NEWSLETTER

How Can Interdisciplinary Collaborative Learning be Effective?

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IN order to explore the application effects of Computer Supported Collaborative Learning (CSCL) in STEM education, this study used the method of meta-analysis to quantitatively analyze 142 pieces of empirical research literature in relevant fields, so as to examine the effects of CSCL on different learning types, as well as the differences in the effects of STEM education supported by CSCL in the dimensions like discipline, learning stage, technology, and teaching strategy.

The results of the study are as follows:

The application of CSCL in STEM education can help improve students' learning effects, but there exist differences in the effect degree of various learning effects, in particular, the effects on cognitive learning are the most significant.

The effects of CSCL on STEM education on different disciplines are different. The impact on Science, Engineering, and Pedagogy is relatively large, while the impact on Health Education and Computer Education is relatively small. CSCL has an impact on the effects of STEM education in different learning stages, comparatively speaking, it has a greater impact on graduate and elementary stages.

Communication Technology, Dynamic Presentation Technology, and Sharing and Co-construction Technology have a more significant impact on the effects of STEM education, while the Multi-technical Combination may not significantly improve the effects of STEM education.

Teaching Strategy has moderately influenced the STEM education effects. Among all the strategies, case-based, game-based, knowledge-constructing and inquiry-based teaching methods are the more effective.

The researchers suggested that it is important to pay attention to using CSCL to achieve emotional goals, strengthening the design of emotional goals; adopting co-construction and sharing technology to support interdisciplinary collaborative learning, focusing on the application of co-construction and sharing technology in knowledge visualization representation and

knowledge tracking; integrating various teaching strategies to promote collaborative inquiry learning.

Source: Modern Distance Education Research, 2021; 33(1): 97-104.