

The Analysis of Gizmos Online Program as Mathematics Diagnostic Program: A Story from an Indonesian Private School

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Abstract : Some private schools in Indonesia started integrating the online program Gizmos in the teaching-learning process. Gizmos was developed to supplement the existing curriculum by integrating it into the instructional programs. The program has some features using an inquiry-based simulation, in which students conduct exploration by using a worksheet while teachers use the teacher guidelines to direct and assess students' performance. In this study, the discussion about Gizmos highlights its features as the assessment media of mathematics learning for secondary school students. The discussion is based on the case study and literature review from the Indonesian context. The purpose of applying Gizmos as an assessment media refers to the diagnostic assessment. As a part of the diagnostic assessment, the teachers review the student exploration sheet, analyze particularly in the students' difficulties and consider findings in planning future learning process. This assessment becomes important since the teacher needs the data about students' persistent weaknesses. Additionally, this program also helps to build student' understanding by its interactive simulation. Currently, the assessment over-emphasizes the students' answers in the worksheet based on the provided answer keys while students perform their skill in translating the question, doing the simulation and answering the question. Whereas, the assessment should involve the multiple perspectives and sources of students' performance since teacher should adjust the instructional programs with the complexity of students' learning needs and styles. Consequently, the approach to improving the assessment components is selected to challenge the current assessment. The purpose of this challenge is to involve not only the cognitive diagnosis but also the analysis of skills and error. Concerning the selected setting for this diagnostic assessment that develops the combination of cognitive diagnosis, skills analysis and error analysis, the teachers should create an assessment rubric. The rubric plays the important role as the guide to provide a set of criteria for the assessment. Without the precise rubric, the teacher potentially ineffectively documents and follows up the data about students at risk of failure. Furthermore, the teachers who employ the program of Gizmos as the diagnostic assessment might encounter some obstacles. Based on the condition of assessment in the selected setting, the obstacles involve the time constrain, the reluctance of higher teaching burden and the students' behavior. Consequently, the teacher who chooses the Gizmos with those approaches has to plan, implement and evaluate the assessment. The main point of this assessment is not in the result of students' worksheet. However, the diagnostic assessment has the two-stage process; the process to prompt and effectively follow-up both individual weaknesses and those of the learning process. Ultimately, the discussion of Gizmos as the media of the diagnostic assessment refers to the effort to improve the mathematical learning process.

Keywords : diagnostic assessment, error analysis, Gizmos online program, skills analysis

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