



Brief note on teaching history

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ABOUT THE STUDY

In this special issue of the Journal of Educational Research, the focus is on creation space in K-12 education research, especially research on how student engagement in space affects their learning and development. Creation space settings can vary greatly, especially in K-12 education. These spaces can be locations in classrooms dedicated to production, classrooms in schools almost dedicated to production activities, or temporary buildings created temporarily in schools or classrooms for production activities, and then, once production activities are finished, carry out disassembly. Regardless of the configuration, the maker space is usually equipped with a number of tools and supplies that can be used in the process of manufacturing or creating a product that is a possible solution to the problem.

Maker Space is a unique learning environment where creators have a lot of control over their own learning. They can be seen as places for structured learning or spaces for creative exploration. What makes the space particularly unique is that it almost has to focus on student-centered learning. By focusing on producing a certain product in the maker, students control their learning. Although guidance can be provided, the goal of many spaces is to allow students to find creative and unique solutions to problems posed. A potential challenge in engaging students in learning is finding consistency with learning standards and traditional teaching concepts. Options for problem solving, creative expression, and conditions for multiple possible solutions can lead to meaningful learning of the processes and outcomes that accompany learning in the creative space. However, due to the potential conflict between traditional education and student-centered teaching and learning methods in space, Maker space learning can encounter challenges. By providing students with unique spatial learning opportunities, you can justify yourself to solve potential challenges. In response to the challenges posed by COVID-19, this research

Innovative teaching model that integrates STEM (science, technology, engineering, and math) education and virtual reality into maker education. The experimental research was divided into three groups (two experimental groups and a control group) to explore (a) the impact of the introduction of STEM on the efficiency of the maker's knowledge learning, the maker's self-efficacy, and the maker's work; (b) introduce virtual reality to the recognition of Maker space The impact of knowledge; (c) The impact of maker courses on the development of maker skills. The results show that the proposed maker course improves students' sense of maker self-efficacy, and STEM-based teaching has a significant impact on the learning effect. However, according to the profile evaluation, the Maker work of the STEM-oriented group is more complicated and systematic than that of the experimental group 1. In addition, the VR group (groups 1 and 2) are more familiar with Maker space (control group) than the PPT group. Therefore, the research results show that when Maker space is introduced, virtual reality content is a more effective teaching method than PowerPoint slides. Secondly, the maker course enhances students' sense of maker self-efficacy. Specifically, STEM-oriented teaching can enhance students' knowledge, complexity, and completion of maker assignments. Although some researchers focus on creativity research in the production environment, so far there has not been any work documenting the collective creativity of students participating in production projects. There are still few studies on the evaluation of collective creativity in project realization and the relationship between collective creativity and project success. In the current research, we use production methods for teaching in the STEAM field.