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# THE IMPACT OF PLAYMOBIL TOYS MANIPULATION STRATEGY ON PRIMARY PUPILS' READING COMPREHENSION

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**ABSTRACT**

Research on reading comprehension has been conducted extensively due to the great focus on children's literacy development. It is important to shift from a simple text-to-text method to a text-to-hands-on approach to improve reading skills. Therefore, the study objectives are to investigate the impact of Playmobil toys manipulation approach on primary students' reading comprehension of short narrative stories in English as a Second Language (ESL) classrooms. Sixty Year 3 students from two primary schools in Raub, Pahang, were involved in this experimental research. After reading the stories, the children in the experimental group had the chance to interact with the Playmobil toys. The toys were then taken away, and the pupils had to create mental pictures that matched the story events. In each session, the children in the manipulation group were compared to their rereading peers to determine if they did substantially better in cued and free-recalls. Furthermore, the study aimed to determine if good, moderate and weak second English language learners (ELLs) differed in their ability to profit from the Playmobil Toys manipulation approach. The statistically significant differences within the sessions in the manipulation group and in between with the rereading group highlighted this method's practical importance in enhancing the students' reading and memory skills. Also, the manipulation method benefited the good and intermediate ELLs. This study offers a valuable way to help primary pupils to understand short stories.

***Keywords:*** *Playmobil Toys, manipulation strategy, mental pictures, second English language learners, primary school.*

## INTRODUCTION

Reading is one of the four essential skills that young students must master during elementary schooling (Sandhakumarin & Tan, 2023). Proficiency in reading and writing assigns social status and establishes a person's socioeconomic standing per their income, career progression and job

prospects. Having a high level of literacy helps people to think more clearly, expand their intellectual horizons, and acquire the practical skills required to communicate work with others and handle complex machinery (Olagbaju & Olaniyi, 2023). Children who acquire fundamental reading behaviour at primary school will develop their literacy, proficiency and reading competency, and it is anticipated that students' reading proficiency will gradually increase as they move into higher grades (Nichols et al., 2018).

Phonics, phonemic awareness, vocabulary, fluency and comprehension are necessary to cultivate reading skills (Nichols et al., 2018). The reading learning process involves integrating phonemic awareness, phonics, fluency, vocabulary and comprehension (National Reading Panel, 2000). This has been further elaborated that proficiency in reading and writing assigns social status and establishes a person's socioeconomic standing concerning income, career progression and job. Reading comprehension, fluency, vocabulary and other academic areas are all impacted by the early development of reading skills (Moller et al., 2022). However, many children are more likely to have trouble understanding information offered in later grades if they do not acquire this capacity in elementary school (Lange, 2019).

Primary school students' inadequate fundamental reading skills can detrimentally affect their reading comprehension and fluency in later grades and as they become adults (Ehri & Flugman, 2018). Reading fluently is one of the most important aspects of learning English. In this global setting, developing reading comprehension skills is crucial for ESL learners as it broadens their vocabulary and progressively improves their other language proficiency (Sandhakumarin & Tan, 2023). The English language is now being taught from year 1 until year 6 in the Common European Framework of Reference for Languages (CEFR) curriculum that was progressively introduced in Malaysian primary schools in 2018 (Muniandy & Jain, 2024). Most schools now use the CEFR-aligned curriculum as the foundation for their English as a second language (ESL) instruction. A key element of Malaysia's Education Blueprint is the CEFR, which intends to raise the nation's educational level to meet worldwide standards in the next ten years (Chua & Sulaiman, 2021).

**PROBLEM STATEMENT**

Many children would not acquire the fundamental literacy by the time they graduate from elementary school (Noltemeyer et al., 2019). Low reading proficiency in elementary school has caused unfavourable school and post-school outcomes, including increased rates of disciplinary actions, school dropouts and criminal activity (Didion et al., 2021). A lack of exposure to the fundamentals of reading might result in limited educational prospects, low self-esteem, ineffective problem-solving techniques and a failure to acquire future competencies (Moller et al., 2022). According to Komiyama (2018), reading in a second language takes a lot of patience and effort. This aligns with Pennell (2020), who mentioned that students can also be categorised as autonomous, instructional and frustrated readers.

