Review of: "Visual Science Communication: The next generation scientific poster"

María del Carmen Sánchez Mora[1]

1 Universidad Nacional Autónoma de México

Potential competing interests: No potential competing interests to declare.

In the Introduction of the article, the authors mention that visual communication is a necessary science language not always well used, and propose the use of interactivity (which they do not define accurately) for science communication, mainly to communicate complex biological concepts.

All this seems to be a good start, but finally, it is difficult to comment on this article because it is perceived as two separate works. In one of them, they present the interactive poster as a tool to perform the visual communication of science and, on the other, they describe in great detail the basis on which said materials should be produced. Although it seems that these are two related topics, the result is that the reader finds an introduction and an implementation full of very interesting bibliographical references that indicate the state of the art in the visual communication of science BUT where the connection with the practical part is not proved.

Starting from the idea that in the communication of science, many aspects of design have been neglected mainly due to the lack of visual design strategies, the authors present a series of interactive posters in which they say they have given priority to the essential principles of scientific communication where they consider that visual science communication not only makes images look nicer, but visual language is essential to make useful comparisons and or give structure. At the same time, they propose that visual design needs to be trustworthy, it may not idealize data and it has to be transparent with all information about its sources. However, not all of these features are justified in the designs presented in the article.

The novelty of the article consists in proposing a new way of making science narrative through a visualization system that includes the use of something that the authors call interactivity, which is actually the inclusion of multimedia in the graphic material. Their definition of interactivity is scarce and limited to propose that it is a very useful tool to increase the scientific literacy of the public.

An important contribution of the work to the field of science communication (which is already justified through the bibliography presented), is precisely to stress the importance of the visual aspect in science communication. They announce that they have developed a new format that combines the traditional scientific poster with the innovation of the interactive poster. They mention that in their posters they are going to transform the scientific findings in such a way that the level of detail and information required can be adjusted intuitively by different publics, although they do not explain how to do that.

The posters they present are very interesting, however they are justified solely through the advice that specialized literature provides on how to produce them properly. It would require making some theoretical precisions such as for example, the definition of visual science communication they are using or they would have to explain why and how an interactive poster could improve ocean literacy (?) in society.

They say that one of the main challenges in the visual communication of science is creating effective visualizations that are engaging and emotional and at the same time scientifically accurate, but they do not describe how they applied this principle to their work.

The authors make a series of important assertions, always taken from the bibliography but not proved in their work, such as:

• “the general public can be approached with simplified and emotional language” (they do not mention that effective science communication requires not only the simplification of language, but its recreation).

• “to evaluate interactive media, usability is measured” (how is this done?).

• Despite the fact that they say that “since 2007 they have been investigating visualization and communication in various scientific fields” and that they are evaluating its impact on the general public, they do not show it in the article.

In the Implementation section they mention that the design can be evaluated through three processes: perception, interpretation and understanding, again without explaining more.

They consider that the key elements for optimal visual design are, among others: The relationship between text and image, the forms and formats of visual representation of complex data or the analysis and preparation of data to transmit information.

Central to these points there seems to be the aspect of visual storytelling where they say that they have produced this type of poster as a form of “sustainable learning (?) that is particularly successful”. Again, this should be demonstrated.

They announce they will describe the implementation of the fundaments of visual communication in the creation of the interactive poster and say that they have thus developed eight interactive posters of which two of them were evaluated according to the experience of the users. They do not present such an assessment.

In the second half of the article they describe the posters as well as their potential recipients in detail and repeatedly mention that their work is based on the literature. They again say, without proving it, that the “Explore the Ocean” poster evokes emotions by producing iconic images, mentioning that this is confirmed by a recent user experience evaluation (Frahm, 2019) of this poster. Apparently, this evaluation shows that the visualizations and animations were perceived as aesthetic and that the implementation of the narrative in the structure contributed to a good understanding and knowledge of the scientific content, which contributed to a positive user experience. This needed also to be presented.

Again, without any proof, they point out aspects such as: “we argue that the interactivity and interconnectivity of the

contents can be as attractive and informative for other target groups that may not be as familiar with it". They conclude that additionally of targeting the general public they also want to support the scientific community with excellent visualizations and interactive formats in the future. They plan to achieve this by developing truly integrated, intuitive and usable tools that help scientists understand their data, but also support communication and knowledge transfer between scientists. All this should be examined carefully because communication between scientists is totally different to communicate with the non-expert public.

In my opinion, the interesting designs that the authors present in this article lose effectiveness since they do not prove the assertions they have taken from the literature.

I consider that the greatest contribution of this paper is that it defends something already known: that adequate science communication should take place in an interdisciplinary team of scientists and experts.