

The Implementation of Item Analysis in Community College

Farah Zahidah binti Mohd Noor¹, Siti Adila binti Mohamad Yazid², Nor Atiqah binti Ahmad Zaki³

¹Kolej Komuniti Bukit Beruang

²Kolej Komuniti Arau

³INTEC Education College

Abstract: Nowadays, lecturers in community college are required to conduct item analysis for each semester. This study aims to examine the barriers faced by the lecturers towards the implementation of item analysis in community college. The data of this study is collected using a questionnaire that uses a four point Likert scale. The data is collected from 37 lecturers in community college. From the findings of the study, it demonstrates that most respondents are indeed facing several barriers in the implementation of community college. However, the respondents also display positive perceptions towards it. Thus, it could be summed up that the lecturers are ready with the implementation of item analysis in community college.

Key words: *Item Analysis, Community College, Barrier*

1. INTRODUCTION

According to Spady [1], outcome-based education (OBE) means clearly focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. OBE is introduced in community college mainly due to develop a holistic individual in line with Vision 2020 and being able to face globalization challenges. Item analysis is considered as the most crucial element in the implementation of OBE. Item analysis is seen as an assessment skill that is effective in improvising numerous aspects in teaching and learning process. Besides, it also facilitates students to master outcome of their learning process.

In order to measure Curriculum Learning Outcome (CLO) and Program Learning Outcome (PLO), an item analysis has to be developed as a mechanism to measure the outcome achievement of the students. Previous studies in other countries showed that item analysis demonstrated positive result on the teachers and students [2]. Malaysian Qualifications Agency (MQA) in Malaysian Qualifications Framework has made it compulsory for all lecturers in community colleges to conduct item analysis based on CLO and PLO since 2015. The implementation of OBE is a long

term process in developing students who are able to fulfill nine domains in MQA. Previously, these lecturers did not have to conduct item analysis. According to Chan and Sidhu [3], ESL teachers possessed limited knowledge in a number of aspects such as interpreting test scores, conducting item analysis and forming test banks. As it had not been used for a long period of time, they are not familiar to it anymore.

Thus, this research will attempt to examine the barriers faced by lecturers towards the implementation of item analysis in community college. In addition, the researcher intend to identify lecturers' perception towards item analysis, their level of readiness in item analysis and the strategies that could be taken by the lecturers to cope with the obstacles they face as they prepare item analysis every semester.

2. LITERATURE REVIEW

2.1 Item Analysis

Evaluation is a primary dimension in education and plays a major role in giving feedback to students. Students' assessment and evaluation are vital part of the teaching and learning process [4-5]. According to Swanson et al., [6-7] among the different types of students' learning achievements and progress the

multiple-choice questions are globally the most utilized.

Item analysis is an important tool to increase test effectiveness. It is a process in which both students' answers and test questions are examined to measure the quality and quantity of the items and the test medium. It is to promote valid interpretation of the characteristics, validity and reliability of quality assessment practice [8]. Item analysis is an examination of a test and the quality of the test depends upon each item of a test [9-10].

Item analysis refers to a statistical technique that helps teachers identify the effectiveness of their test items. In developing quality assessment and specifically effective multiple-choice test items, item analysis plays an important role in contributing to the fairness of the test along with identifying content areas that maybe problematic for students. Generally, the process of item analysis works best when the class is big. In such cases, item analysis can help in identifying potential mistakes in scoring, ambiguous items, and alternatives (distractors) that don't work. When performing item analysis, we are analyzing the following important statistical information.

2.2 Benefits of Item Analysis

The vital element of preparing multiple choice test is to construct good questions. Items analysis allows us to observe the item characteristics and to improve the quality of the test. In the item analysis, it has item revision [11] allows to identify items too difficult or too easy to differentiate between students who have learned the content of the subject and those who have not. It can also to identify the questions that have distractors not credible.

One of the item-writing guidelines concerns the use of various multiple-choice (MCQ) item formats, which can vary considerably in structure and cognitive demand [12-13]. So, it is important to do item analysis after each examination to ensure that the item constructed is okay and if it needs to be modified before it enters test back [3].