Wigfield et al. (2016) explained that students must be motivated to spend quality time and acquire skills and techniques needed for reading more. Although many primary school pupils struggle to read and comprehend grade-level materials, it is important to note that students' literacy is essential for success at both the school level and in life (Capin et al., 2021). Therefore, to make sure that pupils' reading skills are grade level, it is important that their motivation to read be increased first. Hence, English as a Second Language (ESL) teachers must carry out their duties effectively to foster students' intellectual growth, memory, and creative thinking. ESL teachers have a great role in including reading comprehension in their everyday lessons (Sandhakumarin & Tan, 2023).

According to Mayer (1989), every educational resource should be able to help pupils develop a mental model that inspires meaningful learning. A beginner learner, however, does not instantly possess the information or merely pick up the mental model of the system. Understanding the embodied aspect of reading comprehension is fundamental and works well for teaching young readers to comprehend what they read. This method, more often known as Moved by Reading, involves having the kids

engage with the book both intellectually and physically to develop an embodied comprehension of the text through action-related sentences (Glenberg, 2011).

Also, Playmobil has been utilised as an educational tool in a few studies (Parkin, 2023), which also serves as a great factor in the need to conduct this study. On the other hand, little study seems to exist about how Malaysian children use Playmobil Toys. Through the development of the Moved by Reading intervention, this study fills a research gap and adds to previous research on the manipulation strategy of Playmobil toys. It is a chance to generate insights from this study that might help teachers in the nation since it provides insight into how to incorporate the manipulation method to enhance students' comprehension of short stories in the CEFR educational system. In this article, we will observe how Malaysian students are reaping the benefits of comprehending short stories using the Playmobil toys manipulation strategy.

## RESEARCH OBJECTIVE

The main objective of this study was to determine if the children in the manipulation group outperformed the children in the rereading group in the cued and free-recall measures in each session conducted. In addition, the study aims to determine if the children using the manipulation approach obtained statistically significant results in the cued and free-recall measures throughout each session. Additionally, this study wanted to ascertain if the manipulation-based reading technique has benefited good and intermediate English language learners more than it has weak English learners.

## RESEARCH QUESTION

The effect of manipulating Playmobil toys on primary school students' reading comprehension was the focus of this study. There were four research questions, as stated below:

1. Will the children using the manipulation technique outperform the rereading group in the cued-recall tests in every session?
2. Will the children using the manipulation technique outperform the rereading group in the free-recall tests in every session?
3. Will the children in the manipulation group obtain statistically significant results in the free and cued recall tests at each session?
4. Do proficient, intermediate, and poor English language learners benefit from the manipulation-based reading technique differently?

## LITERATURE REVIEW

### *Past Studies*

Parkin (2023) conducted a case study to explore Playmobil Pro usage to help final-year students following Primary Education Studies enhance their comprehension through a fun approach. This study proved that Playmobil Pro helped students grasp topics by offering a play-learning tool with model creation, which creates meaning and facilitates in-depth conversations about the concepts. The research has proven the possibility of using Playmobil Pro as a tool to enhance students' learning and engagement in higher education. Similar to Lego, Playmobil has a higher potential to encourage imaginative learning. This case study explained how to utilise Playmobil Pro to help students learn and comprehend concepts in a fun way. Students were also able to display their learning visually by using the data that was gathered. Additionally, group members expressed that Playmobil Pro enhanced their comprehension and capacity for creative idea expression. Playmobil Pro usage as a new instrument for play-learning in higher education is demonstrated by this case study.

Mathers et al. (2024) further discussed this, examining the differences in interaction between adults and their three to four-year-old children during wordless book reading, text-and-picture book reading and small-world toy play activity. The understanding of how activity context shapes children's language learning settings is expanded by this study. For the play activity, a set of Playmobil toys with

a playground theme was used. The toys were chosen because they were representative of the toys available for pre-schoolers, meaningful for the kids and have both characters and objects to encourage discussion about the characters' actions, motivations and emotions. A bench, a flower, an octopus-shaped roundabout, a slide, a dinosaur-shaped rocker and figures (children and adults) made up the set. As wordless books and toy play have features in common, they may have certain advantages over text and image books. They may, for instance, inspire parents to use more open-ended inquiries or interactive extensions, or their open-ended and child-led style may spark more parent-child dialogue.

Also, Verver et al. (2019) conducted a study to determine whether augmented toys may help fifty-two children with visual impairments who attended a special school for kids with blindness and visual impairments to indulge in more playing. A technology known as Radio Frequency Identification (RFID) was added to a Playmobil knight's castle, enabling each play figure to emit an audible response while it was being used. When physical toys had noises, children with visual impairments tended to share attention when exploring playthings, but this also interfered with social engagement while playing with peers.

