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

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Potential competing interests: No potential competing interests to declare.

The idea of the paper is quite interesting. Nevertheless, the author should focus on it much more.

Main Theme:

According to the author, the main focus of the paper is the role of AI and digital technologies, in general, to education, in the context of the Fourth Industrial Revolution. Subsequently, he proceeds with a discussion regarding the benefits and limitations of AI techniques in education, by:

1. Investigating the role of computers.
2. Studying the expediency of teaching principles of Soft Computing (SC),

in education. Based on the author's discussion, he concluded that, on one hand, some experts expect that the "clever machines" will replace the teacher in the near future, while on the other hand other experts are firm believers that dramatic changes taking place with respect to the role of the teacher in the class.

Points for the author to reflect on:

The fundamental opinion of the reviewer is that the paper seems disconnected, abstract and the train of thought connecting the focus of the paper with the conclusions incoherent.

Starting from Section 1: Introduction, the author provides a very high level explanation of Artificial Intelligence (AI), while stating the following:

"The introduction of the techniques of AI to Education has brought significant benefits to the teaching and learning, to student and teacher assessment and training and to several other educational processes".

Question 1: Although true, where are the sources supporting this statement throughout the paper and what are the benefits he's referring to? This point is crucial as it's one of the main ingredients of this study.

Subsequently, in Section 2: Computers in Education, the author moves on into presenting APOS and ACE; two didactic methods, where computers "play a dominant role", while introducing flipped learning and Case-Based Reasoning (CBR) in a very high level. The only association between these didactic methods and AI, as articulated in this study, is that both revolve around computers.

Question 2: Is there a precise association between APOS, ACE, flipped learning and AI according to the author? The author doesn't seem to create clear association(s), and thus does not convey the intention, motivation and/or reasons he's referring to these topics.

Then the author makes the case that, the rapid emergence of new technology gave birth to complex problems, which are best approached by combining critical thinking as well as computational thinking, while supporting this statement with a self-reference.

** So far, throughout sections 1-2, there seems to be a lack of smooth transitioning from topic to topic.

In section Section 3: Applications of Soft Computing to Education, there is a very brief reference to Bivalent Logic (BL), Fuzzy Logic (FL) and by extension Fuzzy Systems (FS), Probability theory, Bayesian Reasoning (BR), Artificial Neural Networks (ANNs), Genetic Algorithms (GA), under the umbrella term, "Soft Computing".

Remark 1: These are distinct fields of study, not applications. The author doesn't make any reference to applications of the specific fields of study in education.

In section 4: Benefits and Limitations of E-Learning with respect to the Traditional Teaching and Learning Methods, there doesn't seem to be any direct or indirect association nor smooth transitioning from and to the rest of the paper. In addition, there is a reference to the field of Machine Learning (ML) and it's subfield Deep Learning (DL) as a preface to a very brief introduction of a Smart Learning System based on CBR.

Remark 2: ML is not limited to supervised and unsupervised learning. There is also reinforcement learning, while there are sub fields such as semi-supervised learning, although given the spirit of this study, its reference is not mandatory; it can be considered a branch of supervised learning.

Question 3: Why is such an SLS useful, and how did ML achieved such merit? Why is an ML-based SLS useful to teachers?

Afterwards, there is a short reference to robots in education, namely, Tico and Bandit, however, once more, there is no context as to why the author refers to them. Section 4 concludes the limitations of e-learning and how AI will deprive personnel of their jobs, while creating new opportunities for alternative jobs.

Last, in section 5: Discussion and Conclusions, the author starts with a reference to the Fourth Industrial Revolution, while concluding that students and educators are in need of suitable ways to absorb the rapid developments, in order to stay ahead of the curve.

Points for the author to reflect on:

According to the reviewer's, opinion there is a lack of focus. It's very important for the author not to just mention notions, fields of studies and ideas, but more importantly to provide intention, motivation and concrete associations among them so that the reader is able to connect the dots. The sections of the paper seem to be loosely connected, while there is a lack

of smooth transitioning from an intra-sectional as well as inter-sectional perspective. The author is advised to reformulate the paper by associating examples of AI in education, didactic methods, industrial revolutions in a more clear and concise manner.