An Innovative Teaching Model Integrating AR and IoT Practice in Healthcare Education

Lun-Ping Hung
Professor, National Taipei University of Nursing and Health Sciences, Taipei, Taiwan, R.O.C.

Shih-Yang Yang
Department of Media Arts, University of Kang Ning, Taiwan, R.O.C.

Ming-Hung Chen
National Taipei University of Nursing and Health Sciences, Taipei, Taiwan, R.O.C.

Syu-Bo Jhang
National Taiwan University of Science and Technology, Keelung Rd., Da'an Dist., Taipei, Taiwan, R.O.C.

Abstract:

With the rapid development of an aging society and smart healthcare, the integration of technology and health services has become increasingly important. However, university students often lack practical field experience, which affects their learning motivation and application performance. This study incorporated AR into a healthcare IoT course, simulating the environment of a daycare center and the operation of IoT devices to overcome limitations of on-site visits. The curriculum also integrated Arduino and app development to create an immersive, maker-oriented learning experience. Teaching effectiveness was evaluated using three instruments: the Igroup Presence Questionnaire for AR presence, the Motivated Strategies for Learning Questionnaire, and the ARCS model of learning motivation and satisfaction. The overall average scores were 3.37 (out of 5), 5.32 (out of 7), and 4.22 (out of 5), respectively, indicating strong student engagement across immersion, motivation, and satisfaction dimensions. Results confirm that AR-enhanced teaching effectively improves learning outcomes and offers potential for both remote and experiential education in healthcare training.