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Groups difference in the use of inquiry-based learning platform of the flow experience, cognitive load and learning performance

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Abstract: Inquiry-based learning (IBL) in science education is becoming very essential for students to learn. There are many model of IBL designed for different purposes of science learning, this study extended the model of "predict-observe-explain" (POE) to "predict-observe-quiz-explain" (POQE) in which adding quiz to ensure students in understanding their observation. Based on POQE model, this study designed a solar energy e-learning system for those majored in air conditioning and auto repair students to learn why sun can generate energy. According to cognitive-affective factors of media learning, this study compared vocational high school students' cognitive load, flow experience and learning performance in using the POQE to learn solar energy. Data of 375 were collected from vocational schools over Taiwan area and subjected to independent t-test. The results indicated that by using the POQE model to practice inquiry learning related to solar energy, the cognitive load of students from the majored in air conditioning were higher than those majored in vehicle repair majored; but the flow experience and learning performance of students from the majored in air conditioning were lower than those counterparts. The results implied that to use POQE model to design solar energy for vocational students who majored in vehicle repair.

Keywords: inquiry-based learning, cognitive load, flow experience, learning performance