

Diagnostic Assessment for Mastery Learning of Engineering Students with a Bayesian Network Model

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Abstract : In this study, a diagnostic assessment model for Mastery Engineering Learning was established based on a group of undergraduate students who studied in an engineering course. A diagnostic assessment model can examine both students' learning process and report achievement results. One very unique characteristic is that the diagnostic assessment model can recognize the errors and anything blocking students in their learning processes. The feedback is provided to help students to know how to solve the learning problems with alternative strategies and help the instructor to find alternative pedagogical strategies in the instructional designs. Dynamics is a core course in which is a common course being shared by several engineering programs. This course is a very challenging for engineering students to solve the problems. Thus knowledge acquisition and problem-solving skills are crucial for student success. Therefore, developing an effective and valid assessment model for student learning are of great importance. Diagnostic assessment is such a model which can provide effective feedback for both students and instructor in the mastery of engineering learning.

Keywords : diagnostic assessment, mastery learning, engineering, bayesian network model, learning processes

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