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ENHANCING STUDENTS' INTEREST IN TEACHING MATHEMATICS BY USING QUIZIZZ APPLICATION DURING MOVEMENT CONTROL ORDER (MCO)

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ABSTRACT

Nowadays, online game like Quizizz is one of the alternative methods in interactive teaching and learning. This study aims to see the effectiveness of the use of this method to increase the students' involvement and mastery in the topic 'Whole Number'. The implementation of this method carries out during home-based learning sessions during the Movement Control Order (MCO), involving 8 students with learning disabilities from SMK Bukit Sentosa. The participants were selected based on the simple random sampling. The researchers chose the participants randomly without looking at any listed criteria. In the early stage, teachers find that students are not interested in doing offline assignments where students' mastery of learning topics are also very weak. The findings of the study show that there is increasing in students' involvement by 50% based on the comparison of results made through pre test and post test. In addition, the research findings from the students' feedback also show a tendency and interest in the method use. This method is also easing the teacher's duty to prepare and monitor assignments given to students more effectively.

Keywords: Quizizz, Learning Disabilities, Whole Number, Movement Control Order (MCO), Interactive Learning.

1. Introduction

Covid-19 pandemic had been spread almost all countries in the world which effected the human lifestyle drastically. This phenomenon also effected the Malaysian education system. Therefore, the Malaysian government had declared the Movement Control Order (MCO) from 18 March 2020 under the Prevention and Surveillance of Infectious Diseases Act 1988. The duration of the Movement Control Order (MCO) had been extended to several phases, including the Conditional Movement Control Order (CMCO) and the Recovery Movement Control Order (RMCO) to curb the spread of Covid-19. In the content of the Movement Control Order (MCO), there are six guidelines. One of the suggestions from the United Nations Educational, Scientific and Cultural Organization (UNESCO) is to close all the educational institutions included nurseries, government and private schools, primary and secondary schools and pre university (Ministry of Health Malaysia, 2020).

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The guideline had been designated by the Malaysian Ministry of Education (MOE) in 2020 addressed that the teacher was not allowed to go to school during the movement control order (MCO) and all the task needed to be carried out at home. Teachers were encouraged to guide the students through the communication medium and electronic gadget that can be accessed by the students. One of the applications suggested by the MOE; Quizizz application which published in the Google Classroom. After the MCO and the school closure announcement, it was impossible to carry the face-to-face teaching and learning process as well as to carry out the summative assessment like writing assessment or final semester examination due to the shortage of time to complete the planned syllabus. The cancellation of final examination introduced to the new way of students' achievement assessment. Therefore, teachers were flexible to check the task given to the students. Quizizz application was the interactive way that had been introduced to the teachers compared to the traditional of way of teaching and learning to access the students clarified by Araujo and Carvalho (2017).

Covid-19 pandemic changed the normal to new norms in the educational system, including home-based learning and learning through different platform. Ministries of Education (MOE) came out the guideline of the implementation of teaching and learning during Movement Control Order (MCO) to ensure the students' learning proses did not disrupt. Ministry of Education (MOE) had taken initiative to publish the module of teaching and learning at home version 2 and the home-based learning timetable module dated 2 February 2021 which aimed to give the guideline for teachers to carry out the structured home-based learning.

During the Covid-19 pandemic, a major challenge faced by the researchers was the students' participation during home-based learning. Researchers found that students did not interested to do the offline task given by the teacher. Students did not motivate to do the exercise given by teacher through WhatsApp. Students did not commit to do the given exercise which led them to the weak understanding of the topic. In this research, the researchers chose the Quizizz application as a teaching aid in enhancing the mathematics skill specifically in the topic 'Whole Number'.

1.1 Background of study

Najib, Abu Bakar and Othman (2017) stated that the education system would be changed according to the modernization and development of technology that change globally. The use of technology in online learning had been practicing all over the world which to establish the variety in teaching and facilitating (S. Zakaria, M. Hamzah, and K. Abdul Razak, 2017), (Z. Mahamod, and N. Mohamad Noor, 2011), (R. Mohd Zain, dan M. Che Noh, 2016). Moreover, most of technology prepared the routine question and did not give the opportunity to the students to solve the non-routine problem exemplified by Lee and Chen (2009). The technology can help students in upgrading their creativity in solving the non-routine problem by introducing on digital game in learning.

