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Comment on gc-2021-10

Anita Marshall (Referee)

Referee comment on "Multi-scale virtual field experience: sedimentology and stratigraphy of Grand Ledge, Michigan, USA" by Madeline S. Marshall and Melinda C. Higley, Geosci. Commun. Discuss., <https://doi.org/10.5194/gc-2021-10-RC1>, 2021

Publications about VFTs tend to fall in 3 general categories: Showcase papers offer a detailed walkthrough of the materials and how they are used. Process papers provide the technical details of how specific resources are built (how to build 3D models, setting up data repositories, etc.). Evaluation papers provide a careful analysis of some aspect of the user's experience with the VFT or the impact of the VFT on participants through a clearly articulated theoretical framework. This paper falls into the Showcase category, providing a detailed overview of a well-constructed VFT, but no technical details, and only a cursory look at the student experience. There is really nothing especially novel or new about the methods presented. This is not to diminish the effort that went into creating this excellent VFT; in fact these types of papers are very useful to educators looking for practical solutions for their own courses. The clever use of technologies that are already broadly used in the classroom is a positive in my opinion.

The VFT described in this manuscript seems to be a great way to teach stratigraphy and the basics of field notes and interpretations and could be used over and over again in future semesters. I like the open structure which doesn't feed the students interpretations and avoids (as much as possible) formats that lead students to a "right" answer. There is a lot of room for genuine exploration, discovery and interpretation within this exercise. The availability of images at multiple scales from outcrop to microscope imagery aids students in understand how to document and interpret an outcrop. I also appreciate the detailed explanation of exactly what students were expected to do at each step of the VFT.

One of the shortcomings of this paper is that there is not enough qualitative data analysis to provide a rich view of the student experience, yet qualitative data is presented. The manuscript states that no interviews or surveys were conducted. However, student's written reflections are being used as a qualitative data source without really treating them as a qualitative data source. Excerpts from reflections are provided verbatim, grouped by a corresponding Student Learning Objective. Broad themes are interpreted from reflection excerpts, but no info is provided on how these excerpts were coded or processed. For example, are these themes inductive or deductive? Were the authors looking for specific outcome themes based on SLOs (deductive), or did these themes emerge during the analysis (inductive). It seems there is a missed opportunity to look for more interesting themes, such as if/how the experience differed between the two different schools. Overall,

the student experience with the VFT is given a very cursory treatment and lacks impact. I would like to see a bit more development of Section 9 that included a more detailed look at the data for insights on the student experience. That being said, I understand this is more of a VFT showcase paper, and the authors may not feel a richer analysis is necessary for the purpose of the paper.

Line 44: I don't understand what "inflexible scope" means in this context.

Figure 1: It looks like there is quite a bit of distortion in the panorama that was introduced during the photo-merging process. Without the 3D model for comparison, it could lead to some misinterpretations of the outcrop morphology. Perhaps this should be called out in the manuscript somewhere as something to be mindful for others using similar approaches.