Therefore, the teacher can remove them or change the items or modify instruction to correct a confusing instructions or questions that may lead to misunderstanding or misinterpretation about the content. The teacher also may adjust the way they teach after the findings of item analysis. It can save time and energy of the teacher by improving the skills in the test through item analysis.

2.3 Community College

Community College under the Ministry of Higher Education is an institution that provides trainings and skills to all walks of life and it also offers education

opportunity to secondary school leavers before they continue their education at diploma level or start working. There were 10 pioneer community college established in Jun 2001 and Bukit Beruang Community College was one of it. Lecturers at community college have to teach both their full time certificate and diploma level students and the local community too for short courses.

As of this moment, more community colleges are planned to be built phase by phase as stated in the 9th Malaysia Plan to open doors to the local community to increase their knowledge and skills in conjunction with the objective of the establishment of community college in Malaysia. There are currently 90 community colleges all over Malaysia.

Graduates of community college could further their studies at diploma level in community college, polytechnic and other higher learning institution. All community colleges in Malaysia offer certificate level courses while there are a few that offer diploma courses as well. Starting in 2014, the intake of students per year in community college is increased from two intakes to three intakes in a year. These intakes take place in Mac, July and November every year.

This means that students at community college sit for their examination three times in a year. Hence, this creates challenges to the lecturers in conducting item analysis after each of the examination. In community college, students' evaluation is measured with formative and summative assessments whereby its continuous assessments consist of 70 % and final examination consists of another 30%. Once students have sat for their final examination every semester, lecturers have the responsibility to complete item analysis.

2.4 Barriers Faced By Lecturers

In terms of barriers confronted by lecturers in conducting item analysis, Chan & Sidhu [3] summarized in their findings at which those lecturers have inadequate knowledge in certain of features for instance in construing the test scores, implementing the item analysis and constructing a test bank. They argue that lecturers confessed that although they were aware in calculating the mean, other calculations and terms like standard deviation, z-score and t-score were outside their responsibilities. Most of them informed the researchers that they had heard of these terms during training but subsequently their present profession specifications did not entail them to gaze into these features; as a result they had disremembered their significances and purposes.

The circumstances of absence of training and absence of encouraging reactions to training in Malaysia are fairly alike to what is experienced in advanced countries like the United States. Based on Cromey and

Hanson [14], managing assessment activities and bringing them into line with a common "vision" for student attainment is relatively challenging effort for schools in the United States, mostly when, as research has constantly shown, a small number of teachers and administrators have established formal training in assessment [15-17]. The domestic organizations, the research community, and state-run and local education agencies have struggled to deliver assistance to schools concerning the usage of student assessments. Nonetheless, it is not well understood how, or how well, schools are exploiting this support.

2.5 Strategies to Overcome the Barriers of Item Analysis

In order to counteract with those barriers, Chan & Sidhu [3] emphasized that there is a necessity for extra recurrent consultations and guiding workshops for lecturers to get practical training and exposure in regards to conducting item analysis. An agreement with the head of department or departmental personnel is likely a recommendation to organize a series of trainings and workshops in the implementation of item analysis as many agreed that providing them with a booklet of the new format of conducting item analysis did not give a good impression of what was expected for the reason that as such interpretations diverse from one lecturer to another and from one institution to another.

Definitely an effective implementation of any new policy of assessment evaluation requires effective monitoring and feedback. Chan & Sidhu [3] determined that the interview sessions with respondents indicated that there was little monitoring and supervision with regards to implementation of employing item analysis. Hence, steps must be taken to ensure institutional top management especially the Academic Director or Head of Department and the

senior assistants be trained to monitor and supervise lecturers with regards to item analysis. Directors as instructional leaders in the school must play their role to take effective monitoring and supervision measures. More importantly, effective support mechanisms must be provided for teachers who need help.

However in regards of these concern cited above, perhaps the time has come for the authorities concerned to look into lecturers' workload. A reduction in workload and a decrease in the number of student enrolment may be steps in the right direction to ensure effective implementation of item analysis. Regarding the increase in paper and administrative work such as filling in forms, cards and report books, a large majority of the respondents felt institution should be provided with more office personnel to help reduce their workload [3].