The game-based learning is one the online game where as the combination of play and learn process among the students. Play is happiness in early child education where while playing, they can experience in learning (Ad Norazli & Jamil, 2014; Thomas & Brown, 2007). The fun in playing resulted the students did not feel they were learning. This situation enhanced the students' skill and motivation to attract the students' interest and made the learning process became more meaningful and effective (Perrotta et al., 2013). The full concentration in learning helped the students to enhance the learning strategy and the students' ability (Chee, 2011, Papastergiou, 2009). The game is one of the methods that can develop creativity and interest in Mathematics. The use of online game without the integration of effective learning method did not be able to produce the creative and critical thinking students (O'Neil et al., 2005). It can reduce bored and tired feeling specially in solving

Mathematics problem. The game-based learning is the method of teaching and learning outside and inside the classroom which emphasized learn while playing principle. The problem solving in Mathematics can be showed through the game and simulation activity, especially the problem involved in the daily routine. The simulation used to explain the answer or solve the mathematics oftenly (Nooriza, 2013). The previous research involved in game carried out by Thomas Malone (1981), stated that there are three elements that can motivate the studnets; fantasy, challenge and feeling of curiosity (Hsiao et al., 2014). Prensky (2001) supported that game was the effective way in learning because of two important factors which are interactive and attract the students' attention.

The reasons game can be integrated into education;

i) The motivation to students because students assumed that Mathematics was a boring subject. Teaching mathematics involved teaching and complete the task. Besides, the use of game in learning mathematics will establish the interesting and fun environment. Students will be more ready and focus on learning as the subject was interesting (Horizon Report: 2014 K-12 Edition, 2014). Game also encouraged the students to compete among themselves as the factor to motivate the students. While playing, students did not realise that they were learning as well.
ii) In the game, students can less worry towards mathematics as it was considered as difficult. Besides, students were able to their friends' level of achievement through the game. From that, there was a healthy competition among students to do something good (Hsiao et al., 2014; Sayed Yusoff et al., 2014).
iii) The use of game in learning mathematics can help the students to develop their better understanding in concept and mathematics application (Sayed Yusoff et al., 2014).

In teaching and learning the Whole number, the interesting and conducive learning environment was necessary. Thus, students needed to acquire the Whole number topics to ensure they can understand the next topics. Hence, this research can be a reference to the teachers to change and vary the teaching and learning technique and suitable to the students' environment. In result, the teacher can change the teaching technique from the teacher centered to the student centered. The use of Quizizz in this research can establish an effective and collaborative learning among the students.

The interactive learning method such as Quizizz is one of the methods to attract the special need students' interest to participate in home-based learning. The interactive learning can be achieved through the use of the internet as a network to get the information and knowledge at your fingertips and save time. Besides, the multimedia application in education will develop a new concept of education which is a combination of education and entertainment approaches known as edutainment clarified by Jamalludin & Zaidatun (2000). Norasmahani Hj Nor (2015) explained that the technology-based teaching and learning process covered the wider objective and used the interactive approach in the self-learning process. Teachers did not deliver the information to the students otherwise the students worked hard and move actively to obtain the information and knowledge. In the student-centered learning, students used the experience as the guideline in learning.

Quizizz application was developed by Ankit Gupta and Deepak Joy Cheenath in 2015 in Bangalore, India. This application was created to have various selections of settings suitable for a variety of learning purposes. Based on the previous research by Z. Fang (2019), Quizizz can be designed in various formats including right or wrong questions, objective questions, and open-ended questions which teacher can construct their own questions or adapted the provided questions. As the questions were ready, the teacher started the quiz by giving the game code to the students. Each student joined the game by entering the game code in a

Quizizz application through their own smartphone stated by Y.M. Sou, Y.J. Sou and Z. Adam (2018).

