

Peer Review Report

Review Report on "you just look at rocks, and have beards" Perceptions of geology from the UK: a qualitative analysis from an online survey

Original Research, Earth Sci. Syst. Soc.

Reviewer: Glenn Dolphin

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EVALUATION

Q 1 Please summarize the main findings of the study.

Geology is an interesting and necessary science for helping to solve current problems facing humans, however, it has a very big PR problem, in that most people who have not been exposed to geology have a very anemic understanding of the discipline. Though, there are some issues, such as accessibility and inclusion, that are really problems for inviting new students that the geological community needs to address.

Q 2 Please highlight the limitations and strengths.

My bias is toward qualitative research. I think this report has the ability to show participants' own words in a descriptive account which is more informative (for an exploratory account) than the results of a forced choice survey. Where this investigation could go now is to develop an instrument using the qualitative results as a starting point for the language used in the survey questions.

Limitations have to do with the amount of data. There was no accounting for how much data was collected on a per-person average. Did they just provide a sentence, or was it several sentences per question? It would have been nice to know how often a code gets assigned before it goes into a theme or how many responses can generate a theme. To me, themes should reflect significant repetition in the data and not just a one-off, but I cannot tell if there was a threshold used by the authors before generating a theme. There are a number of guidelines I think are important to address to express how we can know the results are both reliable and valid. See Morse, (2002).

I also think what is missing is a theoretical framework, a lens through which the authors are interpreting their data. When looking at a large group of responses to gain an "average" response or understanding of the group, I find a phenomenographic theoretical/analytical framework (Hajar, 2021; Ornek, 2008; Stokes, 2011) to be useful. The authors don't have to use this framework, but they should contextualize the data within one so as not to imply that what the participants express is based on a universal meaning; that researcher interpretation plays no role.

Hajar, A. (2021). Theoretical foundations of phenomenography: a critical review. *Higher Education Research & Development*, 40(7), 1421–1436. <https://doi.org/10.1080/07294360.2020.1833844>

Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods*, 1(2), 1–19.

Ornek, F. (2008). An overview of a theoretical framework of phenomenography in qualitative education research: An example from physics education research. *Asia-Pacific Forum on Science Learning and Teaching*, 9(2), 1–14.

Stokes, A. (2011). A phenomenographic approach to investigating students' conceptions of geoscience as an academic discipline. In A. D. Feig & A. Stokes (Eds.), *Qualitative inquiry in geoscience education research: Geological Society of America Special Paper 474* (pp. 23–35). Geological Society of America.

Q 3 Please comment on the methods, results and data interpretation. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

In terms of methods, results, and interpretation, see the comment above about reliability and theoretical frameworks.

I do think that the findings are important and will make a substantial contribution to the literature. This is a very important study. Our department is currently rebranding itself, and the information in this manuscript would give a lot to think about in how we (and other departments going through the same thing) go about that process.

Q 4 Check List

Is the English language of sufficient quality?

Yes.

Is the quality of the figures and tables satisfactory?

Yes.

Does the reference list cover the relevant literature adequately and in an unbiased manner?

Yes.

Are the statistical methods valid and correctly applied? (e.g. sample size, choice of test)

Not Applicable.

If relevant, are the methods sufficiently documented to allow replication studies?

Yes.

Are the data underlying the study available in either the article, supplement, or deposited in a repository? (Sequence/expression data, protein/molecule characterizations, annotations, and taxonomy data are required to be deposited in public repositories prior to publication)

No.

Does the study adhere to ethical standards including ethics committee approval and consent procedure?

Yes.

If relevant, have standard biosecurity and institutional safety procedures been adhered to?

Not Applicable.

Q 5 Please provide your detailed review report to the editor and authors (including any comments on the Q4 Check List):

I don't have much more to say with regard to this manuscript that isn't already expressed above. I think this is important research as many geology departments are struggling to exist. They can be very relevant, but they need the appropriate PR to connect with prospective students. The only issue I find is there is no discussion about the frame that the data are being interpreted within. Like cross stratification would be interpreted within the depositional system it is found in, or the structure in terms of plate tectonics theory, these data are also being interpreted within some context, critical, phenomenographical, etc. Just like it would be important to contextualize field interpretation by characterizing the tectonic setting, so too should these data be contextualized.

Aside from that, again, a very important piece of exploratory work. I don't know if there are plans to follow up this research with more in-depth research, but it would also be a good contribution.

QUALITY ASSESSMENT

Q 6 → Originality	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Q 7 → Rigor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Q 8 → Significance to the field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Q 9 → Interest to a general audience	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Q 10 → Quality of the writing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Q 11 → Overall quality of the study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>