Investigation of Relations between Self-Adjustments on Emotion-and-Learning and Learning Process-and-Achievement by Using Education Models of CBE, IDEA, SDP and P-TECH for Technology University Students at IoT Classes

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ABSTRACT

In Taiwan, most people have a traditional idea that, the programming is not easy to learn because it needs accompanied abilities such as Mathematic, logic and English writing. Hence, the motivation declines significantly before learning. Actually, the traditional learning paradigm is always a one-way teaching, which lacks interactions during teaching and makes the learning ineffective therefore. In order to increase the students' programming abilities, in this project, we propose a set of learning techniques including Internet of Things (IOT) and Big Data Analysis and also design a set of instruments for IOT programming. Additionally, a set of teaching strategies including Competency-Based Education (CBE), IDEA Service Design Process (IDEA SDP) and Pathways in Technology Early College High School (P-

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TECH) will be adopted to increase the Hands-on experiences and career abilities for students. Through class designs of service paradigms such as multiple assessments, learner-centered teaching and problem based learning, the students' employability will be lifted in this project. The subjects of the experiment are second- and third-year university students, with a total of 147 students. The research results show that learners' emotional adjustments, self-regulations, and learning strategy motivations will further affect learners' cognitions, including flow experiences, cognitive loads, and learning anxieties, and will further affect problem-solving abilities and learning effectiveness. In the analysis of individual differences, among the personality traits of DISC, influential learners perform best in terms of learning effectiveness indicators and learning effectiveness. The research results provide a certain degree of contribution to the Internet of Things practical application course.

Keywords: innovative instructional design; Internet of Things programming; emotion regulation; creative performance; problem solving ability