

## ***Interactive comment on “Engaging children in geosciences through storytelling and creative dance” by Ana Matias et al.***

### **Anonymous Referee #2**

Received and published: 9 January 2020

The manuscript describes the development, delivery and evaluation of an activity designed to raise emotional connectivity to geoscience communication and informal education. The stated objectives are to

‘...engage children in geosciences...’, and to ‘...provide arguments about the importance of arts (dance) and communication techniques (storytelling) in engagement and effectiveness of geoscience programmes and develop [the audience’s] willingness to participate in similar activities.’

The activity described is a thoughtful, relevant, and innovative interpretation of the underlying scientific principles. There is evidence the children enjoyed participation and that post-event many would participate in dance-based learning activities in the future. While the majority of the learning experience was based on dance, this was still

rooted in a brief dissemination style explanation at the start of the lesson plan followed by the reinforcement in the activity.

While I admire the approach to activity development I find it problematic to separate the learning activity from the communication of the science as stated in text beginning on lines 55 and 395. If the goal is to raise science capital rather than geoscience literacy, more evidence would need to be presented regarding the positive linking of the physical activity to the understanding, familiarity, and comfort with the science, or any science, being communicated. Without this, the evidence is only convincing in demonstrating an increase in social capital, at best cultural capital.

The manuscript would be greatly improved with some simple changes to the evaluation including, 1)Pre-activity data on knowledge of coastal morphodynamics – this need not have detracted from the activity as could have been included interactively in the introductory section by asking for experiences of waves/shorelines. 2)Pre-activity data on how pupils prefer to learn science: this would have greatly strengthened assertions that the activity was a preferred method rather than relying on feedback post event collected by those delivering, which has a strong likelihood to create audience bias through wanting to please the activity deliverers. 3)Follow up data on the pupils' understanding and retention of the principles being communicated at 14 days or other time period as deemed suitable post event. 4)Pre and post data on science capital of the teachers and pupils. 5)Evaluation of any impact on the researchers and creative partners. 6)Follow up with teachers on the impact of the activity on team building, etc, would be a useful metric as well.

I do however appreciate there are difficulties in collecting some of this data. It might have helped to have more teacher involvement in developing the activity to support follow up evaluation. I also appreciate and fully agree with the authors' insight into the limitations of this study (text starting line 315, and 369) and believe that careful evaluation planning integrated into the delivery would have in fact provided the data required to greatly strengthen the manuscript. The data collected could be considered

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a baseline for further delivery at, for example, European Researchers' Night 2020. Finally, I fully agree with the authors' point, starting line 385, that more analysis on the emotional connection with learning is a factor that should be recognized and measured more in science communication.

Line 180: what is 'psychomotricity'? Please define.

Line 215: I would like to see a reference for both Laban's theory of movement and the adaptations from Anne Green Gilbert.

Line 248: A reference or link to the EVREST project would be useful

Line 272: typo: 'brief' should be 'briefed'

Line 321: typo: 'trough' should be 'through'

Line 322: Please rephrase 'it seems to promote ocean literacy' (perhaps to it 'may have the capacity to promote. . .'), or present evidence that this is the case, qualitative or quantitative from pupils directly or from teachers.

Line 337: please provide your evidence, even if it is observation based, on how you assessed the presence of the 'positive emotions'.

Line 339: While the association of pleasant memories to science seems probable, I can't see the evidence presented that this is the case. Please make it clear if this is evidence based or a supposition.

Line 356: While social benefits again seem probable, I can't see the evidence presented that this is the case. Please make it clear if this is evidence based or a supposition.

Line: 367: word omission: please place 'of' between 'identification' and 'whether'.

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