Adapting Information and Communication Technology to Contemporary Needs in Global Engineering Education

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Abstract

This study investigates the effectiveness of integrating Information and Communication Technology (ICT) tools, including Online Meeting Platforms (e.g., Zoom), Learning Management Systems (LMS), and Classroom Support Platforms (CSP), in the context of global engineering courses. This study comprises three distinct phases with the goal of informing the design of effective courses. These phases involve ICT within diverse learning approaches and the implementation of active learning methods tailored to students' aptitudes. The first phase involves a comparative analysis of Active Learning (AL) in an English for Specific Purposes (ESP) course, examining the differences between traditional face-to-face instruction and online delivery. The second phase centers on a Basic English course, exploring variations in instructional methods. Specifically, one class is instructed by a teacher less accustomed to using ICT, while the other benefits from a well-organized approach integrating various ICT tools. The third phase of this study focuses on the integration of new ICT, particularly the Metaverse, into ESP courses. A pilot test was conducted, offering a trial run of the Metaverse English course to voluntary students for a brief period. The results of this pilot test included unexpected outcomes, underscoring the importance of conducting trials before implementing new instructional methods in a formal classroom setting. In each stage, both qualitative and quantitative data were presented, and the outcomes of the given data emphasizing the unparalleled significance of ICT in enhancing the effectiveness of course design. While the results are not yet fully generalizable, they hold potential utility for other courses or subjects.

Keywords
Information and Communication Technology (ICT), Active Learning (AL), English for Specific Purposes (EPS), Learning Management Systems (LMS) Metaverse

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Biography
Rumi Tobita is a professor of Center for Liberal Arts and Sciences, Ashikaga University. Ms. Tobita holds a Bachelor of Liberal Arts degree in Language Education, a Master of Education degree in Audio-Visual Education, and certification of Doctoral Candidate in Audio-Visual Education from International Christian University, Tokyo, Japan. Her research topics are Computer Assisted Language Learning (CALL), Educational Technology, Curriculum Development, English Program Development, English for Specific Purposes (ESP), and Brain Science. She has taught several fields of courses such as Educational Technology, Cognitive Science, Social Information, and Brain Science besides English courses for engineering students for 20 years. She is a committee member of IEOM student chapter in Ashikaga University, The Japan Association for Language Education and Technology (LET) and also local organizing committee of WorldCALL 2008 and FLEAT VII.