1.2 Problem Statement

During the movement control order (MCO), the biggest challenge faced by the researchers were the students' participation in teaching and learning at home. Researchers acknowledged that the students did not interested to do the offline task given by the teacher. Students did not motivate to do the exercise given by teacher through WhatsApp. Most of the students did not commit to do the task given as the weak understanding of the topic. Smith and Ferguson (2005) explained that one of the reasons less students' participation in online learning mathematics was due to the improper situation to teach and learn mathematics. Meanwhile, the problem solving was important in mathematics. Based on researchers' previous experience, teaching mathematics was not suitable to be taught through online because the students did not be able to interact with the teacher directly. The students were more inclined to ask the question directly and the teacher would explain it in mathematical terms. Jaggars (2014) opted that learning mathematics through online was more challenging where there were some environments, learning factors such as motivation, feeling isolated and less support in online learning.

The internet networking was one of the issues arises towards the online learning (Nor Shela & Mohd Shafie, 2020). Hence, the internet network in Malaysia was upgrading and able to subscribe from the telco companies in Malaysia (Aziz,2015). Therefore, there was no accuse in online learning. There were problems faced by the students in online learning as less self-discipline, suitability of learning material, facility in internet networking, and the conducive learning environment (Bao, 2020). Students who were able follow the online learning for the first time as they were isolating themselves from others. This was due to the new environment and not used to the online learning community (Taeho & Richardson, 2015).

In this research, the researchers chose the Quizizz application as the teaching tools in enhancing the mathematical skill especially the Whole number topic. This research purposed the effectiveness the use of Quizizz application that had been used by 4.3 million users and 100,000 uploaders in the smartphone. The use of Quizizz as the teaching tools is one of the efforts in enhancing mathematics skill among the students and for the teacher to create the interesting teaching and learning process. The researchers proposed the effectiveness of Quizizz application in learning mathematics.

1.3 Target

This research participated by 8 students in KSSM Form 1 class, Special Education Integration Programme at SMK Bukit Sentosa.

1.4 Research Objective

This research aimed to see the effectiveness of Quizizz application in attracting students' interest in teaching and learning process in mathematics. Specifically, the research objectives were:

1. Enhancing the Whole Number basic skills.
2. Encouraging the use of technology among the special education students.
3. Easing the teacher in preparing, evaluating and reporting the students' achievement.

2.0 Research Methodology

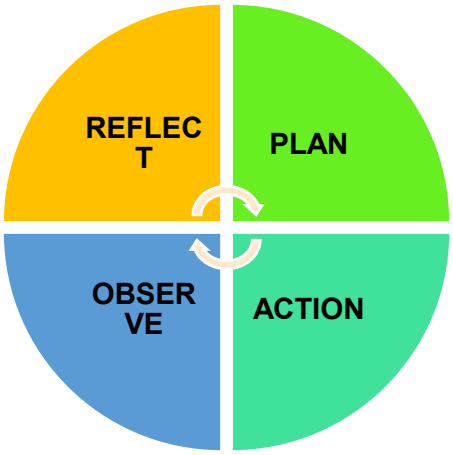
2.1 Research Design

This research proposed the Kemmis and Mc Taggart action research model (1988) (Diagram 1). It was a quantitative research. The initial survey had been carried out through data analysis, interviews, observation and guided exercises. The participants were selected based on the simple random sampling. The researchers chose the participants randomly without looking at any listed criteria. The use of Quizizz suggested in this research which had been practiced by the researchers during Movement Control Order (MCO).

2.2 Research Procedure

Researchers reflected from the offline task and chose 8 students to carry out the intervention. The initial survey had been done by using the exercise to measure the level of students' understanding in a Whole Number topic.

Figure 1: Kemmis and Mc Taggart model (1988)



2.3 Actions

2.3.1 Pre test

The researchers carried out the pre test by giving the task to students after the end of home-based learning process. The task was given as a remedial task on topic Whole Number. The students needed to complete the task and submitted the answer to the teacher. The students can copy the questions in the exercise book or can print it out if there was a printer. While the researchers were collecting the data, there were some problems, which are:

i. Students have not submitted the answer sheet to the teacher
ii. The teacher did not get the feedback from students about their understanding of the topic.
iii. Difficulty in recording the students' work by the teacher.

