Reviewer's report

Title: Instructional multimedia: an investigation of student and instructor attitudes and student study behavior

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Reviewer: Michael Kickmeier-Rust

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The paper describes a study that attempted to compare a regular training episode for physiotherapists, consisting of static instructional material and practical sessions, and an episode where the static information is replaced a multimedia (video) materials distributed on a CD.

Introduction / Background

Insofar, this study is designed and conducted in line with hundreds, even thousands of similar studies, aiming at comparing different educational media (preferably traditional ones with modern, dynamic ones). The introduction of the paper and the description of the theoretical background suffer from an amazing unawareness of the entire field of multimedia learning and multimedia comprehension. Although there are a lot (I would say too many) of references, most of them are quite old (15, 20 years) and mostly not major publications in this area, neither from an empirical nor from a theoretical point of view. I recommend the authors to carefully review the existing body of work, particular more recent papers in the relevant journals (outside the medical area), e.g., Computers & Education, Journal of Engineering Education, Int. J. of Computer Assisted Learning, etc. In this context, also the most important theoretical work (e.g., that of Richard E. Mayer) must be reviewed and related to the author's own research questions. Moreover, there is also a lot of experimental work in the medical area; the authors should cite such work. For example there is a paper investigating the effects of dynamic simulations in medical education:


All in all, this section must be substantially revised to be more up to date and to cover the vast amount of relevant existing work!

Method

First, the section research design does not describe the design of the study, rather aspects of the procedure. I suggest explain the design in a standard way. Apparently the author's realized a 2x2x2 design (program, medium, body part).
All the dependent variables should be listed here also and described in more detail and in a more systematic way to facilitate the readers’ understanding.

Second, the description of the instructional media must be enriched. The authors should explain – in detail – the static contents (length, covered skills, number and proportion of images, etc.), the dynamic contents (involved text, number of media, exact length of the video, information about the interface, etc.), as well as information about the practising sessions with a real instructor. Moreover, Fig. 1 shows a screenshot of the CD interface, which – to be honest – looks really old-fashioned. So information about the date of publications of this CD would be interesting! If it is rather old CD – fair enough – but then the authors should discuss the experiences made with that medium outside this study so far. I’m also puzzled why the content is not distributed through the internet?

Third, the procedure could be described rather briefly and more systematic (e.g., using tables or bullet points).

The data analysis seems appropriate and statistically sound.

PS: Since the review is not anonymous, the XXX in section research design can be replaced with the institution’s name.

Results / Discussion

The presentation of the results is appropriate, although tables 4, 5, and 6 are too extensive.

The problematic aspect for the paper is that (almost) no significant differences were found. This, of course, is in line with the majority of existing findings. Richard van Eck termed this the no significant difference effect. In essence, this effect seems being the result of the fact that not the medium with which subject matter is transmitted is the crucial factor – humans usually adapt very, very quickly to the medium. The crucial aspect is rather the quality of the material and the psycho-pedagogical/didactic approach and quality. In this sense, well-prepared text is always more effective than poor multimedia. Usually, in experimental studies the material is designed or at least selected to be more or less comparable, so in a way they are condemned to result in no differences in effectively or appraisal be the students.

On this basis, preparing a paper that is worth publishing in a journal must build upon this premise and therefore the authors must highlight what the special thing about there study is. What is the novel aspect and what can the reader gain from exactly this paper. To be honest, I’m a bit pessimistic about that requirement. A constructive suggestion is surely not building the discussion around the results of the 1995 (!) work of Toth-Cohen. The focus should be more on the human and pedagogical aspects and on highlighting the specialties of this particular study. A natural anchor point I could imagine is the distinct combination of factual and procedural knowledge. More importantly, the aspect of motor skills is quite unique in the context of all the instructional studies. Finally, I also strongly
suggest taking up the aspect of performance, study time alone does give clear
indications about the effectivity of the training. Here I would expect a more
thorough analyses.

Conclusions and recommendations

This paper needs substantial revisions. Presently the paper lacks of appropriate
embedding into existing work (more up to date and important work must be
reviewed) to be published and also the relevance of the (quite common)
non-significant differences must be highlighted. The must explain convincingly
how the reader can profit from those findings!

A decision upon acceptance can only be made on the basis of a thoroughly
revised version.

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the
statistics.