Author’s response to reviews

Title: The tablet computer's impact on learning and National Dental Examination scores in orthodontics - a mixed-method research

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Author’s response to reviews:

Dear Reviewers,

We would like to thank the reviewers for their very detailed and helpful comments. The manuscript was revised and corrected according to the comments. We highlighted our corrections in the manuscript with green colour for review 2 and yellow colour for review 3.

Reviewer 1:

Thank you very much for your positive feedback.

Reviewer 2:

- Abstract: Page 1, line 41: "prior" instead of "before" should be used, as this would make the sentence clearer.

Answer: Thank you for your suggestion. We corrected the respective sentence.

- Keywords: I would suggest adding "mobile learning"

Answer: Thank you for your suggestion. We added “mobile learning” to the keywords.

- Background: Page 4, line 100: "challenging" seems to be a bit misleading, I would recommend using "helpful" instead.
Answer: Thank you for your advice. We replaced “challenging” by “helpful” to clarify the meaning of the sentence.

- Methods, Results, Conclusion: These parts were well structured and clear.

Answer: Thank you for your positive feedback.


Answer: Thank you for your suggestions. We included both studies as follows:

Chase et al.: “Another study by chase et al. also confirmed that tablets have a positive impact on learning experiences of medical student but students used the mobile learning devices more frequently outside of clinical settings.”

Dunleavy et al.: “A systematic review by Dunleavy et al. concluded that the included studies showed that mobile learning is equivalent or superior to traditional learning methods.”

Reviewer 3:

Background:

- Lines 66-70: Please add some references to support your statements.

Answer: Thank you for your suggestion. We included the following study to support our statements:


Survey design:

- Lines 153-154: "A review of the literature… "

Please add a paragraph further explaining the methods during review of the literature. The result of the literature review should be stated and the included literature should be provided to the reader e.g. as supplement.

Answer: Thank you for your suggestion. The literature review itself resulted in only three useful articles. We think that a supplement with a list of excluded articles would increase the references with non used citations and would be not of value for the reader. Moreover, the reader could use the search strategy below for further reading. We therefore added the following paragraph to clarify the literature review concerning the usability topics. We hope that the reviewer agrees with our decision.

“A review of the literature was conducted to identify usability topics for inclusion in the survey tool. To identify relevant articles a Pubmed search was performed with the following search strategy: “("tablet pc"[Title/Abstract] OR ipad[Title/Abstract] OR "mobile device"[Title/Abstract] OR portable[Title/Abstract] OR smartphone[Title/Abstract]) AND (assessment[Title/Abstract] OR survey[Title/Abstract] OR questionnaire[Title/Abstract]) AND clinic[Title/Abstract]”. The search was limited to English language. The time period covered research published from January 1980 to December 2013.

The primary search resulted in 93 articles. A restriction to “dent*” instead of “clinic” revealed 48 articles. For both search results titles and abstracts were screened and 57 articles were identified for fulltext reading. Articles with a different focus than the usability of a device like psychosocial assessments, self-monitoring, or questionnaires used for data recordings were excluded. Seven articles remained from which further four studies were excluded for the following reasons: a) assessment of visual and audio quality, b) assessment of different devices and operating systems concerning specific e-learning offers, c) survey items do not assess usability, and d) question items were tailored to specific non dental learning goals. Three articles (15-17) were finally selected whereas two of them used the System Usability Scale (18) which is implemented in SoSci Survey (19) as a standard questionnaire template.”


Clinical setting:

Lines 180-181: „Students …"

Sample demographics are lacking. Were all students tested on educational background? Were some of the students Dental auxiliary personnel; such as Dental nurse or Dental Technician (CDT). Did some of the students repeat semesters? The latter might have influenced the results. Please discuss.

Answer: Thank you for your suggestions. Concerning sample demographics 62 female and 55 male students were included. The mean age was 24.5 years for S0 (32 female, 32 male), 24.4 years for S2 (14 female, 13 male) and 24.4 years for S3 (16 female, 10 male).

We added these facts in the following sentence of the manuscript (see highlighted part):

“The NDE scores of students who attended the orthodontic course before TPC deployment (S0: n = 64, 32 female and 32 male, mean age 24.5 years) were compared with the scores of students who participated in the TPC one-to-one program. A total of 53 students, 27 of the first semester after TPC introduction (S2: n=27, 14 female and 13 male, mean age 24.4 years) and 26 students of the second semester (S3: n = 26, 16 female and 10 male, mean age 24.4 years) after TPC deployment passed the NDE in a standard period of study.”

The educational background and qualification as dental nurse, dental technician or dental auxiliary personnel was not investigated. We included this possible bias into the limitations part as follows: “Educational background such as previous education as dental nurse, dental technician was not investigated.”
Concerning the repeating of semesters we clarified our methods section by adding an additional sentence (see highlighted part): “The grades of those students who participated in the program and finally passed the NDE in a standard period of study were assessed. All students, failing a semester at any point of their dental education were excluded from this study.”

In the manuscript, the product name „iPad“ is mentioned excessively; more than 60 times in the manuscript and in the "Conclusions" 3 times in only 6 lines. "iPad" should be used to specify the term tablet PC (TPC). Otherwise, it might be regarded as some kind of "product placement". Please change.

Answer: Thank you so much for your comment. We changed the product name “iPad” into tablet PC (TPC) as highlighted in the manuscript.

Sincerely,

Moritz Blanck-Lubarsch