

SUSTAINABILITY INTEGRATION OF RASE-CARD KIT IN DETERMINING THE TYPES OF ORGANIC CHEMICAL REACTIONS

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ABSTRACT

RASE-CARD kit, a toolkit designated containing compilation of all RASE-CARD materials. The innovation started with the production of flash cards called a RASE-CARD, which are mnemonic to Rearrangement, Addition, Substitution and Elimination CARD. We then developed it into a digital display, known as virtual RASE-CARD kit consisting five items of RASE-CARD teaching aid, RASE-CARD assimilation video, RASE-CARD animated video, RASE-CARD PowerPoint notes and RASE-CARD online quiz. The sustainability integration of this RASE-CARD kit aims to overcome the problem of students' weakness in stating the type of organic chemical reaction correctly in the most efficient approach. A preliminary survey using pre-test on 58 students of the Two Semester System (SDS) of Negeri Sembilan Matriculation College from S2DP4, S2DP5 and S3AP2 classes found that 17 of them got grade C marks and below, which is in the percentage range between 0 to 54. All of these students were unable to identify the differences in the given chemical reaction equations and subsequently led to the failure in determining the type of organic chemical reaction. The results show that this RASE-CARD kit successfully helped the students with an increase in the mean post-test score of 9.64, in which all 17 students obtained marks at an excellent level. This RASE-CARD kit has impacted as a best teaching and facilitating approach to determine the types of organic chemical reactions with its simple, effective and user-friendly principle.

Keywords: RASE-CARD kit, RASE-CARD flash cards, virtual RASE-CARD kit, types of organic chemical reactions, sustainability integration

1. INTRODUCTION

Sustainability integration in education refers to the efforts to maintain, set and focus on the main purpose of improving the quality of the education system. Therefore, every teacher needs to be creative and innovative in terms of methods, approaches and implementation of the best teaching and facilitating practices so that students can enjoy the best learning experience and in turn contribute to the formation of a quality generation. According to Bunce (2005), good teaching and learning methods is integral in helping students understand the content of the lesson.

Types of reaction is a vital content in organic chemistry and can be likened as the heart of organic chemistry (Smith, 2006). Four main types of organic chemical reactions are rearrangement reaction, addition reaction, substitution reaction, and elimination reaction. The types of reaction are too numerous, and it is impossible for students to memorize each of these reactions. Students should not assume each of these organic reactions is unique. All organic reactions have a distinctive characteristic and can be

organized and classified based on the type of reaction that occurs and how the reaction occurs (McMurry, 2003).

2. OBJECTIVES OF THE STUDY

2.1. General Objectives

To develop a toolkit to help students in stating the type of organic chemical reaction correctly.

2.2. Specific Objectives

- i. To determine the level of students' achievement after using the RASE-CARD kit.
- ii. To determine the students' views on the usability of the RASE-CARD kit as a teaching aid.
- iii. To determine the effectiveness of the RASE-CARD kit in increasing students' motivation.

3. METHODOLOGY

Figure 1 shows the implementation of **flipped classroom** model on 17 target group students using the sustainability integration of RASE-CARD kit along with pre, post and questionnaire test instruments.

