



## Reply on RC1

Mattathias D. Needle et al.

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Author comment on "Virtual field experiences in a web-based video game environment: open-ended examples of existing and fictional field sites" by Mattathias D. Needle et al., Geosci. Commun. Discuss., <https://doi.org/10.5194/gc-2021-17-AC2>, 2021

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Thank you very much for the helpful and positive comments. We agree the results of a carefully designed study (with IRB approval) on the effectiveness of the virtual field trips would be very interesting! An exciting aspect of the tools we introduce here is the possibility for direct comparison of student learning outcomes after virtual versus actual field experiences at classic localities like the Whaleback Anticline, with the same, open-ended and data-oriented questions. We look forward to opportunities to collaborate with science education experts on such studies in the future. Here we report on pandemic-related "emergency" replacements for field exercises, with a prototype game to provide proof-of-concept for our approach. We show that these VFTs are functional and accessible to many students and that students understand how to operate the tools and can make interpretations from the information they collect. In response to your comments, we have expanded our discussion of student engagement with these tools, and include some representative anecdotal responses.

We intend to share our workflow for building these VFTs in a forthcoming manuscript but are eager to have these examples as part of this special issue.

Lines 58-59: The manuscript would benefit from additional references of geoscience education research to support several claims. References here would help.  
--Corrected. In the revised manuscript, the claims in these two sentences have been removed. Thanks!

Line 120: Do you have user results from the July 2020 pilot study to report?  
Line 139: How do you measure user experience such as "Most students found the game controls to be intuitive"?  
Line 216: Do you have any user results beyond anecdotal accounts?  
--In the revised manuscript we provide further discussion of the collected student responses to our work to date.

Line 224: Can you elaborate on high-quality work? How was this assessed?  
--Line revised. Student work was compared to our recollection of student work in similar exercises from prior (in-person) offering of the course.

Lines 258-264: I only caution the authors to consider that fictional environments could be abused by instructors. If a major goal of using VFTs is to accessibly acquire and practice field skills, then the VFTs should be geologically reasonable and possible.  
--Agreed!