PROMOTING UNITY THROUGH DATA HANDLING: A STUDY AMONG PRIMARY SCHOOL STUDENTS IN KLANG DISTRICT

Siti Nabila Che Md Nasir, Kalaivanee Ganeson, Murugan Rajoo*, S.Kanageswari Suppiah Shanmugam

Faculty Science and Mathematics, Universiti Pendidikan Sultan Idris, Malaysia.

*For correspondence; E-mail: murugan@fsmt.upsi.edu.my

ABSTRACT: *Nowadays, the government is actively searching for alternative sources of fossil fuel due to its limitation and increasing cost Students' understanding of data handling can be connected to global citizenship concepts such as promoting Malaysian traditional dress and food. The objective is to identify students' awareness of unity by promoting Malaysian traditional dress and food on pre and post-survey and between gender and post-survey. This research used convenient sampling using design and development to develop the lesson plan. The researcher use 30 student's year five. A questionnaire was analyzed by SPSS 26.0 using a paired t-test between pre and post-survey while an independent t-test between gender and post-survey. Results show there is a significant difference between pre and post-survey. Meanwhile, there is no significant difference between gender and post-survey. The data revealed that students understand better data handling topics after a lesson with Unity lesson plan. The implication of this study is Ministry of Education could prepare a sample module or programs for primary and secondary teachers to promote global citizenship education in every subject.*

Keywords: Traditional dress and food, Global Citizenship Education (GCE), mathematics, data handling, unity

1. INTRODUCTION

Statistics began to emerge in the 18th century, and they were linked to probability theory as statistics on a firm theoretical basis. In primary school, data handling entails combining and recording information and presenting it in the form of a bar chart or pie chart. Nevertheless, some students also see statistics as a hard course to score and get higher marks especially data handling. Students limit understanding of graphs and students are not taught how to provide explanations when answering the questions [1]. It can be supported by [2], students have difficulty comparing mean and median data handling for different data sets. They also struggle with graphical presentations and have a limited understanding of the standard deviation in different data sets.

National unity is about the process that seeks to unite people in different ethnic, racial, religious, and socio-economic backgrounds for reciprocally beneficial goals [3]. National unity is an aspiration all nations strive for because it will result in peace, harmony among citizens, and national stability. However, Malaysia faced challenges to form national unity because of a lack of communication, lack of contribution when conducting the activity, and no interest between each other. According to these issues, students' understanding of data handling can be improved by connecting it to global citizenship concepts such as promoting Malaysian traditional dress and food. Instead of increasing student awareness of racial unity, this can encourage students to gain a better understanding of data handling, which includes mode, median, and mean.

2. RESEARCH HYPOTHESIS

Based on research questions and research objectives, below are the hypothesis tests for this study;

H01 = There is no significant difference between pre-survey and post-survey of the student's awareness of unity by promoting Malaysian traditional dress and food using data handling.

H02 = There is no significant difference between post-survey of students' awareness of unity based on gender.

3. LITERATURE REVIEW

The content, pedagogy dan assessment is the essence of curriculum forms in any educational system in the world [4]. This curriculum will guide the teacher to perform their teaching and learning with the student in the class. Mathematics primary school in year one to year six (ages seven to ages 12 years) helps students to acquire the basic skills in numeracy about computational limited to the decimal system, ability to use skills to solve the problem and ability to estimate and interpret graphs [5]. Data handling topic formed by data display and data analysis. It's the combination of bar and pie chart with finding the average (mode, median, and mean). Data handling is a crucial part of mathematics because it allows students to make sense of information, identify patterns and trends and predict and plan [6].

The goal of global citizenship education is to transform students by providing them with knowledge, skills, values, and attitudes. Because moral values education and personal development are necessary prerequisites for citizenship, GCE should begin in primary [7]. GCE introduces students to real-life scenarios that arouse their interest and encourage them to use mathematics to investigate [8]. Students who use the GCE approach in mathematics can critically evaluate data from their daily lives, discover connections between the local and the global, and then share their findings with others. The example of global citizens established by the International Baccalaureate in 2013 such as student profile includes characteristics in curiosity, awe, knowledge, caring, and reflective thinking.

4. METHODOLOGY

4.1 Research design

The research design used in this study is the design and development research (DDR) approaches. This study uses research by using a survey. According to [9], DDR approaches are used to test theory and validate its practicality. The lesson plan was developed on a data handling topic that was related to promoting Malaysia's traditional dress and food. The process in this research includes finding a sample, developing the questionnaire, validity, reliability, pre-survey, micro-teaching, post-survey and analyzed data.

4.2 Population and Sample

This study uses convenient sampling to select the sample. Sample sizes larger than 30 and less than 500 are appropriate for most research [10]. Thus, this study subject with 30 students in year five, who are Malay, Chinese, Indian, ethnics in Sabah and Sarawak.

4.3 Instrument

Instrument development can initiate in many ways. One of the ways to develop an instrument is by looking into a module developed for a study. A total of 12 items were developed. All the items were developed to measure the student's awareness of GCE in the mathematics education context. Students were asked to give an opinion on the extent to which they agreed with the statement in the form of a Likert scale of 5 points. The options are 1 (strongly disagree) to 5 (strongly agree).

4.4 Validation of Instrument

The students' awareness of Global Citizenship Education in the context of Promoting Malaysian Traditional Dress and Food Using Data Handling of Primary School in Klang District. The questionnaire was validated by two experts in the field of Global Citizenship Education and mathematics education. The items were revised according to the experts' advice and comments. Experts accepted all the items with some minor amendments. The items are in Table 1.

Table 1: Questionnaire of Global Citizenship Education

Num	Code	Items
1	U1	I know the importance of unity in my country
2	U2	Mathematics teachers always emphasize unity in a mathematics lesson
3	U3	I used to ask my other races friend when facing any difficulties in solving mathematics problems
4	U4	I like to do group tasks with multi races member to solve any mathematics task
5	U5	My teachers encourage me to discuss in the group with multiracial members in the group
6	U6	I always help my friend to solve mathematical problems without concerning the races
7	U7	The group task during mathematics lessons makes us unity
8	U8	During mathematics lessons, we help each other to have a better understanding
9	U9	I appreciate costumes of other races through examples in a mathematics lesson
10	U10	I appreciate food other races through examples in a mathematics lesson
11	U11	I respect my friend’s idea during discussions in a mathematics lesson
12	U12	Mathematics lessons made me always unite with my friends

4.5 Pilot Study

The pilot study was conducted by distributing 50 questionnaires to primary and secondary school mathematics students by simple random sampling from the Perak state in Malaysia. Cronbach's alpha coefficient procedure was used in the current analysis to determine the sum of measurement error in the test. Cronbach's coefficient has a lower permissible limit of 0.70 in general [10]. The constructs of this study (pilot test) are stable, as seen in Table 2 (alpha Cronbach is more than 0.7).

Table 2: Reliability of Awareness of the Students in Racial Unity constructs in the pilot test.

Global Citizenship Education	Number of Items	Coefficient Alpha
Racial Unity	12	0.914

Table 3 indicates the rotated component matrix. The findings show all loading factors are more than 0.5. As a result, there is no issue about the convergent validity of the pilot test' constructs.

Table 3: Rotated Component Matrix.

Items	Global Citizenship Education
U2	.953
U4	.937
U5	.933
U1	.921
U12	.918
U3	.874
U8	.867
U9	.852
U7	.842
U10	.830
U6	.811
U11	.793

Overall, the pilot study revealed that the alpha reliability coefficients for all the items are acceptable. Therefore, all these items remained for the main study. Thus, the questionnaire could be distributed to the targeted sample.

5. RESULTS

Based on the study, a total of 30 respondents were selected from year five which consisted of 16 (53.3%) were males and 14 (46.7%) of them were female. Most of the sample were Malay students 9 (30%) followed by Chinese students 8 (26.7%), Indian students 6 (20.0%), ethnic in Sabah students 4 (13.3%), and Sarawak students 3 (20.0%).

Table 4: Analysis of Paired T-Test between Pre and Post Survey

Survey	N	Mean	SD	t	df	Sig
Pre-survey	30	2.5528	.42856	-16.053	29	.000
Post-survey	30	4.4694	.31447			

According to Table 4, paired sample t-test showed that a statistically significant difference existed between pre and post-survey, [t(29) = -16.053, p<0.05]. The results of the study have revealed that it is significant between pre-survey and post-survey that has been conducted. Therefore, that the null hypothesis was rejected. An increase also existed with students' awareness of racial unity in learning data handling, as seen in the mean of the pre-survey and post-survey. The mean of the pre-survey scores was (M=2.55, SD=0.43). The mean of the post-survey scores was (M=4.47, SD=0.31). It shows both students get know more about racial unity once they learned in data handling. The finding of [11] showed that the mean for racial unity was relatively high compared to other variables (politics, economics and One Malaysia concept). It showed that the students in higher institutions demonstrated a clear awareness or have a good understanding of racial unity. After conducting a lesson of micro-teaching on traditional dress and food in data handling, students are able to recognize the tradition and culture of multiracial in our country. Therefore, students' knowledge in racial unity has been developed after implementing GCE in mathematics teaching.

Table 5: Gender Differences between Post – Survey

Gender	N	Mean	SD	t	df	Sig
Male	16	4.4531	.38726	-.299	28	.767
Female	14	4.4881	.21646			

Table 5 shows that the result of an independent t-test was conducted to study the differences between gender and post-survey. The mean score of post-survey of females is 4.49 (N=14, SD=0.22) is greater than the mean score of post-survey of males is 4.45 (N=16, SD=0.39). In conclusion, female awareness is higher than male awareness. The t-test was conducted to support the result of the mean value. It shows that there is no significant difference between male and female groups in the post-survey, [t(28) = -0.229, p > 0.005]. The significance level was higher than the level (p > 0.05), therefore the null hypothesis was accepted. This supports the finding of [10] who showed that there are no significant differences in student views of gender based on issues related to racial unity. It is seen equally without any gender restrictions. In addition, students were able to adapt new knowledge taught in mathematics lessons relating to GCE. This indicates that students start showing interest in global issues [12]. Hence, further studies may focus on GCE with different topics in mathematics and improve their understanding of global issues.

6. IMPLICATION

In this research, the researcher focused on promoting traditional dress and food in data handling among primary school students. This GCE educates and widens the students on racial unity issues to see their performance in mathematics. Therefore, the Ministry of Education (MOE) should prepare a sample module and seminars or programs for primary and secondary teachers to promote GCE in every subject not only in civics learning. Teachers might take initiative to implement GCE in mathematics curriculum lessons to create awareness and improve their knowledge towards global issues. Teachers can come up with a pre-lesson plan using global issues in it and cultivate students about values in GCE. Finally, communities play an important role to create awareness so can create harmonious community lessons or other subjects and not limit this education in civic learning

SUMMARY

From this analysis, teaching racial unity in data handling is very helpful to students understanding more about racial unity in Malaysia. By using GCE, teachers can teach students racial unity in the micro-teaching. Therefore, it can be said that the students can relate GCE in mathematics by teaching method. Early exposure of GCE to students was able to build the identity of future generations who value diversity and can mobilize that diversity for the benefit of racial unity in our country.

REFERENCES

[1] Ismail, Z., & Chan, S. W. (2015). Malaysian students' misconceptions about measures of central tendency: An error analysis. AIP Publishing. https://doi.org/10.1063/1.4907430

[2] Tirangkoor, S., Chaiyasang, S., & Kaewsaiha, C. (2018). Teaching strategies to correct misconceptions in descriptive statistics. Proceedings of 122nd The IRES International Conference, 57–61.

[3] Amienyi. (2005). Communicating national integration: Empowering development in African countries. Ashgate Publishing Company, [4] Bernama. (2015). Amcorp Power Proclaimed The 2015 Frost & Sullivan Malaysia Solar Systems. *Company of The Year*.

[4] Black, P., & Wiliam, D. (2018). Classroom assessment and pedagogy. Assessment in education: Principles, policy & practice, 25(6), 551-575

[5] Noor Azlan, A. Z. (2000). Designing the mathematics curriculum in Malaysia: Making mathematics more meaningful. Math. http://math.unipa.it/~grim/Jzanzali.PDF

[6] Hon, M. S., Abdul Halim, A. & Mahani, M. (2019). Enhancing Primary School Students' Higher Order Thinking Skills in Data Handling through Active Learning with SmartBoard. 27th International Conference on Computer in Education. [8] Sopian, K., Othman, M. H., & Wirsat, A. (1995). The wind energy potential of Malaysia. *Renewable Energy*, *6*(8), 1005-1016.

[7] Anggono, J., Lim, R., Limbong, F., Palit, H. C. & Wartono, P. S. (2018). Diversity, Unity and Global Citizenship Education: A Case Study in Community Outreach Program in Indonesia. SHS Web of Conference 59. https://doi.org/10.1051/shsconf/20185901015

[8] Oxfam. (2015). Education for Global Citizenship: A guide for schools. Oxfam.

[9] Collins, A. (1990). Toward a Design Science of Education. Technical Report. 1(2), 34-67.

[10] Sekaran, U. (2003) Research Methods for Business: A Skill-Building Approach. 4th Edition, John Wiley & Sons.

[11] Razli Ahmad, Hanum Hassan & Azuddin Bahari. (2013). Persepsi Mahasiswa Terhadap Isu-Isu Perpaduan: Kajian ke Atas Pelajar-pelajar Rangkaian Universiti Teknikal Malaysia (MTUN). Malaysian Journal on Student Advancement, 1(6), 23-45. [15] UBM-MES. (2017). Electric, power and renewable energy Malaysia. *Retreived from* *http://www.epremalaysia.com*.

12] Lee, W. O., & Leung, S. W. (2006). Global citizenship education in Hong Kong and Shanghai secondary schools: Ideals, realities and expectations. Citizenship Teaching and Learning 25(4), 51-75.