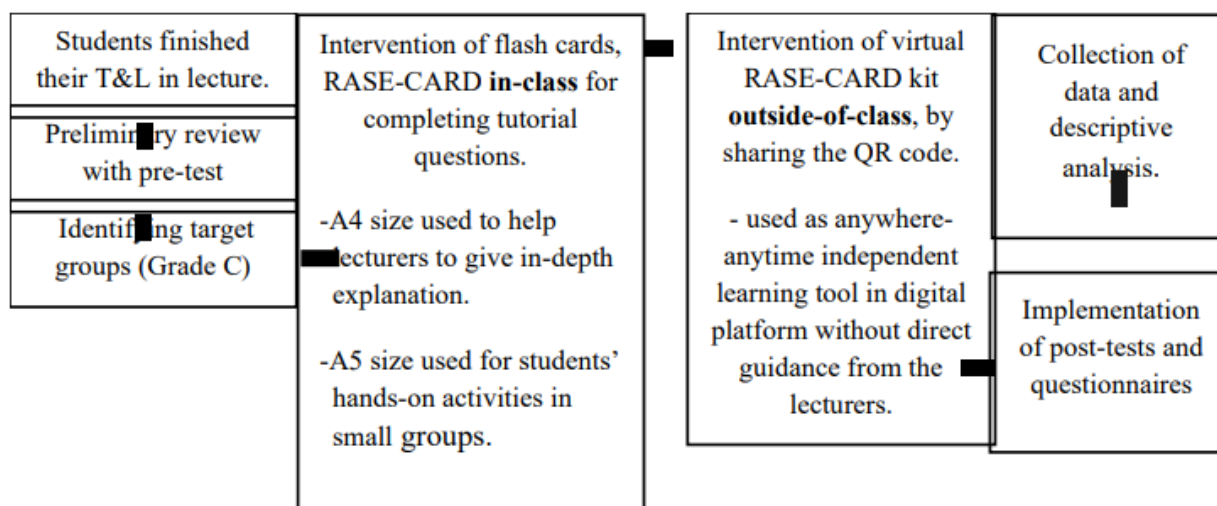


Figure 1. Implementation of flipped classroom

4. FINDINGS AND DISCUSSION

Figure 2 shows a drastically increase in scores recorded by 17 target group students with a minimum score of post-tests 13 out of a full mark of 15, where the mean difference of pre-test and post-test is 9.47.

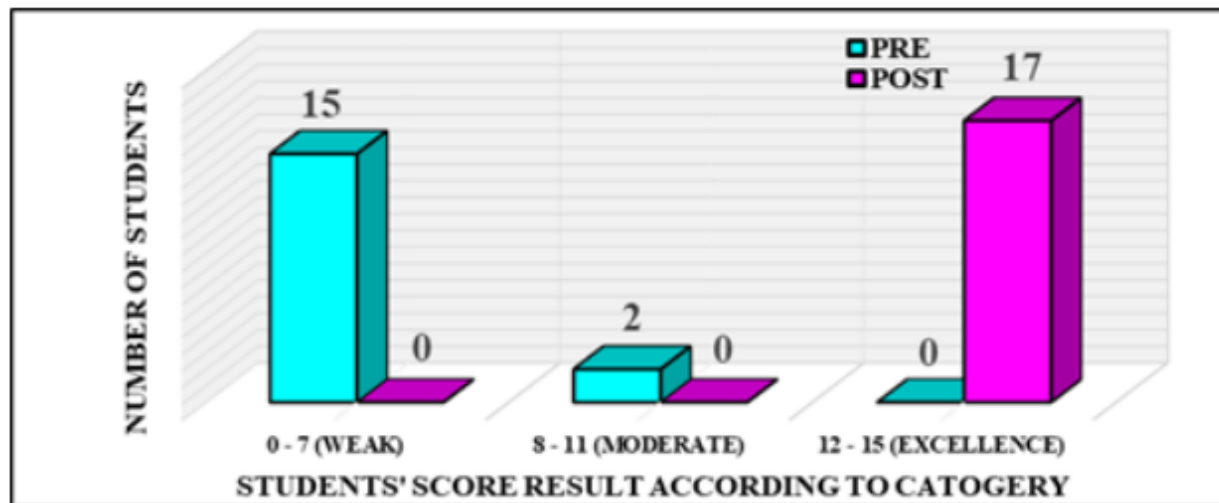


Figure 2. Analysis of students' achievement according to achievement category

The findings through the questionnaire recorded the overall mean achieved for the second objective, namely the usability of the RASE-CARD kit as a teaching aid of 3.94. For the third objectives, RASE-CARD kit has proven effective in increasing learner's motivation with mean value of 3.90. The recorded mean value is at a high level based on the 4-point Likert scale determined by Zainudin et al. (2007).

Overall, the sustainability integration of the RASE-CARD kit is one of the best teaching and facilitating practices. It has opened the minds of students that learning is not just memorizing, but involves the process of understanding to make it long-term learning. It also succeeded in replacing teaching and learning (T&L) with conventional methods, namely by lectures and tutoring to more student-centered learning through an attractive digital ecosystem in which students have more fun.

REFERENCES

1. Bunce, D. M (2005). Exploring impact of teaching styles on students learning in both traditional and innovative classes.
2. Smith, J. G. (2006). Organic Chemistry, McGraw Hill, Inc., New York.
3. McMurry, J. (2003). Fundamentals of Organic Chemistry, 5th Edition. Thomson Learning, InC.
4. Zainudin Abu Bakar, Meor Ibrahim Kamaruddin, Megat Aman Zahiri Megat Zakaria dan Mohd Ali Ibrahim. 2007. Kemahiran ICT guru pelatih Universiti Teknologi Malaysia. Prosiding Seminar Kebangsaan JPPG 2007. 18 – 20 November 2007. Royal Adelphi, Seremban.



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Kelulusan daripada pihak YBhg. Profesor dalam perkara ini amat dihargai.

Sekian, terima kasih.

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