Review of: "Artificial Intelligence and Digital Technologies in the Future Education"

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Potential competing interests: No potential competing interests to declare.

This is an interesting overview of new and proposed uses of computer-based instruction methods, now grouped under the AI rubric. I think it is a very valuable overview of the field. These are my suggestions to improve it:

1. For each technology, it is important to tell readers how well the technology works compared to ordinary instruction methods. Without this information, there is no way to judge whether one should be interested in adopting the technology. I would suggest a table that lists the technologies discussed, the experiments performed, and the results. This would include SCs, APOS-ACE, CBR, CT, flipped learning, etc.
2. The statement from Klaus Schwab, " 4IR is expected to lead humanity to an era of nearly free energy, goods and services " is demonstrably false. It is based on Schwab's lack of understanding about the low-hanging fruit principle: what is easiest is done first, then it becomes more difficult to do the same thing, requiring more technology and also more labor. The history of work over the last 800 years clearly shows that working hours have not diminished (though there was a peak in the 19^{th} century), despite increasing productivity due to technology and improved methods. Technology hasn't reduced the labor component of most services, only increased what they can accomplish. In the case of medicine, for example, we have more expenditure of resources and labor because we can do so much more, given our technology.
3. The idea of computer-aided instruction goes back at least 20 years earlier than the article indicates. This reviewer worked on a large National Science Foundation funded effort known as TICCIT in the early 1970s, which used minicomputers and specially modified terminals for instruction at the freshman college level.
4. It is not clear how the process shown in Figure 2 is supposed to work.
5. The discussion of bivalent and fuzzy logic in Sec. 3 needs some modifications. The problem with these kinds of discussions, which deal with epistemological issues, is that they quickly become self-referential. For example, if we say that bivalent logic is now superceded, this statement applies to itself. So what does it then mean? Fuzzy logic and other logics don't replace bivalent logic, only allow us to apply logic in cases where the proper truth value cannot be ascertained, usually due to uncertainty. In probability theory, for example, we deal with situations where the actual truth is not known, only the likelihood of one or another. But that doesn't mean that the reality is not clear. In quantum theory, we know that the values of observables are not determined until they are measured; but that is not because bivalent logic doesn't work, but because measurement is part of the whole physical process.
6. More discussion of the controversial idea that AI will replace teachers is needed. The reviewer's experience with AI and also as a professor has convinced him that AI is vastly overrated and frankly very stupid, so it won't ever replace

real teachers. At best it can be a supplement, though that could be quite valuable for some types of courses.