EGUsphere, referee comment RC2
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Comment on egusphere-2022-116

Rebecca Williams (Referee)

Referee comment on "GC Insights: Diversifying the geosciences in higher education: a manifesto for change" by Caitlyn A. Hall et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-116-RC2, 2022

General comments:

In general, this is an interesting piece of work that makes some important reflections on our discipline. It brings together themes such as historical context and diversifying reading lists in a manifesto for change for diversifying geosciences in higher education. This is an important topic, and in my opinion the key challenge geoscience faces. There is a growing body of literature and practise in this space and additional contributions such as this one can strengthen and broaden discussions. This growing body of literature is neither recent nor small, reflecting the long lived and extensive discussions taking place in the community. Some of these conversations are further along than suggested by this manifesto, though in frustration I acknowledge that action and change are less forthcoming. In my review I've suggested a variety or works and thoughts that the manuscript could benefit from acknowledging. There is of course a balance between citing previous works and limits on what is possible within a publication.

There have been a few 'call to arms' papers/communications in geoscience more broadly. Some aimed at organisations, some at research, some more broadly (e.g. Ali et al 2021; Cooperdock et al., 2021; Dowey et al 2021; Kiesling 2020; Quardokus Fisher et al 2019). It may be useful upfront to discuss how this manifesto builds on and/or is different to this other work.

The title suggests that this will be a broad manifesto, but I find that the piece is focussed on race and indigenous cultures. This is fine and important but this focus should be more explicit in the abstract and opening statements if it is the authors intention to be so focussed. Marginalisation in the subject can occur for a variety of reasons, and the geosciences have low diversity by any measure (race, LGBTQ+, disability, gender…) and this is all entrenched and perpetuated by our current educational systems. Of course, these are also intersectional – a really interesting piece in applying an intersectional lens to increasing diversity in geosciences is given by Nunez et al. 2019.

I like figure 1. It is clear and well presented. Some of the key messages here are a bit lost in the sections. Perhaps these could be tied more explicitly to the text by subheadings? Throughout I find myself agreeing with many of the reflection but find the sections fall short of clearly articulating the recommendation and HOW/WHY that will lead to increased diversity in the geosciences. The authors could engage more throughout with the work that has/is already being done and the steps that have been taken. By pointing towards case studies/examples of the actions they propose (which do exist) this could be a much more tangible set of recommendations that educators could pick up and use.

The authors may find it interesting to note that the new QAA Subject Benchmark Statement for Earth Science UK HE now explicitly mentions equality, diversity and inclusivity and includes may of the themes included in this manifesto. As well as GeoContext, another useful resource that could be highlighted here is the growing AdvanceGEO community resources. Some professional organisations such as the Institution of Environmental Sciences explicitly demand EDI as part of their accreditation, including themes that are considered here.

Specific Comments:

"Geosciences play an essential role in addressing key societal issues, but it is entangled with past and ongoing prejudiced practices, making it an inequitable and exclusive field."

This is a bold opening sentence. Whilst I do not dispute its truth, others who are not as familiar with the field or literature might. There are a wide range of references that can be used to support this, particularly those that present data to support this fact. For example, Bernard & Cooperdock, 2018; Dutt, 2020; Marin-Spiotta et al., 2020; Pickrell, 2020; Dowey, N., et al, 2021; and there are others. Some of which you refer to, some of which you don't.

Championing Meaningful Transformation

This section has some important reflections and suggestions. However, it doesn't have a clear focus and it is hard for the reader to really pick out its key message. Is it about challenging parachute science? Is it about Land Grab Universities and colonialism? Is it about including marginalised groups? Or is it about demanding that those within the system, and who predominantly benefit from the status quo, challenge and change the systems and institutions in which we operate? I feel like it's the latter but that message isn't coming across clearly. There are other works that also demand this from us (e.g. Ali et al 2021; Dowey et al 2021; Kiesling 2020; Quardokus Fisher et al 2019) that could be usefully cited perhaps.