3. METHODOLOGY

This study was conducted through quantitative method and enforced by data collection through survey. This study was conducted on the lecturers from one of the community colleges in Malaysia. The participants who are involved in this study are made up of 37 respondents. The questionnaire used was adopted and adapted from Samsuddin et al. [18] and Chan and Sidhu [3]. The questionnaire consisted of 20 items, each on a Likert scale ranging from 1 as strongly disagree to 4 as agree.

4. DATA ANALYSIS

The data is collected from the respondents' answers in the questionnaire. The overall analysis of the data was collected using the frequency count and the percentages of each answer where then calculated. The data obtained were analyzed using Google Form Statically Data. The data are presented in percentage form.

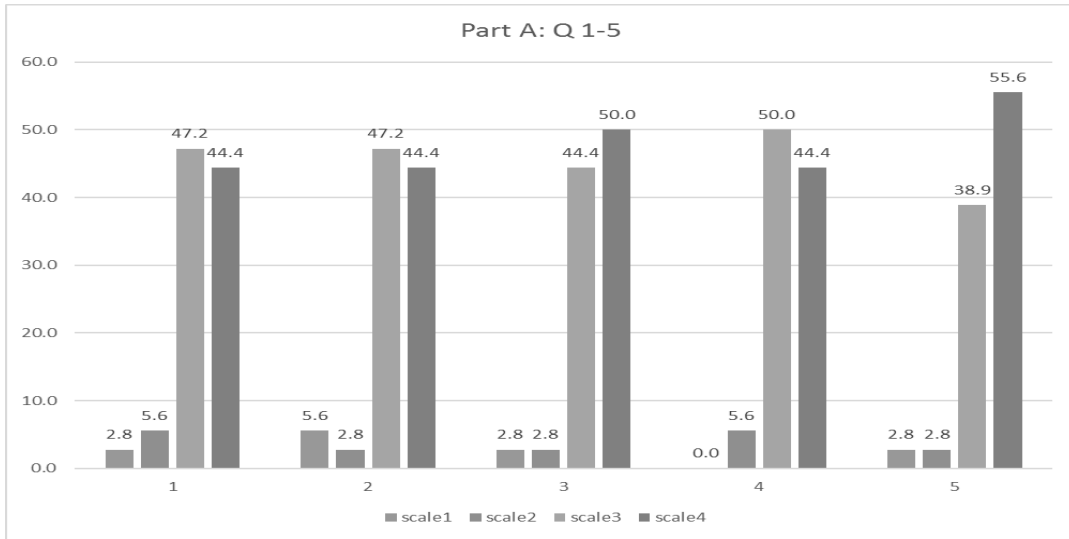


Figure 1. Lecturers' perceptions on item analysis.

The bar chart illustrates the summary of item 1, 2, 3, 4, and 5 on the lecturer's perception on item analysis. The average percentage of scale 4 indicated strongly agree is 47.66% while average of agree percentage is differ by 2.12%. Average percentage for the lecturers' perception on item analysis is very low for disagree and strongly

disagree shown 3.92% and 2.8% respectively. As a conclusion, majority of the lecturers strongly agree with the implementation of item analysis and received positive feedback on perception on item analysis by showing 47.66%.

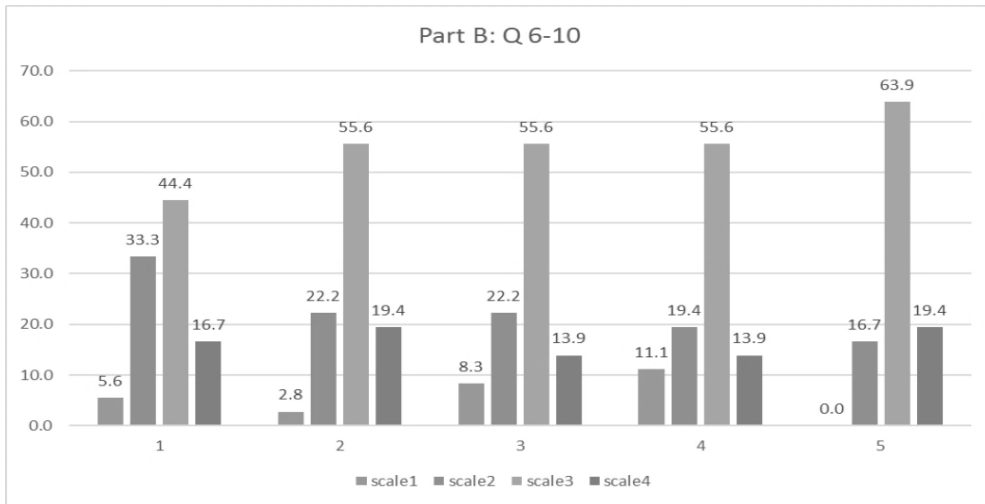


Figure 2. Lecturers' level of readiness in item analysis.

