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COMPARATIVE STUDY OF METHODS FOR TEACHING PERIODIC TABLE 'PT MADE EASY' IN CHEMISTRY SUBJECT

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ABSTRACT

Chemistry is one of the most difficult subjects in school because it requires critical thinking and problem solving skills. The subject involves the study of the composition, properties, and reactions of matter at the chemical level. This article will focus on the periodic table, which is a table that organizes the chemical elements according to their atomic number. The periodic table is also known as the periodic chart, which is a chart that visually organizes the elements by their atomic number. The problem with the students that have no basics in chemistry is that they can't understand the periodic table. Understanding this periodic table is particularly important for the subject of chemistry itself. For students who are just learning this subject for the first time, such as STEM C students, will be experiencing difficulty to understand the periodic table. Thus, this study will be focusing on the comparison between memorization techniques through songs and comparing them with conventional method. As a result, from the survey we did, it was found that musical memorization is easier to memorize compared to the usual method.

Keywords: Periodic Table, comparative, Pre Higher Education, STEM C, chemistry subject

1. INTRODUCTION

Malaysia faces the problem of having a lack of students who are interested in choosing the science stream. This occurs even though various facilities and incentives have been provided by the government such as full boarding science schools, science colleges, MRSM and so on [1]. However, this problem gets worse from year to year and the result is detrimental to our country in the future where our country's dream to achieve a developed country will be stunted [2]. To overcome this problem, Universiti Teknologi MARA (UiTM) through the Pre Higher Education Center (PPT) has taken the initiative to create a Pre Diploma in Science Program (STEM C & Literature Stream) where students from the literature stream in secondary school are given the opportunity and space to study pure science subjects such as chemistry, biology, physics and mathematics. Starting from October 2021-February 2022 semester, the STEM C pilot project was initiated at UiTM Negeri Sembilan Kuala Pilah Campus. For the chemistry subject, one of the most important elements in this subject is the Periodic Table. It is one of the basic knowledge that must be learned by all students who want to learn the chemistry subject. Given the difficulty faced by STEM C students in memorizing the elements contained in the Periodic Table, a memorization technique using lively rhythmic music has been introduced to STEM C students as opposed to conventional memorization methods. Therefore, the main objective of this study is to perform a comparison between conventional method and musical method for memorizing the Periodic Table to determine the effectiveness from the STEM C students' point of view.

2. MATERIAL AND METHOD

An analytical study was conducted between October 2021 to November 2021. A planned questionnaire was given to the students to obtain the required information. In this study, primary data were obtained by conducting a closed-ended online questionnaire to ensure that the data accuracy and consistency is in line with the objectives of the study. The measurement scale used was a five-likert scale on a continuum from strongly disagree to strongly agree to measure either a positive or negative response to a particular statement [3–4]. The study was conducted at the campus of Universiti Teknologi MARA Kuala Pilah branch and the results were collected involving students who registered for the course of analytical separation methods (CHM011). Based on the responses obtained, 17 students participated from the target population, comprising a 100% response rate. This study used a non-probability sampling technique known as facility sampling technique due to its advantages of being simpler and less time consuming (Sekaran and Bougie, 2016). In this sampling technique, the units that are sampled are collected without any specific probability structure while the analysis method used in this study includes descriptive analysis to achieve the objectives of this study.

3. RESULTS AND DISCUSSION

Demographic profile of the study

Figure 1 shows the distribution of male and female students involved in this study as well as the campus involved. Based on gender, female students accounted for 47.1%, while male students accounted for 52.9% of the total 17 respondents.

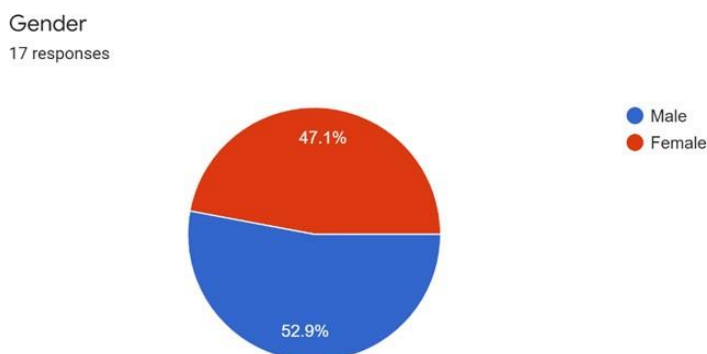


Figure 1: Percentage of respondents gender

For this study, the questionnaire is divided into two parts, namely before and after students learn the Periodic Table singing technique. Figure 2 shows the percentage of students' interest in the Periodic Table before learning this technique. It was found that 12 students or 70.6% of students stated that they were less interested and had difficulty memorizing the Periodic Table since it is difficult to memorize using the conventional method.

