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## **Comment on gc-2021-18**

Jacqueline Houghton (Referee)

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Referee comment on "Transformation of geological sciences and geological engineering field methods course to remote delivery using manual, virtual, and blended tools in fall 2020" by Jennifer Jane Day, Geosci. Commun. Discuss.,  
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It is always interesting to read other people's experiences of virtual field teaching, particularly courses created quickly due to the COVID-19 restrictions. Overall, I enjoyed the paper, it is well written and goes into great detail on what was planned and the technical details of how this remote delivery field methods course was delivered. However, for others to learn from the experience, there needs to be more on what actually happened in practice. I wanted to know more about the experience of delivering the course from both the instructor and student point of view. What worked, what didn't and why? For example, what difficulties did student's face using the software and how were they overcome? How well did student's engage with the activities? What checks did you have in place to catch students who were struggling? How did instructors find creating the course? What advice would you offer to others doing the same? How did student results from this year compare with previous years and can you break this down to see if there were elements where they did noticeably better or worse than when in the field? And if you had to deliver it again, if restrictions were to remain in place, what would you do differently next time? You strongly recommend returning to in-person field methods teaching; something the majority of us will whole-heartedly agree with. Some virtual teaching elements can supplement and enhance in person field teaching though. They can act as pre-trip training or post-trip recaps, exercises that can supplement alternative field experiences for those unable to fully participate in fieldwork, they can even be used as "wet weather day" activities. You do mention some new course elements should be integrated into the in-person delivery, and it would be good to know which these were and why they would be a positive addition to the teaching fieldwork repertoire.

There are quite a few places through the text (particularly sections 3 and 5) where information could be presented as tables or figures for clarity and to reduce the need for repetition.

Section 3: Regular in-person course delivery. This has too much detail, given it is the virtual field course being discussed, and needs editing down. The bullet points on the field trips could be presented as a table or perhaps in an appendix if they are essential, and a similar graphic to figure 2 (which gives a lot of information in a concise manner) would condense the text and allow an easy comparison between the two.

Section 4: Remote course delivery. What was your thinking behind choosing these particular virtual learning course elements? Why did you choose the particular rock virtual rock samples and outcrops? Were there exercises you would have liked to have done but could not find the resources or insufficient time to create them? Out of interest – would students normally be required to purchase compass, notebook drafting equipment or was this an additional financial burden due to COVID-19?

Section 5: Discussion. There is an interesting debate to be had here; if all the learning outcomes can be covered by a remote exercise then why go in the field given the costs and accessibility issues involved? As students had no opportunities to learn or practice some techniques, it would be useful to consider whether all the outcomes were really fully achieved or whether they could only be partly achieved by remote teaching. Again, a table comparing what students would learn in the field against what they learnt in the virtual classroom would give clarity to this section. As mentioned above it would be good to have more on student feedback, for example, what was it about the lab assignments they found more difficult versus the practice exercises and is this something you see in the in-person classes too or is it unique to the remote environment?

Thank you for sharing your experience of remote learning. This is an interesting paper, but it does need more on the experiential aspects of the course and the practical lessons learnt to make it a fully rounded case study. I note the comment already posted makes similar suggestions.

Best wishes and fingers-crossed we can all return to the field in the near future!