The bar chart illustrates the summary of item 6,7,8,9 and 10 on the level of readiness in item analysis, the average percentage received for strongly agree is 16.66%. However, while the number of strongly agree percentage is decreased, the number of agree percentage increased to 55.02%. The average for

disagree is shown at 22.76%. Meanwhile the proportion of strongly disagree is at only 5.56%. Overall, 55.02% of the lecturers agree that they are ready with the implementation of item analysis in community college.

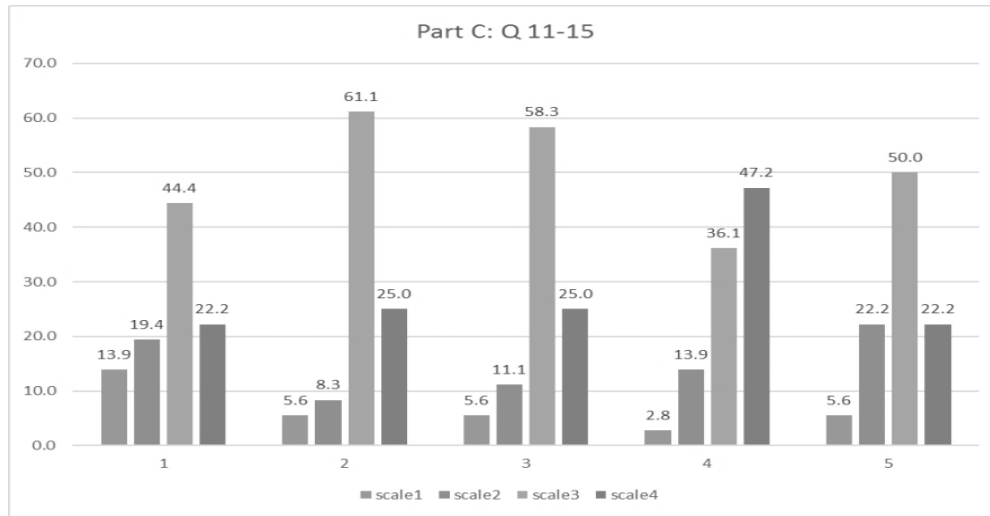


Figure 3. Barriers faced by lecturers in conducting item analysis.

The bar chart illustrates the summary of item 11,12,13,14, and 15 on the barriers faced by lecturers in conducting item analysis. It shows the average percentage for strongly agree is at 28.32%. However, from the trend, it depicts highest percentage drastically increased for average percentage of agree at 49.98%. The average for disagree is shown at 14.98%.

Meanwhile the proportion of strongly disagree is at only 6.70%. Overall, it could be seen that, 49.98% of the lecturers agree about the barriers faced by lecturers towards item analysis such as lecturers did not receive proper training for item analysis. Thus it hinders the effectiveness of conducting item analysis.

