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Comparative Analysis: Effectiveness of 5E and 7E Learning Cycles in Science Education

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Abstract

This study aims to compare the effectiveness of two major teaching models in science education, the 5E and 7E learning cycles. The second objective of the research is to examine the effects of sub variables such as grade level, country/region, and year of the research conducted. The study involved a systematic search of the Web of Science (WoS), Education Resources Information Center (ERIC), and Scopus databases using the keywords "5E, Science, Education," "7E, Science, Education," "5E, Learning Cycle," and "7E, Learning Cycle". Among the articles obtained from the search, a total of 77 articles that were most relevant in terms of content and met the pre-test and post-test criteria were selected for final analysis. Publications that did not meet the content criteria were excluded. Of the selected studies, 49 were obtained from WoS, 13 from ERIC, and 15 from Scopus. The findings suggest that the 5E model, which was developed in the 20th century and continues to have an impact in fields such as science, mathematics, and psychology, can be restructured to meet the evolving needs of the 21st century. Furthermore, a new instructional model that combines the strengths of both the 5E and 7E models may offer more effective solutions tailored to today's student profiles and educational demands.

Keywords: 5E; 7E; academic success; education; science