Glenberg (2011) elaborated on The Moved by Reading intervention, which teaches the children to simulate the story events while involving in the reading activity. In this manner, it is described that there are two stages in the simulation. First, physical manipulation (PM) followed by imagined manipulation (IM). Physical manipulation requires the children to manipulate the toys and simulate the content of what they have read. This is followed by manipulating the toys based on their imagination. Finally, the research discovered that both stages improved memory and comprehension among the students and that reading comprehension is embodied when the words or phrases are being stimulated through the embodiment of perception, action or emotional experiences.

Glenberg (1997) suggested that the development of patterns extrapolates from the physical interaction and allows the encoding of conceptualization when humans interact with the three-dimensional world. Sarama and Clements (2009) reported that the physicality of the manipulatives are not the key contributor, but the manipulability and meaningfulness of the manipulatives is the reasons for success in the field of education. Glenberg et al. (2004) have ensured that grounding is established for the young children's reading comprehension through the physical manipulation of the toys.

According to Glenberg et al. (2004), the imagined manipulation (IM) strategy is crucial for maintaining strategy without instruction to encourage a moderate level of transfer. By using the IM method, students will learn to visualise manipulating toys that match the figures and objects in the text that they are reading. According to the results, the pupils outperformed the other kids who read or reread the material quietly in the text comprehension tests that included free and cued-recall tasks (Glenberg et al., 2004, 2011; Marley et al., 2007). Furthermore, as compared to basic imagery instructions, mental imagery generates a substantial motor component in addition to visual imagery (Glenberg et al., 2013).

### *Background Theory*

Numerous studies (Marley, 2005; Marley & Szabo, 2010; Marley et al., 2011) have reported that two theories—the embodiment theory of reading comprehension, also known as the Indexical Hypothesis (e.g., Glenberg, 1997; Glenberg & Robertson, 2000) and Dual-Coding Theory (e.g., Paivio, 1971; Thompson & Paivio, 1994) are involved in explaining cognitively derived memory in line with the above intervention.

**Dual-Coding Theory.** According to the Dual-Coding Theory (Paivio, 1971; Thompson & Paivio, 1994), this theory's cognitive representation contains verbal and non-verbal codes. Referential links bind the two codes together. When a verbal code and an object as a nonverbal code are given simultaneously, a referential relationship is formed between the term and its referent. The visual representations strengthen the referential link between the iconic and symbolic mental

representations. Every person begins to vocally code the concrete visual stimuli, which enhances the memory ability later on.

Furthermore, Clark and Paivio (1991) explained that the dual-coding approach explains verbal and nonverbal information. While being processed independently, both pieces of information contribute to integrating working memory's mental subsystems. According to the Dual-Coding Theory (Paivio, 1971; Thompson & Paivio, 1994), words and numbers are encoded as logogens, but images or objects are encoded as imagens. The logogens and imagens are linked by referential linkages, which activate modality-specific representations (like words) to activate alternative-mode representations (visual pictures) in the memory further.

**The Indexical Hypothesis (IH)**. The IH is the primary hypothesis that provides the framework for this field of study (Glenberg et al., 2004). In addition, the Dual-Coding Theory's referential connection, which links between words and concrete representations, is formulated by the IH's active encoding (Glenberg & Robertson, 1999, 2000). According to the IH, children's language comprehension and recall are enhanced when symbolic components (words) are combined with tangible representations (manipulatives). The IH further detailed why children have poor memory, making it difficult to retain what they read and hear.

Furthermore, this theory clarifies how students' memory may be strengthened by physically manipulating real representations during reading or listening activities. According to the IH, the efficacy of the visualisation strategy has been enhanced by the incorporation of manipulating tangible representations into learning processes. To help children read other assigned stories from various scenarios without depending on the benefits of the manipulation, the IH recommends a potent fading teaching technique that entails the strategy transfer from the physical to imagined manipulation in language comprehension (Glenberg et al., 2004).

### *Contradictory Findings*

On the flip side, research conducted by Biazak et al. (2010) has tested upon recalling typical and atypical affordance sentences where the research did not support the predictions that the manipulation strategy facilitates the differentiation between both types of sentences. The research has also revealed that the students gained benefits in recalling the embedded concrete actions they had stimulated instead of remembering other information, such as non-action propositions, characters, and locations. These findings contradicted the general statements of the IH that manipulation improves story comprehension, and this was the first study to criticize the IH in the administration of the activity-based listening strategy with preschool children.

