

## **EVALUATING UKM'S LINEAR ALGEBRA FINAL EXAMINATION QUESTIONS IN LINE WITH OUTCOME BASED EDUCATION USING BLOOM'S TAXONOMY AND ITEM ANALYSIS**

(Menilai Soalan Peperiksaan Akhir Aljabar Linear UKM Selaras dengan Pendidikan  
Berasaskan Hasil Menggunakan Taksonomi Bloom dan Analisis Item)

FATIMAH ABDUL RAZAK, SYAHIDA CHE DZUL-KIFLI & ABDUL GHAFUR AHMAD

### *ABSTRACT*

Crafting exam questions is an art in itself. Even though there is no strict formula for producing perfect exam questions, the current line of thinking points in the direction of Outcome Based Education (OBE). In this study, we evaluate the final exam questions of the 2012 Linear Algebra course using OBE standards in two separate phases. Firstly, the questions are categorised according to the Course Learning Objectives (CLO) and evaluated in light of the six cognitive domains of Bloom's taxonomy. This first phase aims to assess whether the examination paper has the right balance of questions in each domain. The second phase involves analysing the results of the students in the same examination using item analysis techniques. The analysis includes finding the discrimination index and difficulty index derived from the answers of the students. This second phase focuses on determining the effectiveness of the questions in discriminating students according to their grasp of the CLO. Based on the results, some improvements are suggested. We conclude that except for the analysis level, the cognitive levels of all the questions are generally acceptable.

*Keywords:* Bloom's taxonomy; item analysis; outcome based education

### *ABSTRAK*

Penyediaan soalan peperiksaan mempunyai seni yang tersendiri. Walaupun tiada sebarang rumus yang boleh digunakan untuk menghasilkan suatu soalan peperiksaan yang sempurna, namun ahli akademik pada masa ini lebih bersandarkan kepada suatu konsep yang dinamai Pendidikan Berasaskan Hasil. Dalam kajian ini, soalan peperiksaan akhir Aljabar Linear 2012 dinilai dengan menggunakan piawaian yang digariskan oleh Pendidikan Berasaskan Hasil dalam dua fasa berasingan. Dalam fasa yang pertama, soalan dikategorikan mengikut Objektif Pembelajaran Kursus dan dinilai berdasarkan enam domain kognitif taksonomi Bloom. Fasa ini dijalankan dengan tujuan untuk menilai tahap keseimbangan soalan dalam setiap domain. Fasa kedua melibatkan analisis keputusan pelajar dalam peperiksaan tersebut menggunakan teknik analisis item. Teknik ini melibatkan penghitungan nilai indeks pembeza layan dan indeks kesukaran yang diperolehi daripada jawapan pelajar. Fasa kedua ini adalah untuk menentukan keberkesanan soalan dalam membezakan kemampuan pelajar berdasarkan Objektif Pembelajaran Kursus. Berdasarkan keputusan yang diperolehi daripada kedua-dua fasa, beberapa penambahbaikan dicadangkan. Kesimpulannya melainkan untuk tahap analisis, tahap kognitif bagi semua soalan tersebut secara umumnya boleh diterima.

*Kata kunci:* taksonomi Bloom; analisis item; pendidikan berasaskan hasil

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*School of Mathematical Sciences  
Faculty of Science and Technology  
Universiti Kebangsaan Malaysia  
43600 UKM Bangi  
Selangor DE, MALAYSIA  
E-mail: fatima84@ukm.edu.my\*, syahida@ukm.edu.my, ghafur@ukm.edu.my*

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\*Corresponding author