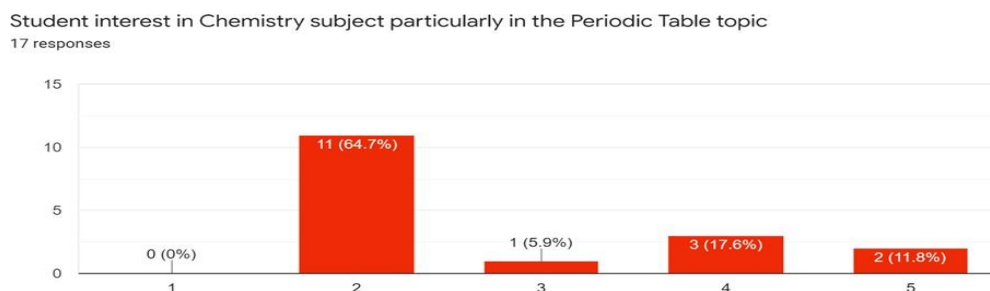


Figure 2: Students' level of interest in the Periodic Table using conventional memorization techniques.

After the students had used the singing technique for memorizing the Periodic Table, we conducted another questionnaire with respect to that purpose. As a result, we found that students' interest has increased towards the Periodic Table and also interest in the chemistry subject itself. This is proven when a total of 6 students chose the score of 4, which is agree, while 7 other students chose strongly agree (a score of 5). In contrast, no students chose the scale of 1-3. Similarly, the respondents were asked questions regarding students' interest in chemistry subjects after this technique was carried out, where 35.3% of students and 64.7% of students chose scales 4 and 5, respectively.

Figures 3 and 4 show the percentages as stated above.

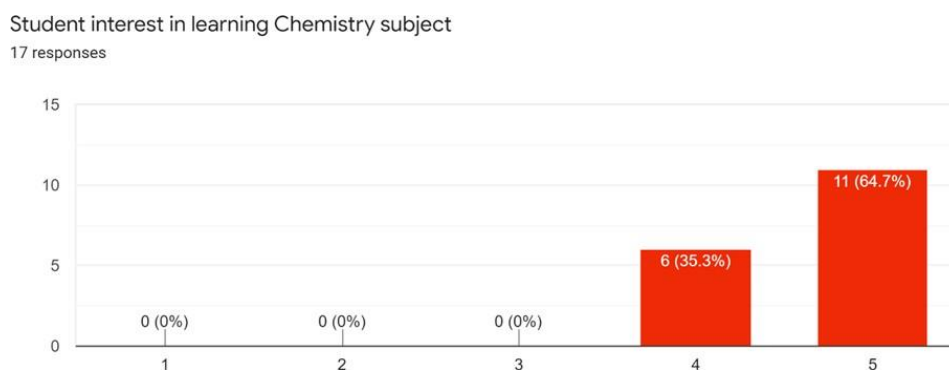


Figure 3: Students' interest in chemistry subject after the PT Made Easy Technique is Implemented.

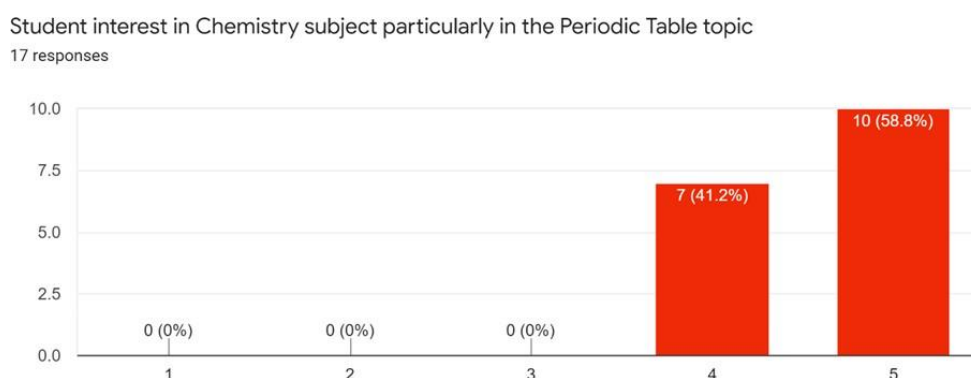


Figure 4: Percentage of students' interest in the Periodic Table after the PT Made Easy Technique was Implemented

4. CONCLUSION

In conclusion, this PT Made Easy technique has attracted students' interest in chemistry lessons and has also made it easier for students to memorize the Periodic Table. It is the lifeblood and knowledge of "must know" by new students who want to get acquainted with this chemistry subject.



REFERENCES

- [1] Chang, T-L & Hsin, H-T. 2020. The effect of the Self-explain–Discuss–Re-explain (SDR) learning strategy on high- and low-achieving fifth-grade students' achievement in science. *Research in Science & Technological Education*, 1-27.
- [2] Graves, M. 2003. *The Vocabulary Book*. New York, NY: Teachers College Press. Haghi, K. A. 2005. New perspectives in engineering education: the promotion of traditional models to innovative solutions. *Journal of Engineering Education*, 7(28):11–22.
- [3] Lin, X, Luo, H & Wu, H. 2012. Educational Model Innovating and Capability Improving Mechanism of Engineering Education Based on CDIO. *Creative Education*, 3: 93–6.
- [4] Makoelle, T. M. 2020. Language, Terminology, and Inclusive Education: A Case of Kazakhstani Transition to Inclusion. *SAGE Open*, 1-8.