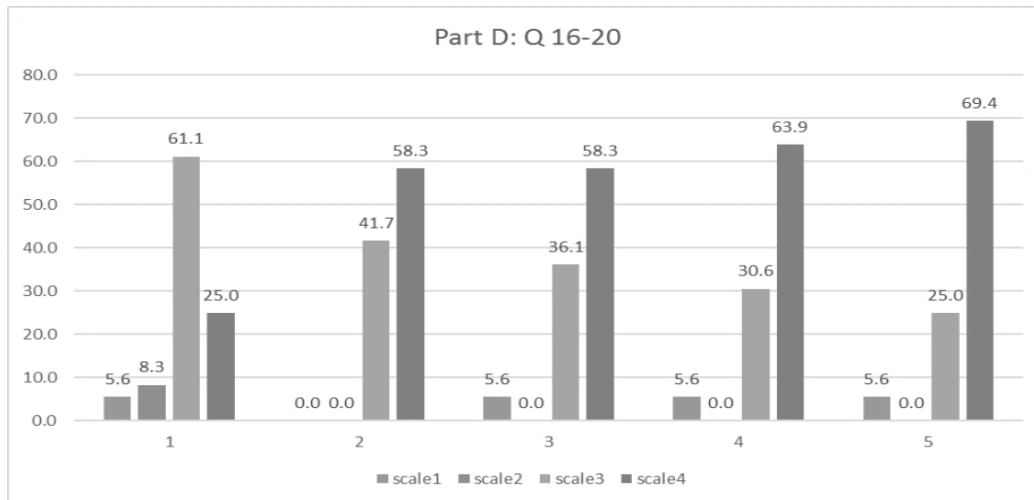


Figure 4. Lecturer's strategies to overcome these barriers.

The bar chart illustrates the summary of item number 16, 17, 18, 19 and 20 on the barriers faced by lecturers in conducting item analysis. It can be perceived the average percentage for strongly agree is the highest at 54.98%. However, from the trend, it can be seen for average percentage of agree is at 38.9%. The average for disagree is shown at 8.3%. Meanwhile the proportion of strongly disagree is at only 4.48%. Overall, it could be seen from the trend 54.98% stated

strongly agree such as that reducing administrative workload to the lecturers and lecturers should be given ample time to prepare for item analysis are the strategies to overcome those barriers.

5. DISCUSSIONS OF THE FINDINGS

Lecturers in this study are aware of the benefits of conducting item analysis after their students sit for final examination. They realize that the findings from item analysis are significant as it serves as feedbacks to these lecturers which they could reflect and use to improve their teaching process and determine which CLO and PLO they should give extra focus. Besides, learning becomes more interactive as lecturers are able to present feedbacks to students which could facilitate students to improve on those areas. Thus, in the item analysis, it has item revision [11] allows to identify items too difficult or too easy to differentiate between students who have learned the content of the subject and those who have not. The focus here is not just on the lecturers but it involves the students and the items too when it comes to item analysis. According to Richards and Farrell [19] as mentioned in Brown [20], teachers can benefit greatly from focused reflection and critical examination of their own teaching experiences, which lead to improvement and further development and same goes for the students too.

However, executing a new policy is not always an easy task. The lecturers have to face several barriers towards the implementation of item analysis in community college since 2015. From this study, the lecturers demonstrate that they need more time to prepare item analysis template for each subject. This is due to the fact that the lecturers are burdened with heavy administrative work aside from their teaching responsibilities. As a result, they have insufficient time to do the template and prepare item analysis effectively every semester after students sit for their final examination. This result is supported by Chan and Sidhu [3] whereby teachers are aware of the positive effects but time constraints and heavy teaching load as the main culprits in its effective implementation.

In addition to that, another salient barrier which the lecturers have to deal with is the uncertainty of whether they have done their item analysis correctly. This happened as there is no standardized template from JPCK up till now. Hence, the lecturers are left on their own as they prepare item analysis every semester. Moreover, as they have left item constructions, item analysis and more knowledge on assessment which they learnt in university for a long period of time, they become unfamiliar with all of these. Chan and Sidhu [3] said that teachers require supervision from their superior to supervise them and ensure that they are doing it correctly and align with what the ministry wants.

Based from the challenges which the lecturers have to endure with the implementation of item analysis in community college, the lecturers

manage to think of several strategies which they believe could facilitate them to overcome the obstacles. Majority of them suggested that their administrative workload should be reduced. Thus, they would be able to concentrate on their teaching process and this includes allocating more time in conducting item analysis. As stated by Chan and Sidhu [3], a reduction in workload may be a step in the right direction to ensure effective implementation of the policy.

