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

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The authors pick an important topic, visual science communication and thoughtful design for sharing information with broad, especially non-professional scientific audiences, but I struggle to understand overall their point. I disagree with the example provided as a *poster* as it looks much more detailed than a typical single study for a research conference. Instead, I think it's more of an exhibit, which requires much more intensive work for design than it seems like any individual researcher or team might be able to commit resources to. I can't see how the authors can translate what they've done to an individual researcher's work, especially as the authors seem to offer no concrete suggestions or even thorough insight into how they developed the work but rather simply offer "an interdisciplinary team." It's true, however, that complex interactive multimedia presentations demand interdisciplinary designers. Finally, I wonder why they chose to focus on one of the eight examples they say they have and provide limited detail again on what data they gathered and how it informed their design let alone what expertise each individual team member (not even specified who these were) added to the experience.

I encourage the authors to re-examine this manuscript and try to decide on a more streamlined approach with recommendations for users (and clear explanation of the users), including budgets of both time and money – including time and money for evaluation on both the front-end and after production. Some specific recommendations to clarify language and clearly cite others' work follows.

Abstract:

Just the natural sciences? Just sciences? I think this could apply more broadly

Also, in that same sentence (#2), I suggest that visualizations do not transfer data to be communicable – because data can be communicated without visualization, but rather facilitate broader communication (also, communicable has an association of infection in disease, which may not be desirable in this wording)

"The public" is generally frowned upon in communication circles today – there is no single group that has enough similarity to be captured readily as such. Rather, consider "publics" or "audiences outside academic circles"; truly, working with those narrower groups is more fruitful for engagement than trying to create one product to work for everyone. Language

could be improved throughout on this point. You yourselves even refer to specific audiences in Figure 1 title and later in the article.

"One of the biggest challenges for visual science communication is to develop effective visualizations that are attractive and emotional, yet scientifically accurate and substantial." Suggest moving this sentence earlier in the abstract as it interrupts the flow of the interactive poster part as a solution.

Overall, the authors switch between active, 1st person voice and passive voice in the abstract at least. Preferably this should be consistent as active voice throughout, and in social sciences, 1st person is also preferred.

Figure 1. What does the color mean in this figure? Is green and blue somehow significant, and what about the colored arrows – do the ones on the left correspond to particular audiences on the right? The colored lines on the left are also confusing – what are they supposed to connect to in the "interactive visualization" portion. At minimum, there needs to be a legend for the colors. Also, why are the left and right objects circles while the center is a rectangle with a border, and what does the shading in the circles depict? Should the Evaluation and Revision arrows also include the scientists? Perhaps instead of a linear depiction, this should be more triangular, with communication also interacting with science unless you truly believe that there shouldn't be any direct communication that way.

Introduction:

"Also, today we often express ourselves faster and more comprehensively through the use of visual means." This could use a citation.

"The challenge" (para 1) – I believe this is only one challenge, not the singular challenge in visualization

What is DIN A0 paper? I don't see how the paper type is relevant in addition to the unfamiliarity. Do you mean large format? Perhaps just including the dimensions would be clearer.

You say you emphasize the scientific poster in the first paragraph, yet the abstract sets up communication to broader publics.

"Usually, scientists are expected" – needs citation

In general, I believe there are a lot of probably factual statements in the introduction that could be better supported with citations rather than assumed to be broadly understood.

"since the understanding …. Can be simplified" – again, I think facilitated is better than simplified. One criticism of communication is that it simplifies things and removes complexity, while your argument is that visuals can help preserve that complexity

"The science of Science communication" is not a complete sentence.

"The demand …" paragraph sets up a sort of linear development of the field, (especially the sentence "this in turn") – I doubt it was a linear development and would suggest revisions that indicate parallel work instead.

"In addition, interactivity enables the combination of different media to communicate science in an effective and interesting way." – this statement definitely needs a citation or should be re-written, because simply adding interactivity does not guarantee effectively communication. There are numerous examples of bad interactive visualizations with ineffective design.

"recently it has been shown" – I dislike the absolute language of this statement; science never completely proves/shows anything. I would re-word as "supports" and also consider softening the rest of the language to be more clear that this is true in some cases, with some audiences, etc.

Interactive animations … "this strategy" – is interactive supposed to be the strategy of reduced cognitive load? Please clarify, and cite cognitive load research here as this is the first time you're introducing the idea.

I'm not following how using interactive media for young adults means automatically that a source will be authentic and reliable – please cite – also, why introduce young adults in particular?

"audience prefers to be inspired by …" please cite

Explore the Ocean

So in looking at this video, I would not call this an interactive poster but rather a fully multimedia exhibit. I thought from the beginning this article would be about sharing the results of an individual research study, but this video shows a much more in-depth multi-chapter experience. My concept of what an individual research team might be able to produce for a

single conference is not the same as what's presented in the video, which seems more like a durable but much more expensive production.

I did appreciate the outline of the tasks the authors/researchers undertook to gather information (card sort, etc.), but for a research paper, would expect much more detail on this aspect and the particular findings that led to the design decisions.

Narration in "Explore the Ocean"

It seemed strange to me to introduce literature in this section which seemed to be part of a previous section on the design.

Also interesting, you portray this as an "interactive" poster, which I presume means you can navigate in any desired order, but note that the sub-chapters are all building on a logical structure (presumably logical to the researchers, not so clear whether it's logical to non-scientists), so it seems rather linear

Is a pleasurable reception the same as emotion? Seems rather a vague "good feeling" to me.

Discussion

Again, seems very out of place to be introducing new literature in the discussion

I would have liked to hear much more about the design process, i.e. the discussions among the various team members and their expertise, the iterations after user feedback, etc., than just a description of the final product. The use of a single example when the authors mention 8 instances also seems a bit of a letdown.

Conclusion

"leads to unprecedented visualizations and new perspectives" – I do not see this supported in your article. I think you have developed a very pleasing product, but I don't see how it's "unprecedented" or a new perspective