## METHODOLOGY

### *Research Design*

This experimental-based research utilised an experimental and a control group. The experimental group was assigned the manipulation strategy and the control group the rereading strategy. After assigning the intervention to three distinct groups of English language learners equally, this study identified which group and type of learners would get the highest results in their memory tests, which accommodate within and between the sessions. The dependent variable in this study refers to the scores attained in both memory measures, whereas the independent variable is the intervention used.

### *Participants*

Two elementary schools in Raub, Pahang, were chosen to participate in the study. Nine-year-old children who speak English as a second language were the targeted group. Students from years 4, 5, and 6 were not included in the study as it is believed that the students with higher previous knowledge may have performed equally in the exam before and after the intervention (Marley & Szabo, 2010). To capture the skill and maturity of thinking among the younger children who participated in the study, the study chose to work with the primary readers who had typically finished decoding practice for more than a year.

***Instruments***

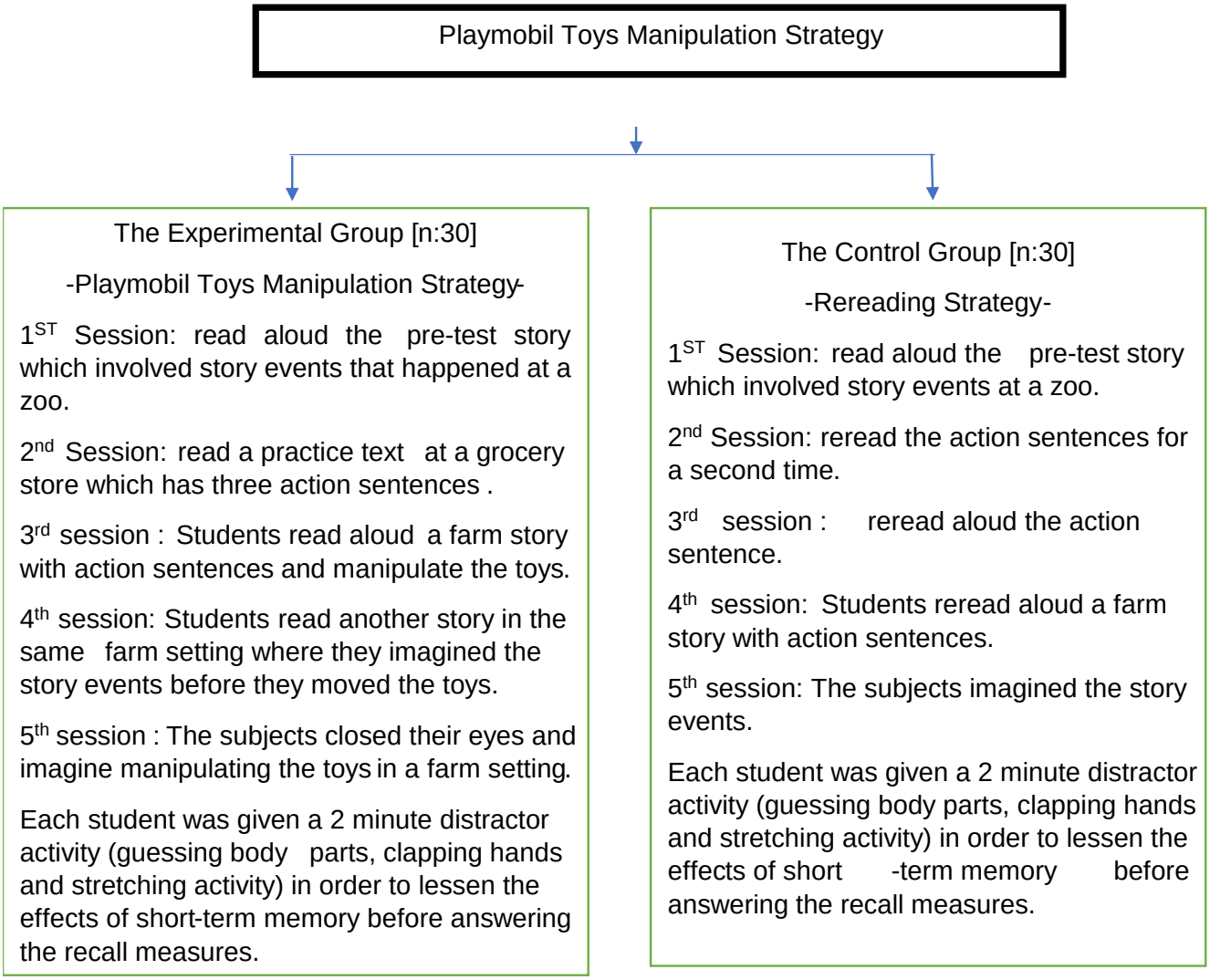
It is essential to highlight that the stories used in this research have been modified to fit into the local culture of Malaysia. Several adjustments were made to make the stories less unfamiliar to the readers' imaginations and more consistent with the themes selected for second language learners. There were five stories: a story at the zoo, three farm stories and one grocery store story. A list of 'idea units' with simple sentences and proportions was developed. The free and cued-recall measures' questions were also approved through the focus group discussion.

