video modules were viewed in sequence. Within each video, users could pause, rewind, and resume play. Viewing times were recorded for each user.

For this pilot project we looked for an unobtrusive way to collect user feedback. We believe for our target audience the use of post-test quizzes or exercises to determine mastery or viewing order is too obtrusive. Instead of using pre- and post-test quizzes, or physiological measures [Crosby et al.], our inspiration was television.

Historically, pilot episodes of television shows are tested with focus groups. Sometimes the audiences use technology to record their impressions in real-time:

“Each seat in the viewing room came equipped with a hand-held device with a knob in the middle. If we saw something in the program we liked, the master of ceremonies explained, we were to turn the knob to the right. And if we saw something we didn't like, we should turn the knob over to the left.” [Michaels] and

“**Stanton-Lazarfield Program Analyzer** - System used by the Columbia Broadcasting System (CBS) to pre-test the appeal of a new program with a randomly selected studio audience. Known also as "Little Annie," the SLPA gathers groups of people in both Los Angeles and New York and invites them to

screen filmed materials. They are escorted to a seat equipped with knobs. If they enjoy what they see, they are instructed to press the knob on the right hand of their chair; if displeased they press the left arm of their chair.” [Advertising]

We decided to record participant’s self-reported “comfort” immediately after viewing each of the five short videos making up our Turnitin tutorial. Instead of a physical knob as for television pilots, our participants clicked a thermometer-like scale (from one to four) to express their comfort with the just-finished video. Low comfort ratings triggered a pop-up asking the user to explain their rating.

Our results were initially disappointing as no user ranked a video module lower than three – a high comfort score. A closer inspection of the data showed that results for the fifth video module were more interesting. Seven of 18 participants recorded a comfort level lower than four. In contrast, for the first four video modules, only 10 of the possible 72 scores were lower than the highest comfort level.

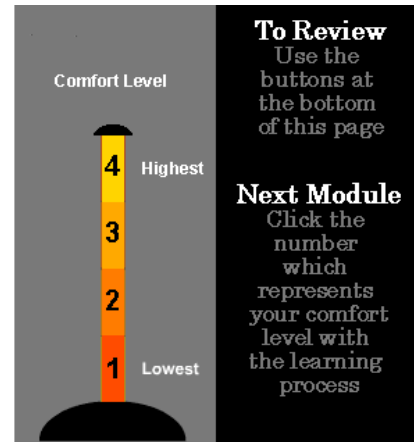


Figure 2. User Comfort Scale

Module five is atypical since it is the longest (mean user time of 5.7 minutes, compared to a mean time of 1.8 minutes for the third module, for example), with one participant taking over 10.5 minutes. In addition to being longer than other modules, the fifth module covered the most challenging aspect of Turnitin: interpreting a plagiarism report. It also included a brief bobble by instructor that was immediately corrected during the video. The instructor’s backtracking and recovery was not relevant to the skills being demonstrated and resulted in confusion for the participants:

“There was some confusion in the last session, due in part to [the demonstrator] not being able to find the dark green chunk of text he was looking for. Otherwise, his comments and side comments helped to keep me interested.”

Future work

We are interested in self-reported user comfort of short video training modules. In particular, we want to:

- Use workflow techniques to build user models and presentation order. The authors have considerable experience with workflow systems and believe that simple user models can be developed for nonlinear viewing of training modules.
- Collect real-time “comfort” levels. Unlike the television focus groups collecting real-time data, we used an end-of-module “thermometer”. After the initial pilot we quickly prototyped a version using vertical mouse movements to record user satisfaction in real-time. We collected data from one user and averaged comfort levels at five second

intervals for each video module. We plan to implement a trackball to collect data similarly to the television “knobs” described earlier by Michaels.

- Investigate weaknesses in the real-time collection of self-reported comfort. The fragility of focus groups and dangers of asking users for their preferences was recently popularized in Malcolm Gladwell’s *Blink*. Particularly interesting are his accounts of the self-reported repulsion from the best-selling Aeron office chair, and the instability of cola “sip tests” [Gladwell 2005]. From a more academic perspective, we are interested in the possibly contradictory results of social psychology research showing that “thinking too much” can “reduce the quality of preferences” [Wilson], but that lack of knowledge can lead to “inflated self-assessments”. [DeAngelis].

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