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Assessment for Effective Lecture on Knowledge Retention towards Student Learning with Web-based Educational Tools

Josephine Lai Chang Hui[1], Ting Su Hie[2]

[1]Department of Chemical Engineering and Energy Sustainability, Faculty of Engineering, Universiti Malaysia Sarawak (UNIMAS), 94300 Kota Samarahan, Sarawak, Malaysia
Email: lchjosephine@unimas.my
[2]Department of Language Studies, Faculty of Language and Communication, Universiti Malaysia Sarawak (UNIMAS), 94300 Kota Samarahan, Sarawak, Malaysia
Email: shting@unimas.my

Abstract**—** *This study assessed the effective lecture for knowledge retention towards student learning. The survey involved 42 university students (fourth year in Chemical Engineering and Sustainability Energy Department, UNIMAS) where all of them were tested before and after the class through a 10 questions quiz as assessment. From this quiz assessment, only 50% (21 students) of the students managed to answer at least 7 questions correctly before the lecture was delivered. After delivering lecture, 100% (42 students) of the students managed to answer 10 questions correctly. However, after four weeks, only 90% (38 students) of the students managed to score 10 questions correctly due to short knowledge retention.*

Keywords**— Assessment, effective, lecture, knowledge retention, students.**

I. INTRODUCTION

Since the last century, learning has been a central topic in many fields especially education since the largest part of the previous century. Learning can be defined as a change in behaviour due to the experience gained [1]. Learning can be explained as ontogenetic adaptation [2]. Therefore, learning is important among all the students especially in higher education. Students manage to learn or increase their knowledge through lectures given. Different students have different types of learning styles. One of the most attractive style and lengthen the knowledge retention among the students in higher education is web-based educational tools [3].

Lecturing has been one of the most employed tools for information transmission in higher education. It is one of the best methods in reducing knowledge gap between lecturers and students. The main benefit of lecture includes low cost as one lecturer focuses on a large group of students. Lectures are effective as this process involves spontaneous communication skills between both lecturers and students [4]. Through this way, students managed to gain important information effectively. In addition, effective lecture helps to cover large chunks of materials in a shorter period, and simultaneously it helps to fit the needs of all the students [5]. Through the web-based educational tools such as online books or journals, it helps the students to study the notes earlier, understanding the topic before the lecture and voice out their opinions and enquiries [3]. However, this may be a real challenge to ensure all the students can have the same knowledge after the classroom as some students may not putting the effort on studying lecture notes or online materials provided.

To ensure all the students manage to obtain the same knowledge level after a lecture, assessment is a strategic method to ensure the quality of the students. Assessment can be well explained as the bridge between lecturing and learning [6]. Different assessments can be categorized into formative assessment [7], summative assessment, school-based assessment and diagnostic assessment [8]. All these assessments are closely associated with socio-constructivist theories of learning. Assessments help in the process by making learning visible to the students [8]. Students' knowledge and learning can be improved through assessment and evaluation while lecturers manage to improve their lecturing methods through the assessments given [9].

Lecturing, learning and assessment are interrelated and equally important in higher education. Assessment is one of the engines to drive student active learning. It helps the students to understand their weak point on specific lecture and enhance that specific part