***Procedures***

Participants involved in the research spent about 15 to 20 minutes in each session and completed all the sessions. There was no amount of time allocated for each session. To elaborate, the subjects were assessed in the free-recall where they were told to tell everything they remember from each story they read. This free-recall activity aims to measure the students' recall of information where they were asked about five to six times by saying, 'Please tell me everything that you remember from the story you have read' and 'Is there anything else that you remember', to ensure complete recall of the story events. Both recall measures were audio-recorded for subsequent transcription.

**Figure 1.**

*The Experimental Design*




***Data Analysis***

The first and second research questions required the usage of the non-parametric Mann-Whitney test

as the distribution of the free and cued recall scores was not normally distributed. The Mann Whitney test was used to examine the significant mean difference between the free and cued recall scores among the students between the manipulation and the rereading group.

However, the Kruskal-Wallis test was used to solve the fourth research question, which examined the significant mean differences between the free and cued recall scores among the good, intermediate and weak ELLs in the manipulation group. The non-parametric Friedman's Test was also used to identify significant changes within all the sessions in the manipulation group. Yet, the repeated measures of ANOVA and ANCOVA were used to identify significant changes within all the sessions in the manipulation group, although the study did not normally distribute scores. This is called the robust use. Both parametric tests were used to answer the third research question.

### *Ethical Considerations*

It is essential to consider ethics while conducting research where permission has been obtained from the Ministry of Education, Pahang State Education Department, district education office in Raub, parents, teachers and both schools' authorities to conduct the research on the selected subjects. The collected data remained private and confidential.

## DATA FINDINGS

Based on the cued and free-recall scores, this study concluded the effect of Playmobil toys' manipulation approach on reading comprehension among three categories of ELLs. According to the study's findings, pupils in the manipulation group outperformed the rereading group concerning cued and free-recall descriptive scores. Furthermore, the research findings indicated that proficient English language learners outperformed the intermediate and weaker ELLs in both memory measures. Furthermore, the intermediate ELLs outperformed the weak ELLs by a considerable margin. Therefore, compared to weak ELLs, recognition is given to good and intermediate ELLs in this study.

On the other hand, the repeated measurements of ANOVA for the free-recall measures showed that the children in the manipulation group did better in the third and fifth sessions. On the other hand, the repeated ANCOVA measure showed that students' free-recall performance was higher in the third session than in the fifth. However, repeated measure ANOVA in the cued-recall measures revealed that the students' performance in the third session was noticeably better than in the fifth. Additionally, the ANCOVA repeated measures revealed that the cued-recall measure had insignificant mean differences in the third, fourth and fifth sessions. It has been discovered that the students' knowledge of the Playmobil toys' physical features is insufficient to determine if a manipulation method would be successful. For the children to profit from the manipulation technique, the study concluded that they should be well-versed in the imagery method.