2.3.2 Post Test

After the researchers checked the answer from the post test, the researchers did not return the answer sheet to the students and researchers did not discuss the answer with the students, but the researchers had been introduced the answering question technique by using Quizizz application. Researchers constructed the same a set of questions by using the Quizizz application in the quiz form. After finished constructing the questions, researchers started the quiz by giving the game code to the students through the class WhatsApp. The researchers asked the students to answer the Quizizz and guide them to use it. Before the researchers guided the students to use the quiz application, researchers sent the user manual through the class WhatsApp and explained thoroughly about the use of this application.

The steps on using the Quizizz application for students:

i. Students can use the Google Classroom account at Quizziz.com.
ii. Students logged in, the link given by the teacher.
iii. Students wrote their full name in the space provided.
iv. Students answered the quiz.
v. After finishing it, the provided marks of students showed on the screen.

2.3.3 Students' Feedback

Researchers asked the students to reflect on post test analysis data as they implemented through their smartphone and WhatsApp as individually. Students were encouraged in response on their view about the intervention.

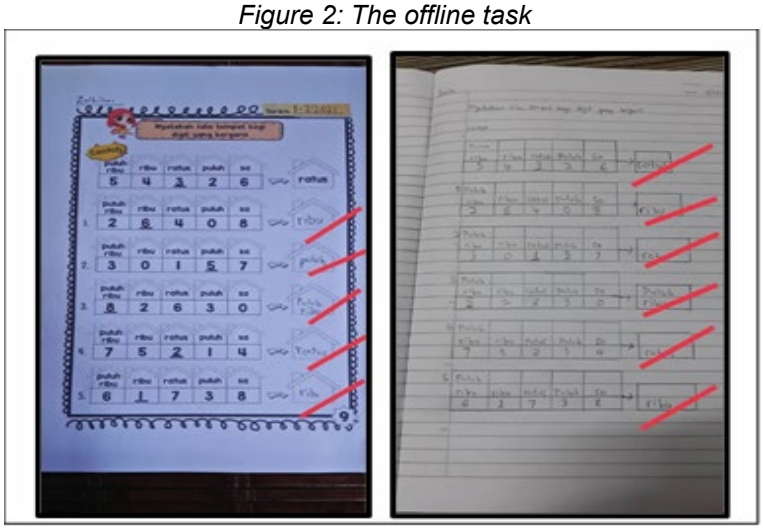
2.3.4 Observation

During the learning process through the Quizizz application, researchers made an observation through the report generated from the researcher's Quizizz account. Researchers can trace the students' participation in the class, but researchers can trace the number of players in the quiz, the time allocated to answer the qui, the total marks, the percentage of the corrected answers and number of incorrect answers with the students. Through this application, researchers monitored and recorded all the proofs and students' work as the future purposes. The report could be downloaded in the form of Microsoft Excel and can be printed.

3. Research Findings and Discussion

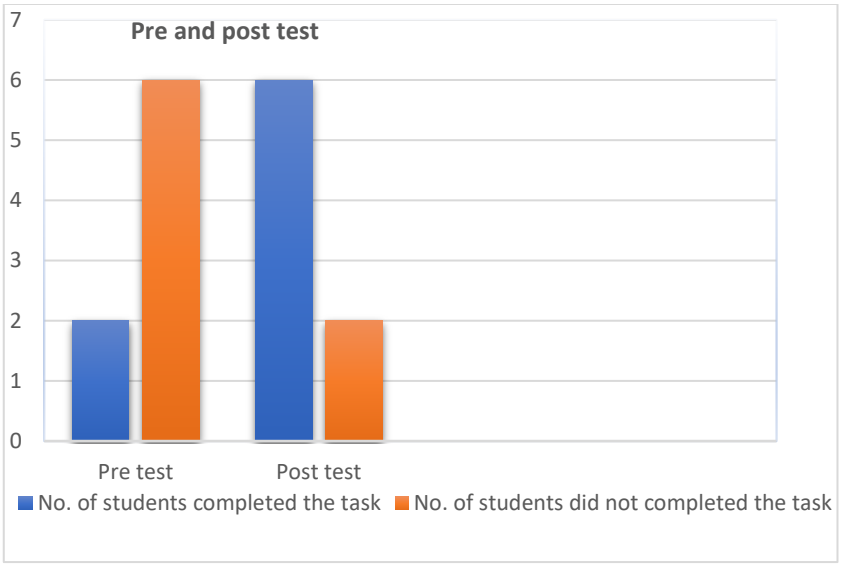
The research findings from the pre test showed that, only two students submitted the task given. Figure 2 showed the students' exercise. Both students used the different ways which are print out the exercise and copy the exercise in the book. Both of them screen shot the task and sent it through the WhatsApp. Researchers checked the task, but the book did not return to the students until the intervention. Researchers did not know the status of the unsubmitted task by six students, whether the task completed or vice versa.

