

Understanding Electrical Components and Simulink Blocks Based on an Artificial Intelligence Learning Method

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Abstract

With the advancement of AI technology, barriers to accessing information and producing content have been eliminated. Consequently, artificial intelligence has emerged as a prominent field in education. This article aims to introduce a novel approach that allows students to translate scientific concepts into images using AI. By simplifying intricate scientific ideas into plain language for AI, students can foster their creativity and engineering mindset. This technique can be integrated into classroom activities and exercises, requiring learners to articulate the connection between scientific concepts and the generated images with logical reasoning. Developing and recognizing scientific concepts boosts creativity and engineering thinking as students analyze the images from different perspectives to identify scientific principles. Moreover, creating an image with AI necessitates exploring a scientific topic from diverse perspectives to explain it in simple terms.

Introduction

In various sectors, including education, the role of artificial intelligence (AI) technology is becoming increasingly apparent. AI technologies have transformed educational curricula, especially in technology, science, mathematics and engineering. However, AI is also set to change the face of the world of education as a whole, and one technology that has received a lot of attention recently is Artificial Intelligence (AI).

This paper introduces a method based on using AI. The purpose of this method is to achieve a better understanding of the educational content, which is a challenge in e-learning.

In the proposed method, student should translate a scientific subject into simple language for AI. If a learner can explain a complex subject in simple language, it indicates that he or she has fully understood the subject.

Methodology

This pedagogical approach has been carried out on the participants of the postgraduate program at Shahid Beheshti University. In this method, topics related to engineering elements and software blocks in Simulink were taught to the students. The proposed pedagogical approach is to design more effective and appropriate learning images for students using AI technologies. This training can be implemented in two forms: exercises and instructional images. In the exercise-based approach, the teacher asks students to design photos using AI to convey a concept or scientific point. These photos should be able to independently convey a teaching concept or scientific point to other students. The proposed teaching method can also be implemented as a classroom activity. In this form, the teacher uses AI to design a series of images to convey a concept or scientific point. These images contain teaching points or concepts that the students have to discover.



Figure 1. Photo created by AI to teach wind turbines with a visual resemblance to a shark's fin.

Strengths of Method

The strengths of the proposed teaching method are divided into three categories: deep learning, the promotion of creativity, and the implementation in virtual education.

A- Deep Learning- In deep learning, learners first acquire the educational content and then transfer their learned knowledge to artificial intelligence in simple language.

B- Fostering creativity- Students should be able to discover scientific points and concepts by creating or viewing images. They have no restrictions in creating images and can freely use their creativity to design the desired image.

C- Implementation in virtual education- With the coronavirus outbreak, virtual education has gained a prominent place in the educational system. The possibility of using different teaching methods in virtual classes may be of particular importance. The potential to use this method of education in both virtual and face-to-face settings is one of its strengths.

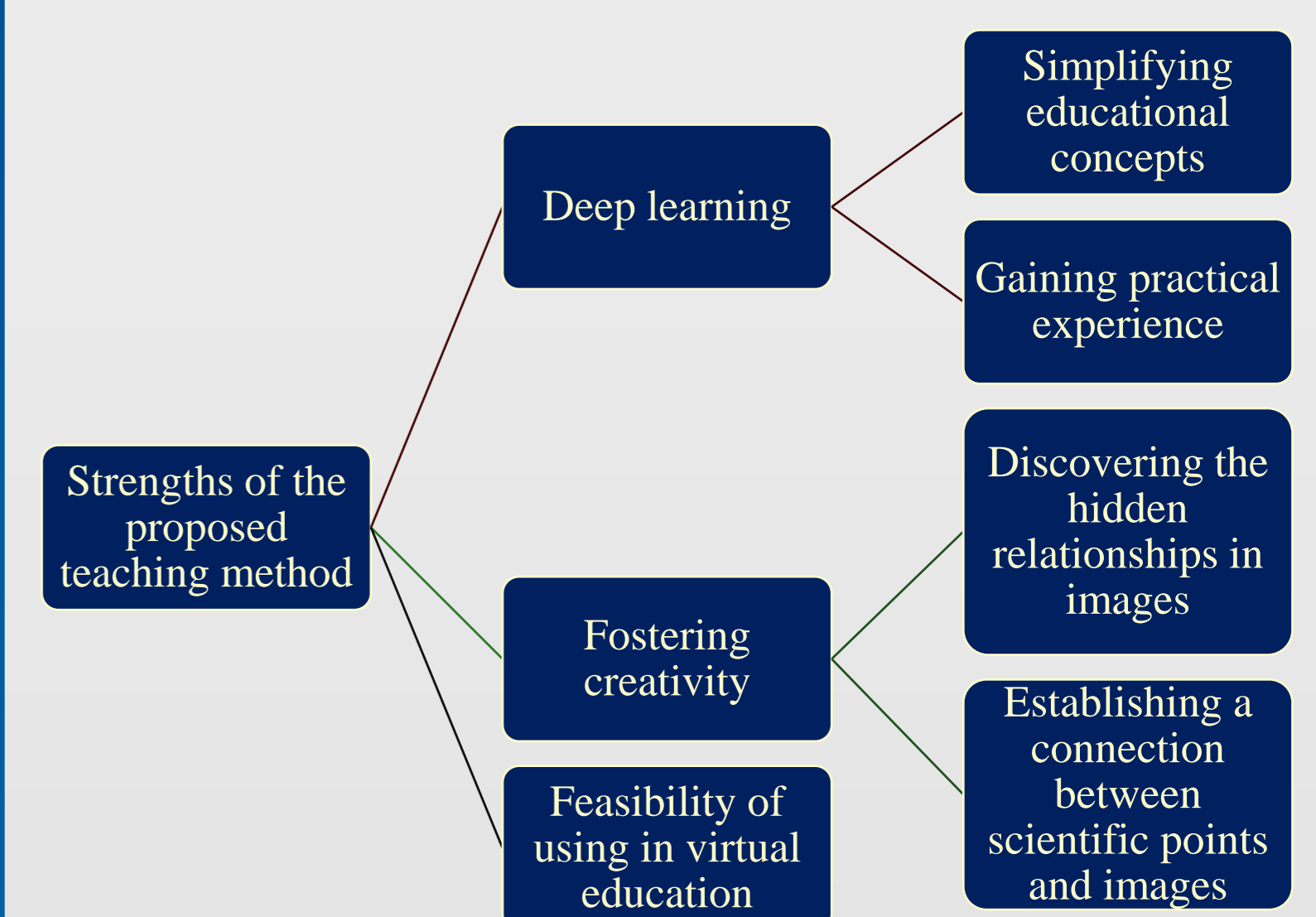


Figure 2. Strengths of the proposed teaching method from three perspectives of deep learning, fostering creativity, and application in virtual education.

Conclusion

In this article, a novel teaching method is introduced. The main objective of this article is to investigate a teaching method that can be used both in-person and virtually. In this method, deep learning and creativity are enhanced in learners. This approach enables students to convert scientific concepts into images using artificial intelligence. By simplifying complex scientific concepts into plain language for artificial intelligence, students cultivate creativity and engineering thinking within themselves. This teaching method can be implemented in two ways: instructional and exercise-based. In both forms of implementing this teaching, learners must be able to explain the relationship between scientific concepts and the created images with logical reasoning.

References

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