## DISCUSSION OF THE FINDINGS

### *Analysis for the First Research Question*

**Table 1.**
*Descriptive Scores of the Cued-Recall Measure between the Groups*
Group Statistics

| | CRM | N | Mean | Std. Deviation | Std. Error Mean | P-value[a] |
|---|---|---|---|---|---|---|
| CRS_1 | Manipulation | 30 | 2.5000 | 2.59642 | .47404 | |
| | Rereading | 30 | 1.7833 | 2.39857 | .43792 | 0.10 |
| CRS_3 | Manipulation | 30 | 4.5333 | 2.86758 | .52355 | |
| | Rereading | 30 | 1.4333 | 2.12835 | .38858 | 0.00** |
| CRS_4 | Manipulation | 30 | 4.13333 | 2.900456 | .529548 | |
| | Rereading | 30 | 2.36667 | 2.177207 | .397502 | 0.01** |

| | | | | | | |
|---|---|---|---|---|---|---|
| CRS_5 | Manipulation | 30 | 3.0667 | 2.27328 | .41504 | |
| | Rereading | 30 | 2.1833 | 1.68913 | .30839 | 0.16 |

Table 1 describes the cued-recall scores for all the selected sessions between the manipulation and the rereading group. This has indicated that the performance of ELLs in the manipulation group is more effective than the students in the rereading group in the cued-recall measure. However, only students from the manipulation group performed significantly better than the rereading group concerning the cued-recall scores in the third and fourth sessions. This can be seen in the fact that the p-values were lesser than the level of significance ($p < 0.05$). This shows that students from the manipulation group have shown enormous interest in performing well in the third and fourth sessions, which involve physical manipulation and imagine manipulation than the rereading group.

***Analysis for the Second Research Question***

**Table 2.**

*Descriptive Free-Recall Scores Between the Groups*

| | | | | | | |
|---|---|---|---|---|---|---|
| FRS | Manipulation | 30 | .9000 | 1.04552 | .19088 | |
| _1 | Rereading | 30 | .6500 | .97512 | .17803 | 0.23 |
| FRS | Manipulation | 30 | 2.0500 | 2.79886 | .51100 | |
| _3 | Rereading | 30 | .7167 | 1.01441 | .18520 | 0.02** |
| FRS | Manipulation | 30 | 1.6500 | 2.03483 | .37151 | |
| _4 | Rereading | 30 | 1.1000 | 1.30912 | .23901 | 0.39 |
| FRS | Manipulation | 30 | 1.4833 | 1.56736 | .28616 | |
| _5 | Rereading | 30 | .7000 | .89635 | .16365 | 0.06 |

*Notes: ** refers to the case of significant at 5%.*

Table 2 describes the free-recall scores for all the selected sessions between the manipulation and the rereading group. However, only students from the manipulation group performed significantly better than the rereading group concerning the free-recall scores in the third session. This can be seen in the fact that the p-value is less than the level of significance ($p<0.05$). This shows that the students from the manipulation group have shown enormous interest in performing well in the third session, which involves physical manipulation than the rereading group.

***Analysis for the Third Research Question***

**Table 3.**

*Results of Pairwise Comparisons of the Free-Recall Scores with the Adjustment of Bonferroni*

Pairwise Comparisons

Measure: FRS

| (I) session | (J) session | Mean Difference (I-J) | Std. Error | Sig.[b] | 95% Confidence Interval for Difference[b] | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| 1 | 2 | -1.150* | .361 | .020 | -2.171 | -.129 |
| | 3 | -.750 | .319 | .154 | -1.652 | .152 |
| | 4 | -.583* | .204 | .046 | -1.160 | -.007 |
| 2 | 1 | 1.150* | .361 | .020 | .129 | 2.171 |
| | 3 | .400 | .461 | 1.000 | -.905 | 1.705 |
| | 4 | .567 | .340 | .636 | -.395 | 1.528 |
| 3 | 1 | .750 | .319 | .154 | -.152 | 1.652 |
| | 2 | -.400 | .461 | 1.000 | -1.705 | .905 |
| | 4 | .167 | .362 | 1.000 | -.859 | 1.192 |
| 4 | 1 | .583* | .204 | .046 | .007 | 1.160 |

| | | | | | |
|---|---|---|---|---|---|
| 2 | -.567 | .340 | .636 | -1.528 | .395 |
| 3 | -.167 | .362 | 1.000 | -1.192 | .859 |

*Based on estimated marginal means*

**. The mean difference is significant at the .05 level. Negative-good*

*b. Adjustment for multiple comparisons: Bonferroni.*

*Note: 1 = 1, 2=3, 3=4, 4=5*

Table 3 shows the results of pairwise comparisons of the free-recall scores with the adjustment of Bonferroni. It shows statistically significant mean differences in free-recall scores among learners between the first, third, and fifth sessions in the manipulation group ($p < 0.05$). The learners from the manipulation group performed better in the third and fifth sessions compared to the first session through the negative mean differences.

