

Guest Editorial Preface

Current Trends and Sustainability in Maker Education With Technology

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As an emerging educational paradigm, maker education not only alters the nature of traditional practice, but also devises an innovative way to cultivate talents. It relies heavily on real-life experiences and hands-on training, thereby engaging students in meaningful learning through which they may gain deeper understanding. In addition, maker education offers great possibilities for combined innovation by enabling students to make good blends of new methods, tools, and connections they have learned, hence a solid foundation for career development, which in turn contributes to the sustainable development of maker education. In view of the growing attention to the usefulness of maker education as an emerging educational paradigm, this special issue is intended to address key topics about maker education tackled by the following articles.

This special issue features six peer-reviewed articles that revolve around maker education. The topics they touch upon range from the ARCS (attention, relevance, confidence, satisfaction) model, assessment, cooking, SDGs (sustainable development goals), social sciences, and web credibility. Besides, taking geographical diversity into consideration, this special issue includes contributors from East Asia, Southeast Asia, and North America, which shows not only the vitality of the online pedagogy community but also the continued positive response to this journal.

The first article is authored by Shin-Jia Ho and titled “Correlations Between the UN SDGs and Educational Technology From the Perspective of Taiwan’s Educational Innovation.” The SDGs, since their establishment by the United Nations, have been gradually integrated into the objectives of the educational community. The contributor investigates the way in which the SDGs can be achieved in the context of Taiwan’s educational environment (from maker to entrepreneurial education). Overall, this article advances our understanding of SDGs.

The second article, authored by Layla Sabourian and titled “The Efficacy of Maker Education and STEAM Content Delivery Through Cooking: A Case Study of the Chef Koochooloo Project,” is a highly intriguing piece of research on maker education. Most scholars of maker education tend to teach students science, technology, engineering, arts, and mathematics (STEAM) from a technological perspective, such as utilizing robots to fulfill maker education. The contributor blazes a trail by using cooking to familiarize students with STEAM. This article offers scholars an alternative way of thinking about maker education, which is well worth our attention.

The third article, authored by Marja Gabrielle Bertrand and Immaculate Kizito Namukasa and titled “Maker Education: Assessment, Documentation, and Sharing With a Wider Community,” deals with the assessment of maker education, which serves as a valuable reference for teachers who promote

maker education. Specifically speaking, maker education is not simply about learning theoretical knowledge. It sets greater store by students' practical abilities. In other words, written tests are not the only criterion for assessing students' performance, which renders it more difficult for teachers to evaluate students' learning effectiveness. Therefore, the contributors provide their view about the assessment of maker education, and academic peers can draw on their research findings.

Authored by Yu-Liang Ting, Shin-Ping Tsai, Yaming Tai, and Teng-Hui Tseng, the fourth article is titled "Tackling the Challenges of Acquiring Web Videos for STEM Hands-On Learning: Example of a Fake Hologram and a Proposed Learning Model." It probes into hands-on learning and STEM (science, technology, engineering, and mathematics) education from the perspective of online learning. With the popularization of the Internet nowadays, related scientific knowledge has become easily accessible to students via online resources. Students' learning effectiveness is ergo subject to the quality of these online resources. Thus, the contributors attempt to propose a learning model to address these challenges, allowing students to learn scientific knowledge in a more effective fashion.

Authored by Subhan El Hafiz, Puti Archianti, and Alvin Eryandra, the fifth article is titled "Maker Education Challenge in Social Sciences: An Insight From Psychology." Maker education has been widely applied in scientific courses, for it echoes the idea of hands-on learning in scientific education. Nonetheless, the contributors try to introduce maker education into psychological courses, which makes this piece of research distinct from the majority of existing literature. On that account, this article provides an alternative view for teachers of social sciences, and in turn encourages the innovative combination of maker education and social programs.

The sixth article, authored by Jan-Pan Hwang and Mei-Yao Chang and titled "Effects of Maker Education Integrating ARCS on Learners' Performance, Motivation, Self-Efficacy," explores maker education from the angle of learning strategy. Maker education entails the integration and application of transdisciplinary knowledge, which implies that students need to develop multiple abilities to accomplish the learning tasks. Against this background, the contributors integrate the ARCS (attention, relevance, confidence, satisfaction) model into maker education, seeking to improve students' self-efficacy, learning motivation, and learning performance, whereby the usefulness of this article for teachers of maker education is made evident.

The accelerated development of maker education finds expression in the aforementioned research articles. Maker education has been realized in various forms (e.g. cooking) and applied in different disciplines (e.g. social sciences). The seven articles demonstrate not only the value of maker education but also its great potential. More importantly, these articles justify further investment and promotion of maker education insofar as to actually enhance students' learning motivation and performance.

We would like to express our deepest gratitude to Prof. Chia-Wen Tsai, the editor-in-chief of this journal, for offering us the opportunity to serve as the guest editors of this special issue. Our sincere appreciation is also extended to the reviewers of this special issue for their constructive comments and suggestions about these research articles as well as their considerable time and effort devoted to ensuring the overall quality of this special issue. Of course, our special thanks go to all the contributors who accomplished this special issue with concerted efforts. This special issue would be impossible without their great scholarship.

We hope you find these research articles informative, inspiring, and enjoyable. We also expect this special issue to lend brilliant insights into both the formulation of future research and the practice of innovative maker education, which may help to improve the understanding and application of maker education around the world.

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