"Extracting knowledge from communities without clear reciprocity has historically

benefited dominant groups, while excluding and exploiting oppressed communities."

Can you point to some of the literature that discusses this in more detail? Perhaps some work on parachute science? There's a wealth of literature on knowledge extraction more generally, perhaps some useful geoscience-focussed references can be found in Rogers et al {preprint}.

Diversify Sources

This is an important section on the use and perpetuation of knowledge in our curricula. I understand that the authors may wish to swerve 'decolonising curriculum' but perhaps they could nod to some appropriate literature and thought here? For example, this section seems to focus on how literature is used by educators in teaching degree programmes – essentially reading lists. Is the recommendation here that reading lists contain works from diverse authors, in a variety of languages, from a range of geographic locations? Could the authors be more explicit about this recommendation? Or is it more that in our teaching, we should consider the very foundations on which our discipline is based and challenge those ontologies? For example, should educators consider the extensive and diverse knowledge systems that are typically excluded from our curricular (e.g. see Hall & Tandon, 2017; le Grange 2007)?

As far as recommendations regarding diversifying reading lists go, I particular like the emphasis on co-production with students. I think this can be strengthened. Working with students as partners and collaborators in increasingly evidenced as a pathway to truly inclusive curricula. You could use Adewumi et al., 2022 and references therein.

The section on authorship could be interestingly linked back to the previous discussion on parachute science. North et al., 2020 might be a useful source here. I'm not sure I see the relevance of "While some journals offer discounted publication rates and fee waiver requests" Line 60. This is a barrier to publication, not a barrier for educators to use that material in their curricula. The argument in this section could be tightened to directly link to how this material is (or is not) used in education and how it should and could be incorporated.

Integrate Historical Context

This section may be better restructured to first explain how local researchers and knowledge was(/is) excluded and then how this is perpetuated by the record not being corrected/highlighted through our teaching. Rogers et al., 2021 has some sources on this that may be useful – again I appreciate that the authors may wish to swerve 'decolonising the curriculum'. I would argue that many educators do teach geoscience in historical context (c.f. line 73-74) but that the context given is narrow in its view, Eurocentric and

dominated by white male discourse that celebrates the science rather than situates it in colonial expansion. Some of this is explored in Dowey et al 2021 amongst a vast literature. Finally, it might be useful to emphasise how teaching historical context will lead to diversifying geoscience.

Broaden Pedagogy, Epistemology, & Communication Styles

This section importantly highlights ways of knowing and recognising the variety of ways of knowing. It focuses on communication and knowledge sharing, which is of course important. A large variety of inclusive pedagogies is nodded to in the reference to Mintz, perhaps too fleetingly. It tends to overlook pedagogies and strategies to be inclusive to other marginalised groups. For example, it doesn't recommend any of the work on including disabled students in the geosciences (a huge issue particularly with our emphasis on fieldwork e.g. Feig et al., 2019; Stokes et al., 2019, Lawrence & Dowey 2022), neurodiversity (e.g. Kingsbury et al., 2020), LGBTQ+ (e.g. Olcott & Downen, 2020) and gender (e.g. Holmes et al, 2015).

Support Transformative Agency in Education

This section addresses valuing the student's learning-teaching-knowledge-experience and how that can be linked to agency and the student's ability to take on knowledge and pursue action. This is an important and complicated point. The authors focus this in knowledge production and ways of knowing, picking up similar threads in previous sections. Student agency is more than this though and centring students in their education in a variety of ways is an important tool to improving diversity and inclusivity. Students are not only participants in geoscience education but can be valued co-producers and collaborators. The authors touched on this in the section on reading lists, but this could be taken further here. By giving agency to students, we can together build curricular that is more inclusive to their needs e.g. as explored in Curtin & Sarju 2021 and refs therein; Cook-Sather & Agu, 2013 etc.

Technical Corrections:

See attached PDF.

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Please also note the supplement to this comment:
https://egusphere.copernicus.org/preprints/2022/egusphere-2022-116/egusphere-2022-116-RC2-supplement.pdf