

## ***Interactive comment on “HydroViz: evaluation of a web-based tool for improving hydrology education” by E. Habib et al.***

**Anonymous Referee #2**

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HydroViz: evaluation of a web-based tool for improving hydrology education

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### GENERAL COMMENTS

This paper provides a description of the HydroViz web-based tool for hydrological education and, thus, fits the scope of the special issue.

An interesting case study is reported; but the authors get caught in the details rather

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than drawing-out the transferrable knowledge from this study that is of wider relevance to hydrology education. The authors need to identify the novelty and significance of this paper in relation to their previous work and in the context of the pedagogic and hydrological literature.

Moreover, it is very difficult to benchmark whether (or not) HydroViz is an effective hydrology education tool as there is no comparison/ control group (i.e. students that learned the same information in another way). This is a major issue that the authors must address.

As illustrated by my numbered list in the SPECIFIC COMMENTS, there are several matters that require further explanation/ clarification to improve the readability and rigor of the paper.

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### SPECIFIC COMMENTS

ABSTRACT 1. The abstract should explain the wider implications of this evaluation of HydroViz in terms of hydrology education. 2. p. 2570, Line 6: what do you mean by “buy in” and buy-in by whom? 3. p. 2570, Line 13: is there a comparator (e.g. traditional class room teaching) for Hydroviz to assess its relative effectiveness as a learning tool? 4. p. 2570, Line 16: what do you mean by “somewhat effective” and why is HydroViz more effective at senior-level? 5. p. 2570, Line 20: these issues need to be expanded and explained. 6. p. 2570, Line 21: future plans require further explanation.

INTRODUCTION 7. The goal of HydroViz is discussed; but there is a need to explain the aim and objectives of THIS PAPER (i.e. evaluation of the educational system and to what end). The paper must aim to be more than a description of the HydroViz tool and seeks to evaluate utility for hydrology education. 8. The authors have published previously on HydroViz <<http://hydroviz.cilat.org/publications.html>> so they should situate this paper in relation to previous work in the Introduction. (I note their 2011 ASEE

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Journal of Advances in Engineering Education is not cited.) What is the novelty of this paper? What does it add beyond previous publications? 9. p. 2571, Line 27: missing punctuation.

10. Section 3 perhaps should come before Section 2 to explain the educational needs before describing HydroViz. As is, the tool comes before the purpose.

HYDRO-DATA... 11. This section is very descriptive with most of the background information available (it seems to me) on the HydroViz website.

HYDROVIZ SOFTWARE 12. This section is (again) very descriptive. The text needs to tease out how and why this approach has potential to enhance student learning.

LEARNING MODULES 13. All the necessary information is in Table 1; consequently, the text can be abridged considerably. 14. Are there any points of good practice or teaching innovations in terms of module design?

IMPLEMENTATION AND EVALUATION 15. p. 2575, Line 24: specify which courses and where. 16. p. 2576, Line 9: how did "homework assignments" help determine effectiveness? 17. p. 2576, Line 13: what were the criteria for assessing project effectiveness? These criteria need to be clear. What is the benchmark for assessing improved effectiveness (e.g. traditional class room teaching)? 18. p. 2576, Line 14: unclear; please be more specific. 19. Section 5.3. could be shortened and integrated into Section 5.1. 20. p. 2576, Line 11: refer to Table 1 and delete text. 21. Section 5.4: I am still very unclear how "homework assignments" help determine effectiveness. 22. A link to the "Online Surveys" should be provided and the descriptive text shortened to pull-out key points. 23. The "Informal Interviews" do not seem to have been conducted in a very systematic manner. How robust is this information? 24. p. 2578, Line 16: the paper contains quite a bit of internal repetition. For example, the information on the student cohorts has been provided three times by this point. Please remove unnecessary repeating. 25. Section 5.5 is confusing; and it would appear that HydroViz as used differently between levels and institutions, which has implications for interpre-

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tation of data. 26. Section 5.6 (variable) data used for evaluation needs to be much better justified.

EVALUATION RESULTS 27. I find it very difficult to benchmark whether (or not) HydroViz is an effective hydrology education tool as there is no comparison/ control group (i.e. students that learned the same information in another way). This is a major issue that the authors must address. For example, non-contextualized %s of students agreeing cannot be used to say the HydroViz tool is a better means of education than other pedagogic approaches. 28. p. 2581, Line 2: what does the preceding paragraph tell us?

WHAT CAN BE DONE TO IMPROVE HYDROVIZ? 29. This section is very descriptive. The authors should focus on issues that are of wider relevance to the use of web-based tools for hydrology education. As is, this section is too specific to HydroViz to be of wider interest to the HESS readership.

SUMMARY, DISCUSSION... 30. p. 2581, Line 21: The statements about HydroViz being effective are difficult to evidence based on the results presented for the reasons mentioned earlier in my review (i.e. lack of control group to benchmark against). 31. Again, this section is repetitive and very descriptive. As stated above, the authors should focus on issues that are of wider relevance to the use of web-based tools for hydrology education. 32. No references are made to the hydrology or educational literature. It is very important that the authors situate their work in educational theory and within the discipline of hydrology to clearly illustrate the novelty of their work and its wider implications. It is the generalize-able points (not this interesting case study) that the HESS readership will be interested in. The transferrable knowledge seems to be lost in the case study detail.

TABLES 33. Table 3 needs a caption. 34. Tables 3-7 consider plotting selected data as graphs to help visualize results.

FIGURES 35. Figure 2 could be deleted and a link to the webpage provided instead.

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MINOR POINT 36. Data are plural.

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