Reviewer's report

Title: Virtual Microscopy System at Chinese Medical University: An Assisted Teaching Platform for promoting active learning and problem-solving skills

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Reviewer: Sylvia Mione

Reviewer's report:

Major compulsory revisions
1. explain abbreviations: Background: educational methodologies: CRL, TRAD?
   Methods/ Participating students: CTL group (Table1)?
2. third semester? there are only 2 semesters in an academic year.
3. add the company and/or trademark of the Virtual Microscopy system being used in the research.
4. Teaching Methods:
   what about the (equal) prior knowledge in the 2 groups (VM/LM)? Is this assessed? Or is the possible influence eliminated afterwards? If not, mention this limitation in the discussion.
   add more information about the teaching in the LM group: were the teaching conditions the same (not only the staff)? Were there also individual and open classroom discussions in the LM group? Observations of equivalent slides as in the VM group?
5. Evaluation Methods: examination of tissue structure: tissues or whole organs to be recognized? Observation of slides with VM or OM or another method e.g. prints of microscopic structures on paper? Mention in the discussion the possible favouring of one of the groups by the observation method used.
6. Statistical analysis: SE or SD? Paired t-test: difference between pre- and posttest per student in each group? Mention the version and the company of the SPSS software.
7. Results: mention in the Evaluation Methods section that there was also a questionnaire on preferences for VM or LM in both groups, not only a questionnaire on satisfaction with VM only in the VM group
8. Results: what are the results of the questionnaire on preferences for VM or LM? Are they the '95% said they would prefer to use virtual microscopy' of the Discussion section? Mention this already in the Results section.
9. Results: explain the Pre- and Posttest-design already in the Evaluation Methods section. Was the pretest comparable/analogous to the posttest, same components (written examination, tissue structure identification,...)?
10. Results:
    ... 'no difference among the student's PRETEST scores'...: do you mean an
independent 2 samples t-test between the 2 groups? Add t- and p-value.

... 'but POSTTEST results displayed a significant difference between'... : do you mean the PAIRED DIFFERENCES between pre and post test results in each group or did you only check the differences between the posttest results themselves between the 2 groups? If so, you cannot speak of a paired t-test, and then the pretest results show only a kind of equivalence in prior knowledge between the 2 groups. Please state this more clearly and add t-value.

11. Questionnaire on student satisfaction: is there also a narration tool comprised in the VM system? Mention this already in the Teaching Methods section.

12. Discussion: explain what rote learning is exactly?
The discussion is kept too general, it has to go deeper and further in discussing some aspects of the own research results.

Minor essential revisions

1. Abstract:
The present study aims to describe a virtual microscope system for undergraduates and TO evaluate the effects of promoting active learning and problem-solving skills.

The questionnaire results indicate that THE VM system improves students’ productivity and promotes the learning efficiency.

2. Background:
Mostly because of its history and culture, medical education in China faces OTHER problems than in MOST developed countries. Such as?
The VM system for basic medical education and quality control overcomes several traditional problems, such as faculty shortages and a lack of resources [5-7]. There are some published studies addressing VM in DIFFERENT countries, particularly in North America and Europe;...

New teaching methodologies ARE REQUIRED TO ACHIEVE THE PURPOSE of the current educational system to improve...

We DESIGNED our VM system as an open assisted platform that would empower our learners to DEVELOP independent learning and problem solving SKILLS to overcome the LIMITATIONS facing the traditional lecture-based learning.

3. Methods:
in the autumn of 2011.
The entire collection of GLASS slides WAS scanned.

USERS CAN ZOOM INTO THE IMAGE ON THE SCREEN USING THE TOOLBAR (4×, 10×, 20×, 40×, 100× and X×(Fig.1b) ) IN THE UPPER LEFT HAND CORNER ON TOP. The user can also adjust for contrast and brightness WITH THE BUTTON in the right hand corner (Fig.1c-f).
Clicking on the marker title in the sidebar will center the marker on the map and **MAGNIFY** the image to the level...

Furthermore, advanced features, including a search function, site usage tracking, and **LISTING** of all USED slides, **WERE** made possible with the database structure.

Through discussion boards, the students clarified their doubts on content **TO** the teachers and other students, which **INTENDED** to increase the amount of MUTUAL **REFLECTION**.

4. Teaching methods:
The DESCRIPTIVE data of the group are displayed in Table I. The group **OF** 115 STUDENTS was randomly divided...
Students **VIEWED** slides through the VM system.
Individual group discussions were not supervised and were **SUBSEQUENTLY** followed by an open classroom discussion...
LM Group#The DESCRIPTIVE data of the group are displayed in Table I.
...provided by **THE** same staff **AS** IN THE VM group.
...after **FINISHING** the course.
The SCORING staff was blind to the identity **AS** WELL **AS** TO THE group of the students.
...identification of TISSUE structure: 15 organ SECTIONS were fixed **AND** STAINED on GLASS slides (Hematoxylin and Eosin (HE) staining).
Students observed the slides **BY** OPTICAL OR VIRTUAL microscope and identified the...

5. Results:
Subtitle: Results of the HISTOLOGY examination of the two groups
Questionnaire: The students’ profile evaluation results were shown IN Table 3.

6. Discussion:
Our VM system can be exploited to **INCREASE** students’ basic knowledge and problem-solving skills despite the lack of available space, equipment and instructors IN THE TRADITIONAL LM SETTINGS.
Through this, students are able to learn key histopathological skills, SUCH AS...
Thus, virtual microscopy is a reliable and more reproducible: **EXPLAIN THIS technology**
Due to the fact that there are more students than teachers and equipment available, **(REMOVE COMMA)** Chinese teaching usually relies...
The PARTICIPANTS **STUDIED** histology using the VM during ONE semester, and of the 115 ... Students indicated that the VM helped **TO** stimulate their
interest in the topic before the discussion, enhanced their ability to memorize the information and helped them to become more active participants.

...more complex levels of knowledge (i.e. on the comprehension or analysis level): MORE EXPLANATION

This is a controversial topic for many schools who recognize that students... ...assist or assisted? platform, you used assisted teaching platform in the earlier abstract section

7. Conclusions:
...against the limitations facing traditional optical laboratories,...
Students can use the VM system regularly and augment their basic knowledge and problem-solving skills to......

8. Notes on contributors:
They teach (2x)
...at the college...and take part in evaluations...
REMOVE: 'have worked for some years'

9. Figures:
CHANGE the symbols NS and *
Fig. 3: Y-axis: Mean TATLE scores?

Kind regards and thank you for your work.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests