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## **THE APPLICATION OF IZIIGRID IN FACILITATING STUDENTS' MASTERY OF THE GEOGRAPHIC GRID AMONG IN MALAYSIAN SECONDARY EDUCATION**

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### **Abstract**

*The goal of this study was to examine the effectiveness of an innovative teaching material known as "IziiGrid" in enabling students to master geographic grid which was one of the most important topics that students at the age of 15 in secondary school. The study was conducted on an intact class of 20 students at a secondary school in KK Sabah. The teaching material "IziiGrid" was designed from two rulers embedded with patterns that allowed students to locate geographic grid on a map or globe precisely. The students were taught on how to use this material and their performance was evaluated through pre-test and post-test. The results showed that all 20 students improved their performance by achieving the highest grade in the post-test when initially 19 of them failed the test prior to the intervention. The findings implied that 'IziiGrid' is effective in facilitating students' mastery of geographic grid and deepen their understanding of its importance. Thus, this innovation can be used widely to teach this topic.*

### **Keywords**

IziiGrid, Geographic Grid, Geography, Secondary School, Mathematics

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### **1. Introduction**

The main problem that many Malaysian students often face in geography class is the mastery of geographic grid as they lack mathematical skills as well as interest in learning the topic. This research was a case study conducted on a group of students at a public secondary school in

Kota Kinabalu, Sabah. Based on the observation of the teachers, the students did not display the expected level of commitment and attention while learning how to apply their understanding of geographic grid to identify specific location precisely. In fact, they often failed to use it correctly and therefore, constantly made mistakes in finding precise location. The analysis of their examination scores also revealed that 80% of the students failed to provide correct answer in given tasks related to this topic. It was evident that they were not motivated to learn this topic and this necessitated the teachers to design new approach on how to familiarize them with geographic grid.

## **2. Problem Statement**

The students needed to master geographic grid as it was a requirement for them to learn this topic as part of the subject, geography, that they were expected to pass in the national standardized examination at the end of their lower primary education. They found the subject challenging as it entailed a lot of mathematical operations and it demanded them to pay more attention in details in searching for the precise answers. As students struggled to understand the technique, they became demotivated and disengaged that they usually paid less attention in class and sometimes began to misbehave. In addition, there were very few suitable teaching materials that could be used to teach the subject especially when most students had to rely on the conventional rulers to help them find the answers accurately. There were several strategies that could be used on geographic grid in finding locations but the students seemed to still struggled with the topic as they usually made mistakes in basic calculations.

Therefore, IziiGrid was invented in order to help the students master the topic and use geographic grid effectively and efficiently. IziiGrid is a teaching material designed from two rulers that were embedded with numbers and patterns which illustrates the concept and formula of how geographic grid functions.

## **3. Objective and Research Questions**

The goal of the research was to examine the feasibility of IziiGrid in facilitating students' mastery of the topic. There were two purposes:

1. State the reference of the six grids in identifying a particular location using geographic grid.
2. Improve students' understanding on how to use geographic grid more efficiently.

## **4. Experiential Learning**

Iziigrid enables learners to learn about the topic by being actively involved with the process of discovering the answer and mastering the technique. This is consistent with what Lewis &

Williams (1994) argued on the importance of learning by experience; “In its simplest form, experiential learning means learning from experience or learning by doing. Experiential education first immerses learners in an experience and then encourages reflection about the experience to develop new skills, new attitudes, or new ways of thinking.” Thus, Iziigrid has great potential in facilitating the teaching and learning of this specific topic in geography subject.

## 5. Methodology

The target group for this research was a group of students aged 15 and 16-year-old who studied geography at Sanzac secondary school in Kota Kinabalu. There were 20 students who were involved in this study and their academic performance was categorized as average and novice and these students required support and assistance from the teachers in order to improve their academic performance.

The students’ performance in the past examinations showed that all of them did not do well in the topic. Their responses during preliminary interviews on how well they understood topic indicated that majority of them were not able to demonstrate great level of understanding of this topic. Thus, an intervention was designed to improve these students’ understanding by integrating the teaching material “IziiGrid” that provided a more hands-on learning experience to the students as it was created as a tangible material than they could touch, move and use on geographic grid. Pre-test and post-test were administered before and after the intervention. The test contained 10 items and the students were given 15 minutes to complete the test.

## 6. Findings

The results of the test showed significant improvement with stark contrast between pre-test results with the post-test results. There were no students who attained full scores in the pre-test while post-test indicated that all of the students obtained full scores. This could be attributed to the effectiveness of “IziiGrid” as an effective teaching aid.

**Table 1:** *Pre-test Result*

<b>Scores (%)</b>	<b>Level</b>	<b>Number of students</b>
<b>80 – 100</b>	Excellent	0
<b>40 – 70</b>	Average	1
<b>0 – 30</b>	Poor	19

Table 1 showed that 19 out of 20 students were considered poor in their pre-test while one student managed to perform slight better by attaining average level. This meant that the students were not able to understand how to successfully apply the concept of geographic grid.

**Table 2: Post-Result**

Score (%)	Level	Number of students
80 – 100	Excellent	20
40 – 70	Average	0
0 – 30	Poor	0

Table 2 showed how the students were able to improve their performance in the post-test as all of them attained excellent level. This meant their test scores were within the range of 80-100 %. This was a massive improvement in comparison with the pre-test scores.

## 8. Discussion

It could be deduced from the findings that “IziiGrid” is an effective material in enhancing students’ understanding of the practical concept of geographic grid in finding locations. This could be attributed to the design of the material that enabled students to experience hands-on learning than mere conceptual techniques they had to use without the assistance of any tangible material. This is consistent with Tengku Sarina Aini Tengku Kasim & Yusmini Md. Yusoff (2011) who encouraged teachers to be creative in finding alternative teaching approach so they can cater to students’ diverse learning styles and needs. Furthermore, it is also a requirement by the 21<sup>st</sup> century learning for teachers to train students in solving problems and using practical experience to find answers to challenging questions.

The students also became more engaged in their learning as they could achieve sense of achievement and satisfaction when they were able to find correct answers using the tool “IziiGrid” which enabled them to efficiently determine a location precisely. Ahmad Fadzli fauzi (2011) claimed that students became engaged in learning when there were stimuli that caused them to feel excited and motivated to learn, such excitement derives from external factors like the application of new and novel teaching aids which aids their learning. In addition, the students were able to have meaningful learning as they were able to work on the task independently and find the answers on their own. This was something that they could not really accomplish in the previous classes. This is coherent with Williams and Williams (2011) who argued that teachers can create a motivating and supportive environment for students to learn if they let the students take charge of their learning.

## 9. Conclusion

The research showed that IziiGrid is an effective teaching tool that facilitate students’ mastery of geographic grid as they could learn its practical application and clear concepts. As a result, they became more efficient in applying the concept of geographic grid in identifying specific

locations precisely that their test scores revealed major improvement. They also became more motivated, engaged and attentive in the class. More studies need to be done to find out how effective IziGrid is and what types of improvements that should be made. It is suggested that future study needs to look at its effects on larger number of students that might involve several classes or schools and it is also crucial to compare its application with the conventional method. It is evident that this tool can be introduced in the geography class in Malaysian secondary schools in order to help students master the topic.

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### **Appendix**

The following photos showed how students used the tool “IziGrid” in identifying particular locations precisely.