**Table 4.**

*Results of Pairwise Comparisons of the Cued-Recall Scores with the Adjustment of Bonferroni*

Pairwise Comparisons

Measure: CRS

| (I) session | (J) session | Mean Difference (I-J) | Std. Error | Sig.[b] | 95% Confidence Interval for Difference[b] | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| 1 | 2 | -2.033* | .454 | .001 | -3.319 | -.747 |
| | 3 | -1.633* | .364 | .001 | -2.663 | -.604 |
| | 4 | -.567 | .458 | 1.000 | -1.863 | .730 |
| 2 | 1 | 2.033* | .454 | .001 | .747 | 3.319 |
| | 3 | .400 | .519 | 1.000 | -1.071 | 1.871 |
| | 4 | 1.467* | .407 | .007 | .313 | 2.621 |
| 3 | 1 | 1.633* | .364 | .001 | .604 | 2.663 |
| | 2 | -.400 | .519 | 1.000 | -1.871 | 1.071 |
| | 4 | 1.067 | .421 | .101 | -.124 | 2.257 |
| 4 | 1 | .567 | .458 | 1.000 | -.730 | 1.863 |
| | 2 | -1.467* | .407 | .007 | -2.621 | -.313 |
| | 3 | -1.067 | .421 | .101 | -2.257 | .124 |

**. The mean difference is significant at the .05 level.*

*Note: 1=1, 2=3, 3=4, 4=5.*

The post-hoc ANOVA was used to detect the specific significant mode of cued recall scores within each of the selected sessions through Bonferroni adjustment and pairwise comparison. Table 4 shows the results of pairwise comparisons of the cued-recall scores with the adjustment of Bonferroni. It shows statistically significant mean differences in cued recall scores among learners between the first, third, and fourth sessions in the manipulation group ($p < 0.05$).

Learners from the manipulation group performed better in the third and fourth sessions than the first through the negative mean differences. There were statistically significant mean differences in the cued-recall scores among learners between the third and fifth sessions in the manipulation group ($p<0.05$). Learners from the manipulation group performed better in the third session compared to the fifth session through the positive mean differences.

***Analysis for the Fourth Research Question***

The table below will explain the fourth research question, whether there are differences in gaining benefits from the manipulation-based reading strategy among good, intermediate, and weak English language learners.

**Table 5.**
*Results of Descriptive Free-Recall Scores between Different Types of ELLs in the Manipulation Group*

| | | Means | Standard deviation | p-value[a] |
|---|---|---|---|---|
| FRS_1 | Good | 1.85 | 1.20 | |
| | Intermediate | 0.50 | 0.63 | |
| | Weak | 0.35 | 0.53 | 0.00** |
| FRS_3 | Good | 4.80 | 3.32 | |
| | Intermediate | 0.95 | 1.17 | |
| | Weak | 0.40 | 0.32 | 0.00** |
| FRS_4 | Good | 3.55 | 2.44 | |
| | Intermediate | 0.90 | 1.07 | |
| | Weak | 0.50 | 0.33 | 0.00** |
| FRS_5 | Good | 2.80 | 1.77 | |
| | Intermediate | 0.90 | 0.91 | |
| | Weak | 0.75 | 1.03 | 0.01** |

Table 5 shows the results of the Kruskal-Wallis test as it is required to test the significant differences of the free recall scores among the good, intermediate and weak ELLs in the manipulation, group if any, when the free recall scores are not normally distributed. As McDonald (2009) stated, the Kruskal-Wallis test does not support normally distributed scores. In general, good ELLs have performed significantly better than the intermediate and weak students concerning the free-recall scores within the manipulation group. This shows that the p-values are less than the level of significance ($p< 0.05$). This has supported the findings that the good and intermediate ELLs have benefited more than the weak students in the free recall measures.

**Table 6.**
*Descriptive Scores for Cued-Recall Measures among Different ELLs Based on Kruskal-Wallis Test*

| | | Means | Standard deviation | P-value[a] |
|---|---|---|---|---|
| CRS_1 | Good | 4.75 | 3.18 | |
| | Intermediate | 1.55 | 1.40 | |
| | Weak | 1.20 | 1.06 | 0.01** |
| CRS_3 | Good | 6.90 | 2.25 | |
| | Intermediate | 4.05 | 2.27 | |
| | Weak | 2.65 | 1.84 | 0.00** |
| CRS_4 | Good | 6.95 | 2.60 | |
| | Intermediate | 3.35 | 2.29 | |
| | Weak | 2.10 | 1.02 | 0.00** |
| CRS_5 | Good | 5.10 | 2.35 | |
| | Intermediate | 2.80 | 1.65 | |
| | Weak | 1.30 | 0.48 | 0.00** |

