Reviewers report

Title: The Application of Virtual Reality and Augmented Reality in Oral & Maxillofacial Surgery

Version: 0 Date: 25 Apr 2019

Reviewer: Reinhilde Jacobs

Reviewers report:

MAJOR CONSIDERATIONS/ COMMENTS/ CRITICISMS/ SUGGESTIONS.

Although the topic is rather interesting and innovative, this paper lacks in structure and organization.

This paper should deal with virtual and augmented reality. It is clear from the title.

In virtual reality, the user is placed in another location entirely: whether that location is computer-generated or captured by video, it entirely occludes the user's natural surroundings. Virtual reality is closed and fully immersive. The user is isolated from the real world, while immersed in a world that is completely fabricated. I think Oculus Rift is the most famous device for virtual reality.

Augmented reality is different because it is the blending of virtual reality and real life. Augmented reality puts virtual things in a real world/environment, the user continues to be in contact with the real world and objects, it is not isolated from them. On the contrary, the visible natural world is overlaid with a layer of digital content. Augmented reality is open and partly immersive. I think Hololens is the most important augmented reality device.

I think these concepts must be clearly explained in the introduction of the paper. Not later!

But in the background, the authors instead introduce a short summary of all the techniques available for the capture of patient's data. I think it is not appropriate- why you do not start with defining what virtual and augmented reality actually are? Moreover, that short introduction on 3D data capturing is incomplete because the authors forgot to properly mention intraoral scanners, MRI, and jaw motion tracking that is now clinical reality.

So please erase this background and re-write it according to my suggestion: Be focused on the topic. A fantastic systematic review has been recently published on this topic by Joda and colleague. Please read it carefully. Cite it properly.

The background should only describe what is the virtual reality, what is the augmented reality, their common points, their differences, the specific characteristics and features. Why you do not add mixed reality too? Can you explain the differences between these three?
always in the background, the authors should report on the most important devices currently in
the market, not only the two i mentioned but at least 5-6 in total, with the main features.

then, the purpose/aim of the study should be clarified, to report on the most important studies
currently available in the literature on virtual and augmented reality. can you add mixed reality
here too? if you can properly explain the differences between these three.

the methods section is missing here. no details on how your literature search was performed, but
it is necessary to introduce a paragraph about your literature search, how you did it, from where
you collected papers, and more. i know it is not necessary to have a systematic approach, but a
minimum of structure is needed. in this section, you must clearly separate papers on virtual
reality vs papers on augmented reality vs papers on mixed reality.

the results should present a first section in which you summarize the amount of screened
literature, the studies you found more pertinent, and their areas of dentistry - oral and
maxillofacial surgery, prosthho, ortho, gnatology, general dental education, anatomy.
then, in separate sections, you should revise all these studies and briefly reporting on them. i
suggest to remove the list of dynamic surgery tools because not appropriate in this paper, but of
course you should mention which system the different authors of the included papers used in
their studies. sometimes it is difficult to understand or differentiate between them, so many new
stuff and devices. some of them entirely experimental. in this section, once again, it would be
better to separate papers on virtual reality vs papers on augmented reality vs papers on mixed
reality.

in the conclusions, you should summarize these data and their relevance and the possible future
applications, for the three (virtual, augmented, mixed reality). i think it is too early to fully adopt
these technologies we are at the beginning, therefore a statement or two on the present
limitations are important.

in general, i think in this paper you underestimate the value of virtual and augmented reality for
educational purposes. Huang et al published a beautiful review on virtual and augmented reality
in dentistry in 2018. i suggest you to read it carefully.

obviously the abstract should follow this structure.

MINOR CONSIDERATIONS/ COMMENTS/ CRITICISMS/ SUGGESTIONS.

there are several typos and mistakes in the text starting from the title. the reference list is too
short and not sufficiently updated. in addition, some sentences are not properly supported by
evidence in the literature, but they should be.

in general, the authors failed to properly read the journal’s guidelines for the authors because the
reference list is not properly organized, as well as the article structure.

please refer to the instructions for the authors and correct your mistakes.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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Please complete a declaration of competing interests, considering the following questions:

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