Geosci. Commun. Discuss., referee comment RC1
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Review of gc-2021-13

Martin Archer (Referee)

Referee comment on "Editorial: Geoscience communication – planning to make it publishable" by John K. Hillier et al., Geosci. Commun. Discuss., https://doi.org/10.5194/gc-2021-13-RC1, 2021

This editorial provides an incredibly useful guide to the process of undertaking geoscience communication research that might be suitable for publication within the journal GC, and thus the manuscript would make a worthy contribution to the journal itself. The editorial is well structured and outlines key steps, backed up by many published examples, to convince readers that publication of communication activities/research is worthwhile and how one can go about this. I have only minor comments on the manuscript.

General comments

For activity-driven research, the authors have a tendency to focus only on impact evaluation. Indeed on lines 153-154 the authors state that "the GC editorial team would like to see investigations of the dialogue and the communication process itself", which would constitute a form of process evaluation. This statement comes across as though there are currently no such studies in GC, when this is not the case. Recent examples include: Archer et al. (2021b), Balmer (2021), Skinner (2020). In addition, in my opinion it would also be helpful for the authors to raise the possibility of audience evaluation, i.e. assessing who the audiences of communication activities actually were compared to targets, such as socially disadvantaged demographics (e.g. Archer, 2021) or those that don't typically engage with science (e.g. Archer, 2020). Both of these types of research are often performed in social science and educational research, so would be worth explicitly mentioning somewhere in the article so that a wider range of potential activity-led articles can be udnerstood by readers and potential authors.

I think it would also be helpful for the authors to elaborate on how self-reflection may be used in constructing GC research articles, which is only briefly mentioned on line 434. Many times throughout the manuscript it is stated that qualitative and/or quantitative evidence is required, so reconciling how self-reflection may be included with this statement is required. Self-reflection, grounded in contemporary theory, is a form of Action Research. Mentioning how this may be leveraged in GC would be immensely helpful to potential authors that wish to go down this route.

Specific comments

Line 16: "Behave" may be the wrong word, since this implies subsequent actions by

participants/audiences. "Respond to these efforts" may be better, since this verb evokes a greater variety of outcomes such as attitudes and thoughts, and also makes clearer the subject of the sentence.

Line 26: "may involve" would be more accurate, since there is the possibility of impact that does not include such communication activities or even the active participation of the academic, as evidenced in many REF Impact cases.

Lines 29-32: It would be useful to mention social science and educational research, established fields that have a great amount of overlap with science communication and public/societal engagement, somewhere here.

Line 39: "robust evaluation"?

Lines 56 & 278: Perhaps not the right phrase, since "tangential communication" usually refers to going off topic. Maybe "subtly" or "stealthily" communicate would be better?

Line 60: "Our target audience for this editorial" in order to clarify that you are not simply referring to the journal's target audience.

Line 63: "as well as" instead of the last "and"?

Lines 74-75: "other geoscientific work" Please clarify, does this refer to (non-communication) geoscientific research?

Lines 130-135: Personally, I would say this a little harsh on activity-driven research and ignores that qualitatively-drawn conclusions can offer broad insights into why specific aspects may or may not have been well received, which can therefore be applied elsewhere. I would suggest the authors temper this argument slightly.

Line 200: "implementation or impact" to include a broader range of potential research questions?

Line 200: The authors should highlight highlight that any success metrics should be, where possible, benchmarked against other available data in published or grey literature and not simply arbitrary.

Line 229: "emitted from the sun" is not technically correct since these waves can naturally arise in the solar wind itself as it travels towards Earth or as the wind interacts with Earth's magnetosphere. "due to the 'solar wind'" would be fine.

Line 233: This sentence is a slight mischaracterisation of the authors. While the statement is true of the first author, the co-authors have different scientific backgrounds (e.g. medical science) but are principally public engagement professionals/practitioners.

Line 234: What the authors mean by "stakes" is not defined until much later, so perhaps should not be referred to at this point in the manuscript.

Line 270: "or audience" I would suggest this is removed, since there were clear audiences in mind during the planning (geoscientists vs. non-geoscientists).

Line 342: "Science communication researchers"? Not all professional practitioners are trained in evaluation/research methods and/or underlying theory.

Lines 349-349: "interdisciplinarity of the project and stakeholders"? In some of the examples presented, the authors already had interdisciplinary expertise that they could

leverage in order to enable publication.

Lines 375-378: Perhaps the authors could comment that the act of collaborating with different disciplines might make authors to GC more skilled in new areas and thus able to continue publishing their communication activities/studies with less assistance in the future?

Line 389: "might not" instead of "cannot" as this will also depend on the effect size.

Lines 418-420: These appear to be primary sources of data, so should they not go on Line 400 along with the mention of graffiti walls (which included drawings as well as words)?

Line 418: Raising demographics here highlights the need to discuss demographic data, either as a primary or secondary data source (e.g. Archer, 2020, 2021).

Line 424: "the size and significance of any potential changes" in order to highlight that there may be no real changes from before to after as a result of robust statistical analysis?

Line 426: Perhaps add comments and likes alongside views for YouTube videos?

Line 432: Quantitative linguistics concerns empirical properties and laws of languages, whereas what the authors refer to here is quantifying qualitative data.

Figure 1: Panel a is somewhat misleading, since the collection of evaluative data requires prior-planning and thus the research element cannot be wholly unconnected from the activity. I would suggest the authors modify to include some slight overlap to the activity and research.

Figure 2: The numbering does not start at the top left, which may be confusing for readers. I can see that this has been chosen to align with the arrows, however, if I understand correctly, the process is not a cycle thus such cyclical arrows are not warranted. I would suggest the authors use a simpler depiction either using typical flow chart style or even just a vertically numbered list.

Technical corrections

Line 56: "video games" (a space is missing)

Line 277: "is a risk"

Line 355: "a simple survey" missing indefinite article

Line 359: "a direct feed" missing indefinite article

Line 419: "school children" space missing

Line 437: "make" remove the s

Line 510 "recommended" add ed

References

Archer, M. O.: Space Sound Effects Short Film Festival: using the film festival model to inspire creative art–science and reach new audiences, Geosci. Commun., 3, 147–166, https://doi.org/10.5194/gc-3-147-2020, 2020.

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Archer, M. O.: Schools of all backgrounds can do physics research – on the accessibility and equity of the Physics Research in School Environments (PRiSE) approach to independent research projects, Geosci. Commun., 4, 189–208, https://doi.org/10.5194/gc-4-189-2021,

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Skinner, C.: Flash Flood!: a SeriousGeoGames activity combining science festivals, video games, and virtual reality with research data for communicating flood risk and geomorphology, Geosci. Commun., 3, 1–17, https://doi.org/10.5194/gc-3-1-2020, 2020.