*Note: ** refers to the case of significant at 5%*

Table 6 shows the results of the Kruskal-Wallis test as it is required to test the significant differences of cued-recall scores among the good, intermediate and weak ELLs in the manipulation group, if any when the cued-recall scores were not normally distributed. Generally, the good ELLs performed significantly better than the intermediate and weak ELLs within the manipulation group concerning the cued-recall scores. This result supports that good and intermediate English language learners gained more benefits from the manipulation-based reading strategy than weak English language learners in

the cued-recall measures. This result is supported by the fact that p-values are lesser than the level of significance ($p < 0.05$).

**Table 7.**
*Results of Descriptive Free-Recall Scores between the Different Types of ELLs in the Manipulation Group*

| | | Means | Standard deviation | p-value[a] |
|---|---|---|---|---|
| FRS_1 | Good | 1.85 | 1.20 | |
| | Intermediate | 0.50 | 0.63 | |
| | Weak | 0.35 | 0.53 | 0.00** |
| FRS_3 | Good | 4.80 | 3.32 | |
| | Intermediate | 0.95 | 1.17 | |
| | Weak | 0.40 | 0.32 | 0.00** |
| FRS_4 | Good | 3.55 | 2.44 | |
| | Intermediate | 0.90 | 1.07 | |
| | Weak | 0.50 | 0.33 | 0.00** |
| FRS_5 | Good | 2.80 | 1.77 | |
| | Intermediate | 0.90 | 0.91 | |
| | Weak | 0.75 | 1.03 | 0.01** |

In general, good ELLs have performed significantly better than the intermediate and weak students within the manipulation group of free-recall scores. This shows that the p-values are less than the level of significance ($p < 0.05$). This result has supported that the good and intermediate ELLs benefit more from the manipulation-based reading strategy than the weak ELLs in the free recall measures.

This study concluded that the year three children performed better in the imagery sessions after they went through a few sessions of physical manipulation with the Playmobil toys because the manipulative group had higher descriptive scores in both memory measures. The results confirmed the expectations of the IH, which explains that children who completed several indexing phases will benefit from story content-related images. Similarly, if listeners or readers fulfil the IH's criteria of indexing words to objects or perceptual symbols, their retention, application, and understanding will increase (Glenberg et al., 2004). Maher and Sullivan (1982) further explained that older students do not benefit as much from this intervention because they already have relevant mental imagery as part of their reading strategies.

## CONCLUDING REMARKS WITH POLICY IMPLICATIONS

Numerous changes should be made to the English language teaching spectrum in Malaysia per the implementation of the CEFR-aligned English Language curriculum, including the teaching materials (Shak et al., 2021). The Education Ministry's goal of having a variety of comprehensive teaching aids in a classroom to fit in the twenty-first century will be met by implementing the manipulation approach of Playmobil toys in teaching English. In the modern educational environment, more instructional time should be devoted to teaching the English language, as every child's capacity to succeed in school is significantly influenced by their ability to utilise the language in society. This study concluded that appropriate tools and strategies must be practised to create a modern language learning environment and various teaching resources that will allow students to enjoy learning the language in the classroom. Based on the statement made by Glenberg et al. (2004), the IH creates an innovative method to enhance reading comprehension, and that was the main reason this study investigated the effect of the Playmobil toys on reading comprehension among year three pupils.

Conclusively, future research must discover if manipulation can help poor English language learners perform better. This is because Gambrell and Bales (1986) stated that mental imagery is an effective

way to be used by struggling readers to identify issues in reading. More research should be conducted on manipulating Playmobil Toys. Also, young children should receive more instruction in creating mental pictures before participating in the study. More studies should be done on the addition of other criteria besides classroom participation to assess the categorization of the three distinct categories of English language learners in the classroom.

Glenberg et al. (2007) stated that the manipulation method works well with abstract texts. This has been further proved by Carbonneau (2013) that using an activity-based learning technique and engaging in hands-on manipulatives helps students grasp abstract concepts. Therefore, additional investigation is required to determine whether this strategy applies to story stories in their abstract form. Furthermore, the study proposed that additional studies should be conducted to determine which gender gains the most advantage from the manipulation technique.

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