Figure 2: The offline task



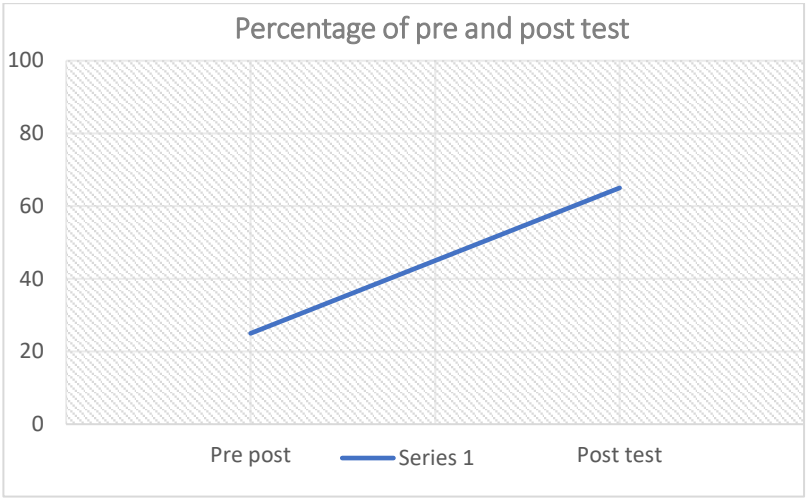
The research findings found that the number of students' participation increased from 2 to 6 students who completed the task after the intervention. It showed that there was increasing by 4 students after applying the Quizizz. It showed that the same questions, but developed it in the game based portrayed there was increasing by 4 students after applying the Quizizz. Figure 3 indicated the differences between pre and post test.

Figure 3: The graph indicated the differences between pre and post test



In the percentage, it increased by 50% where there were 25% students answered the offline task compared to 65% students answered the task by using the Quizizz. Figure 4 clarified the increment of students' participation. From 8 students, only 2 students did not give the response in pre and post test.

Figure 4: The graph clarified the increment of students' participation.



The result of students' feedback who be able to complete the question on Quizizz application, the researchers obtained that 100% students gave the positive feedback where they experienced the interesting and meaningful learning from it. The students faced some constraints to complete the task which is no printer, lazy to copy the exercise, took a lot of time to complete the task and not conducive learning environment. But, after the intervention, their interest in learning had been increased as it applied the game-based question which it helped them easy to understand and can be answered repeatedly as it did not take a long time to answer and compete among themselves. Moreover, they wanted to do all the tasks in the Quizizz platform in future as it was fun, meaningful and new way of learning from them. Table 1 supported the number of students answered the questions through Quizizz.

Table 1: The data demonstrated the number of students completed the question through the Quizizz application

Players

Rank	Player Name	Avg. Time	Score	Accuracy	Correct / Total
1	Ong Jia Sheng	15 secs	16090	100%	16 / 16
2	Syed Muhd Al-Hafiz	7 secs	15170	100%	16 / 16
3	Khairul Izany****	11 secs	14050	100%	16 / 16
4	Danish Shazuan	10 secs	11440	81%	13 / 16
5	zulhilmi*	12 secs	11000	75%	12 / 16
6	aidil akmal	20 secs	10610	81%	13 / 16

Based on the table above, it showed the ranking, the player, the time allocated, marks, accuracy and the number of wrong and right answers. Table 1 demonstrated the information obtained. Ong Jia Sheng was the first place as he got the full marks even though there was another student answered it faster compared to him. Besides, he answered it 100% correctly. Unfortunately, Syed Muhd Al-Hafiz was the fastest student completed the questions, but his

mark was lower compared to Ong Jia Sheng. The marks obtained by the number six scorer were the lowest although he answered all questions correctly compared to the number five scorer. The data expounded that the total marks obtained was more important compared to other data.

