

Geosci. Commun. Discuss., referee comment RC1
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Comment on gc-2021-16

Anonymous Referee #1

Referee comment on "Virtual strike and dip – advancing inclusive and accessible field geology" by Natalie Bursztyn et al., Geosci. Commun. Discuss.,
<https://doi.org/10.5194/gc-2021-16-RC1>, 2021

Comments to the Author

Review of the manuscript (ms) in Geoscience Communication (GC) journal (Ms #: gc-2021-16) "*Virtual strike and dip - Advancing inclusive and accessible field geology*"

Written by authors: *N. Bursztyn, P. Sajjadi, H. Riegel, J. Huang, J. O. Wallgrün, J. Zhao, B. Masters, & A. Klippel*

▪ GENERAL COMMENTS

The authors present here an original research paper showing how they embedded the Strike and Dip (SaD) tool into an introductory geology course and how they evaluate its effectiveness through students' questionnaires combining quantitative and qualitative questions. The authors showed that, in general, the SaD app was positively perceived by students and that learners who were familiar with navigating geographical or gaming software, found it easier to use compared to students who were not. The authors also discuss the limitations, potential improvements of the SaD tool and perspectives in the discussion section. I am not familiar with learning statistics; therefore, I cannot judge on this aspect in this paper but instead, on its general shape and the technical parts along with the virtual experience itself. I support the publication of this work in the GC journal if the following (minor) comments can be taken into account:

- Few comments (suggestion/reformulation) are detailed and highlighted in the PDF (more concerning its current shape than its scientific content).

- *Introduction part.* I found the introduction section very long, and some sentences really dilute the main message of the manuscript. Few examples and suggestions to shorten a little bit this part of manuscript: L63-68: "*Fieldwork is further challenged by an increasing awareness of harassment that is happening in the field, which is often targeting women and minority students and faculty who do not conform to the stereotypical mainstream conceptions of fieldwork, that is, it is a white, male-dominated domain. Marin-Spiotta et al. (2020) call out this issue, comparing it to the Vegas Rule, criticizing the understanding that "what happens in the field, stays in the field."*" I found this part a little bit off the topic. Although this is a major issue and Marin-Spiotta et al. paper discussed it properly. I do not think such arguments serve the cause of developing virtual field trip experiences. L83: "*... a niche product belittled by many "real" geoscientists*". The end of this sentence again is getting slightly off the topic and marks a personal experience instead of a general trend from my numerous constructive exchanges with "real" geologists. I would try to reformulate these parts. The authors cite several times "under review" publications or "personal communications". I don't think this matches the journal policy. Are these papers published since then? L79: "*Marshall et al. under review*"; L80: "*(numerous personal communications)*".

- *Question about the software access and license.* I found the SaD app very promising and wanted to try, but unfortunately, I just found a demo at this web address: <https://sites.psu.edu/virtualfieldtrips/strike-and-dip/>, which does not allow me to use the SaD functionalities properly. So here are my questions: what is the license status of this app? Would it be open, free, open-source, which license, accessible to other teaching cursus? Maybe a word should be given on this aspect in the presentation section of the app and maybe in the perspectives. In addition, a web link (or links to videos) could/should be added in the paper (maybe I missed it?), so the readers can actually test the SaD app and follow the developments updates.

- There are some missing information in the discussion part. For example, in L613, the authors do not mention several 3D models repositories that are now very common and from which it is easy to download high-resolution textured digital outcrop models, like Sketchfab, Open Topography, v3geo, etc. In the perspectives section (L715): same comment. This initiative already exist. Here are some references:

Riquelme, A., Pastor, J. L., Cano, M., Tomás, R., Benavente, D., & Jordá, L. (2020, June). Digitalisation of rock specimens and outcrops for training. In *ISRM International Symposium-EUROCK 2020*. OnePetro.

Métois, M., Martelat, J. E., Billant, J., Andreani, M., Escartin, J., & Leclerc, F. (2021). Deep oceanic submarine fieldwork with undergraduate students, an exceptional immersive experience (Minerve software). *Solid Earth Discussions*, 1-17.

Nesbit, P. R., Boulding, A. D., Hugenholtz, C. H., Durkin, P. R., & Hubbard, S. M. (2020). Visualization and sharing of 3D digital outcrop models to promote open science. *GSA Today*, 30(6), 4-10.

Or nonacademic paper: <https://sketchfab.com/blogs/community/using-3d-models-for-teaching-at-the-uq-school-of-earth-and-environmental-sciences/>

- Here is a general question/comment to the authors; I would be glad to have their feedback about this. Why are you using the Right Hand Rule in the SaD software? This is generally something we show in a second phase when students are working with geological compass here in our introductory courses. Indeed, the RHR is a special case / a convention for structural measurements in the field and add a level of understanding and of complexity in 3D spatialization. Just taking the strike, the dip and the dip direction is pretty straightforward and does not require to use one or the other hand. Would it be possible to use the SaD tool in this way simple way? Just showing a virtual compass allowing the student to measure the dip and strike along with the dip direction?

2. **SCIENTIFIC ASPECTS**

- *Is the research paper suitable for the Journal?*

Yes.

- *Of broad international interest?*

Most probably if everyone can get access to the SaD app.

- *Is it novel?*

Yes, mostly.

- *Quality of the data and their processing.*

OK.

- *Quality of the interpretations*

OK.

3. TECHNICAL ASPECTS

- *Is the manuscript properly organized?*

Yes, mostly, see general comments.

- *Is the ms content to the point/concise?*

Not really, see general comments.

- *Ms written clearly using correct grammar and syntax?*

Yes.

- *Is the title informative and a true reflection of the content?*

Yes.

- *Are the illustrations all useful and necessary?*

Yes.

- *Are the references relevant and up to date?*

Yes.

Please also note the supplement to this comment:

<https://gc.copernicus.org/preprints/gc-2021-16/gc-2021-16-RC1-supplement.pdf>