

## ***Interactive comment on “T-shaped competency profile for water professionals of the future” by S. Uhlenbrook and E. de Jong***

### **Anonymous Referee #1**

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It is difficult to evaluate this contribution using the standard approaches and the authors state that it is more of an opinion paper. The subject matter is, however, relevant to the special edition on hydrology education. The issues raised in the paper are very important, however, I am not convinced that they are especially new. My own undergraduate and post-graduate background in the Geographical sciences (some 30+ years ago) was strongly based on similar concepts of educational development, although the terminology of T shaped profile was not used. I think the same could be said for a number of other courses offered in the past and today. There are many instances where competence in the broad field of water resources science is encouraged to compliment specialist knowledge in one field. This is not to suggest that the topic should not be re-visited, I would just like to make the point that it has been around for some time.

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I do think that the paper is longer than it needs to be to make the point. There is quite a lot of repetition of similar or the same points, which could be made more succinctly.

Some additional comments:

The concept that specialist knowledge can become outdated (page 5, L12 and elsewhere) is emphasised too strongly. I do not think that knowledge becomes outdated, but it can be added to. The problem lies in the fact that some professionals do not update their knowledge. It is therefore not the knowledge that is necessarily outdated but that individuals are not updating their knowledge.

I am also not convinced that global environmental change leads to problems of 'unprecedented complexity and magnitude'. The complexity in environmental systems has always been there. It might be that we now need to more urgently understand the complexity, but that is a different matter. It could be argued that we should have developed a better understanding in the past (particularly of multi-disciplinary solutions) and that is why we face many pressing problems of the present and future.

There are many minor, but highly irritating, grammatical errors in the paper that need to be corrected and some of them render the text almost incomprehensible:

P2, L16: '...remain more permanent' P2, L22: '.. is to contribute to..' P3, L4: '..careful consideration regarding the content and design..' P3, L12: '.. hydrology in the wider sense..' P3, L13: ' ...eductaion be better linked..' P3, L18: ' ..empirical evidence..' P4, L19: '...fulfilling all the requirements of a senior..' P5, L5: '.. who sepcialised in hydraulic..' P5, L6: '... of micro-pollutants.' P5, L13-15: This sentence does not make sense and needs to be re-worded. P5, L16: ' It is necessary to learn..' P5, L23-24: I assume this is meant to be '.. competencies change as an individual changes during their professional career.' ?? P6, L2: '..requires, for instance, more..' P6, L7: 'Nowadays, professionals, in particula those with an academic background, never..' P6, L11: 'To accomplish..' P6, L14: '...resources and their variation..' P6, L24: ' ..e.g. for assessing existing and advising on..' P7, L15: '..graduates of the future..' P7, L21:

'.. outside their own discipline, and on the other hand..' P8, L17: I am not convinced that the mono-disciplinary approach is necessarily dominant in the world, particularly in science-based departments. If this statement is to be left in, it needs to be further supported by evidence. P8, L19: '... of the T), a T-shape professional...' P8, L22: 'the demand side that needs a solution to the problem' This needs to be re-phrased as it does not fit in properly with the other part of the sentence and paragraph. P9, L11: '.. in groups containing experts..' or '... consisting of experts..' P9, L18: '..cover all the domains.. P9, L29: '..group members with..' P10, L5: '..of groups jointly..' - rephrase as this is not correct grammar. P10, L11: the sentence on architectural design task is not a proper sentence. P11, L11: '...graduation as a practicing..' P11, L19: delete 'see above'. P11, L23: '...gender balanced, often a challenge in many hydrology programmes due to the imbalanced..' However, I am not convinced that this is a general problem and I would suggest that some class statistics should be provided to support this contention. P12, L1: '.. from outside their own..' P12, L8: '...enable the development of passion for ..' P12, L24: '... are of high quality and ..' P13, L30: '.. and horizontal bar are addressed.' P14, L6 and elsewhere: I would suggest changing 'groupworks' to 'groupwork' P14, L10: '... phase do students..' P14, L21: '..the programme..' P14, L24: '.. This stimulates the development..' P14, L28: 'This has to be reflected didactical approaches' not a sentence. P15, L6: '..for distributing lecture material..' P15, L11: ' ..receive on the first day..' P15, L18: '..part of the Horizon..' P15, L22: ' ..in the Mediterranean..' P16, L17: ' ..development of other skills..'

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