Table 2: The data collected from Quizizz application

Participant names	Score	Q1 63%	Q2 68%	Q3 53%	Q4 47%	Q5 58%	Q6 63%	Q7 53%	Q8 63%	Q9 58%	Q10 37%
Ong Jia Sheng	16090 (100%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Syed Muhd Al-Hafiz	15170 (100%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Khairul Izany	14050 (100%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Danish Shazuan	11440 (81%)	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓
zulhilmi	11000 (75%)	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓
aidil akmal	10610 (81%)	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗

Table 2 demonstrated the elicit data obtained from each question. In the quiz, the researchers prepared 10 questions with the multiple-choice answers. The data generated from Quizizz helped teachers to evaluate whether the given questions helped the students to understand the topic. If many students answered it wrongly, it showed that the students did not understand it or the questions did not suitable for their level. From the diagram, Aidil Akmal got two incorrect questions; question no 7 and no 10 while there were two students answered questions no. 4 wrongly. Question no 1,2,3,6,8 and 9 had been answered correctly by all students. From the diagram, there were three students answered it correctly, but the marks were differentiating due to the time taken while answering. Ong Jia Sheng got the first place with the highest marks.

4. Conclusion and Suggestion

In the conclusion, the experience in using online Quizizz changed the students' behavior and interest in teaching and learning at home. It showed the change in students' participation. The research findings were quite similar to the research done by Hussain, Tan and Idris (2014). In their research, they agreed to the effectiveness of gamification towards special need students in mathematics subject specially to understand the concept and problem solving for the difficult questions. Fortunately, it effected to the positive students' achievement in academic. Gamification is the catalyst for the students to participate in learning activities and injected enthusiasm among the students to be more excellent in academic achievement explained by Ong, Chan and Koh (2013).

The application motivated the online classroom environment became more dynamic as the teacher can monitor the students' participation through the interactive quiz explicated by Fang (2019) because each access student would be representing an avatar image included the students' name (D. C. Boulden, J. Hurt, and M. Richardson, 2017). Teacher traced the number of players in the quiz. Besides, the previous research indicated that the Quizizz application can increase the students' learning ability (Y. M. Sou, Y. J. Sou, and Z. Adam, 2018), increased the students' attention in teaching and learning process (Y. Basuki, and Y. Hidayati, 2019), reduced the anxiety (M. D. Pitoyo, 2019), and portrayed the positive

implication in the students' participation in class (D. C. Boulden, J. Hurt, and M. Richardson, 2017).

Most of the students explained that the use of Quizizz application were attractive as the quiz application had an interesting screen with the various colours. The use of an avatar image and music gave the same experience with the real computer application. The Quizizz application also can soar the students' understanding because the students can answer it repeatedly until they understand it.

Even though the research findings opposed to a few researches about the use of Quizizz. It showed that there was a similar achievement level and no significant improvement. Research done by Prasetyo (2016) explained about an application which can help in difficult with learning Al-Quran and it proved that this method helped to solve this problem. Analisa et al. (2015) elaborated that the process of teaching and learning by using Web 2.0 application did not achieve the meaningful learning because of the poor internet connection in the campus.

The use of application was not limited to a Whole Number topic only though it can be applied to all subjects as it can be created in various format, including wrong or right questions, objective questions, and open-ended questions to be easier and effectively. It supported by Ku (2014), Hsiao et al. (2014), Yang (2012), Hwang et al. (2014), and Eow et al. (2010) the use of Quizizz in teaching cannot be used in mathematics only, but can be implemented in other subjects and various levels of teaching.

Thus, the researchers suggested to the teachers to use the game-based application such as Quizizz in learning and facilitating process during Movement Control Order (MCO) because it gave a good impact to students and teachers. Apart from that, it can be used as an additional reinforcement in evaluating the students' achievement which suited to the teachers' need. The students' participation can be seen through the data. The Quizizz helped the researchers to evaluate the students' achievement because it was more interesting, easy and had the collaborative elements in constructing questions.

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