6. CONCLUSION

This study was intended to identify lecturers' perception towards item analysis, the lecturers' level of readiness towards the implementation of item analysis in community college, the barriers faced by the lecturers and the strategies to overcome those barriers. The findings indicated that the lecturers are indeed facing several barriers towards the implementation of item analysis in community college. The data revealed that majority of the lecturers have positive perception towards the implementation of item analysis in community college. Thus, based from the data, it could be deduced that most of the lecturers are ready with the implementation of item analysis. However, these lecturers faced several barriers such as insufficient time in preparing item analysis template. Hence, it could be seen that the lecturers have agreed on several strategies in order to overcome those barriers like lecturers' administrative workload should be reduced in order for them to give undivided attention to prepare for their teaching and learning related tasks. As for conclusion, the lecturers are ready with the implementation of item analysis in community college as they perceive its benefits. But, in order to conduct item analysis effectively, these lecturers need to apply and think of strategies which could assist them as they stumble across the challenges along the way. It is crucial for the lecturers to overcome these obstacles as it would determine the quality of item analysis done by them.

REFERENCE

- [1] Spady, W. G. (1994). *Outcome-Based Education: Critical Issues and Answers*. American Association of School Administrators, Arlington, Va.
- [2] Siri, A. & Freddano, M. (2011). The Use of Item analysis For the Improvement of Objective Examinations. *Procedia- Social and Behavioral Sciences* 29 (2011) 188-197.
- [3] Chan, Y.F & Sidhu, G.K. (2012) School-Based Assessment among ESL Teachers in Malaysian Secondary Schools. *Jurnal Pendidikan USM*.

- [4] Popham, W. J. (2002). *Classroom Assessment – What Teachers Need to Know*. Allyn and Bacon, Boston.
- [5] Trice, A. D. (2000). *A Handbook of Classroom Assessment*. New York: Longman.
- [6] Swanson, D.B., Holtzman K.Z., Albee K, & Clauser, B.E. (2006). Psychometric Characteristics and Response Times for Content-Parallel Extended-Matching and One-Best-Answer Items in Relation to Number of Options. *Acad Med*, 81, 52–55.
- [7] Swanson et al. (2005). Psychometric Characteristics and Response Times for One-Best-Answer Questions in Relation to Number and Sources of Options. *Acad Med*, 80, 93-96..
- [8] Sireci, S. & Parker, P. (2006). *Validity on Trial: Psychometric and Legal Conceptualizations of Validity*. Article first published online: 15 NOV 2006; DOI: 10.1111/j.1745-3992.2006.00065.
- [9] Sharma, S.R. (2000). *Modern Teaching Strategies*. New Delhi: Omsons Publications.
- [10] Freeman Frank S. (1962). *Theory and Practice of Psychological Testing*. New Delhi: Oxford & Ibh publishing.
- [11] Lange, A. & et. al. (1967). Using Item Analysis to Improve Tests. *Journal of Educational Measurements*, Vol. 4, No. 2, Summer 1967.
- [12] Haladyna, T. M. (1999). *Developing and validating multiple-choice test items*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- [13] Martinez, M. (1999). Cognition and the Question of Test Item Format. *Educational Psychologist*, 34, 207–218.
- [14] Cromez, A., & Hanson, M. (2000). An Exploratory Analysis of School- Based Student Assessment Systems. North Central Regional Educational Laboratory. Learning Point Associates. http://www.ael.org/dbdm/resource.cfm?&resource_index=9. Accessed on 7 July 2007.
- [15] Stiggins, R. J. (1995). Assessment Literacy for the 21st Century. *Phi Delta Kappan*, 77(3), 238-245.
- [16] Stiggins, R. J., & Conklin, N. F. (1992). Classroom Assessment Practices. In *Teachers' Hands: Investigating the Practices of Classroom Assessment*. State University of New York Press: Albany, NY.
- [17] Wise, S. L., Lukin, L. E., & Roos, L. L. (1991). Teacher Beliefs about Training in Testing and Measurement. *Journal of Teacher Education*, 42 (1), 37-42.
- [18] Samsudin, S. A. et. al. (2014). Pelaksanaan Pentaksiran Berasaskan Sekolah (PBS) Menerusi Pandangan Guru. *Konvensyen Antarabangsa Jiwa Pendidik 2014*, 11-13 Ogos 2014.
- [19] Richards, J.C., & Farrell, T. S. (2005). *Professional Development for Language Teachers: Strategies for Teacher Learning*. Cambridge, UK: Cambridge University Press.
- [20] Brown, H.D. (2007). *Teaching by Principles, An Interactive Approach to Language Pedagogy*. United States of America: Pearson Longman.