Interconnection of Reverse Engineering Learning with Small and Medium Enterprises: An inspiration for impactful collaborative product design

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ABSTRACT

The problem of Small and Medium Enterprises (SMEs) in Indonesia is very comprehensive regarding product design. They have local products but experience constraints in quality and innovation in market competition. Collaborative approaches with universities have been pursued even though they have only been realized through collaborative research. This research provides an alternative to accelerating the achievement of industrial products by applying reverse engineering learning based on industrial products implemented in the Computer-Aided Design (CAD) course. To solve partner problems, the stage of developing a learning model was carried out by involving seven validators from academics and professionals. Research is also directed to testing the effectiveness of reverse engineering learning models based on industrial products with existing learning models with postest-only control design experimental designs. The results of testing validators and students in the experimental class showed significant results. Interrater reliability validators agree that the model built is constructive and valid. There were significant differences with the existing learning model at the time of testing. These results reveal that the resulting recommendations in CAD learning provide advantages for universities and SMEs. For students, the reverse engineering learning model based on industrial products can improve their learning outcomes, and for SMEs, it is a recommendation for improving quality and product diversification.

Kata Kunci: *reverse engineering, CAD learning, Small and Medium Enterprises, product design*