The use of Jigsaw II Technique in Malay grammar learning

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ABSTRACT

The Jigsaw II technique has been found to be effective in teaching and learning grammar based on cooperative learning. Therefore, this study was conducted to examine the effect of the use of the Jigsaw II technique on Form Four students' attitudes and achievement in Malay grammar learning. Sixty-two students from two boarding schools in Kubang Pasu district, Kedah, Malaysia, were selected to participate in the study. They were divided into a treatment group and a control group. Thirty-one students of the treatment group used the Jigsaw II technique, while thirty-one students of the control group used the Gallery Walk technique. Both groups were given pre-test and post-test. Pre-attitude and post-attitude questionnaires were given to the treatment group only. Data was collected and analysed quantitatively using paired sample t-test, independent sample t-test, and simple linear regression test. The results showed a significant difference in achievement and attitudes for the treatment group in learning Malay grammar after using the Jigsaw II technique. The analysis also showed that the student's attitude also influenced their achievement in learning Malay grammar based on the Jigsaw II technique. In conclusion, language teachers should choose and diversify cooperative learning techniques, such as the Jigsaw II technique, as this technique can also influence students' achievement and attitudes in grammar learning.

Keywords: Cooperative learning; grammar learning; Jigsaw II technique; Malay language

INTRODUCTION

The globalisation of education in the 21st century has resulted in rapid development in communication and technology. Through this development, numerous advances have taken place in the education field worldwide, leading to the emergence of new educational designs and policies, innovative digital-based educational resources and tools, and new values. This progress in the field of education brings significant changes to the teaching and learning process, thus increasing the achievement and motivation of students in their learning. Along with this development, most teachers compete and prepare themselves to apply the appropriate 21st-century teaching strategies to meet the needs of student-centred education (Embi, 2016). In the teaching and learning (TnL) of Malay subjects, for instance, the application of student-centred teaching strategies has been outlined in the Malay education curriculum, which includes project-based learning, constructivist learning, learning how to learn, mastery learning, inquiry-based learning, and cooperative learning (Kementerian Pendidikan Malaysia, 2018).

Nevertheless, some issues arise in discussing the application of student-centred teaching strategies in the Malay education curriculum, especially in cooperative learning. The issue is that educators prefer to use only one cooperative learning technique, the Gallery Walk technique. A study by

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Kiamsin and Talin (2018) found that teachers in Malaysia preferred using the Gallery Walk technique in TnL since it is a popular technique used by teachers in schools. Therefore, the teachers used less of other cooperative learning techniques since they were inclined to use the Gallery Walk technique only. Gallery Walk is a classroom learning activity requiring students to walk in groups to perform tasks assigned by the teacher. The task can be in the form of getting ideas and listening to explanations or presenting opinions and responding to the work of other groups. Gallery Walk enables students to investigate, explore, synthesise and evaluate (Namaziandost et al., 2018). Many studies on TnL of languages used the Gallery Walk technique, whether in the country or abroad, such as studies conducted by Chew and Sulong (2020), Jusoh and Daud (2020), Radzi et al. (2020), Namaziandost et al. (2018) and Anwar (2015). The results of the study by Chew and Sulong (2020) have found that the use of the Gallery Walk in learning Malay language writing did not have any influence on student achievement, i.e., there was no significant difference in the mean achievement score of the treatment and control groups.

Students will become bored if the teachers use only one teaching technique without utilising other techniques (Iberahim et al., 2017), including learning Malay grammar based on cooperative learning. As a result, it will indirectly affect the achievement and attitudes of students in learning Malay grammar. The problem of student achievement in Malay grammar can be illustrated when students are seen as incompetent in using standard Malay, also known as the learned language (Omar, 1999). According to the Malay Language Subject Inspection Report by the Quality Assurance and Inspection Committee, Ministry of Education Malaysia, more than 20 percent of the students showed weaknesses in vocabulary and speaking, while more than 50 percent in grammar. In addition, public and school assessment results showed that students' Malay language proficiency is moderate, and their weaknesses were very significant in terms of vocabulary and grammar (Kementerian Pendidikan Malaysia, 2017). Student attitude is an important aspect in influencing the level of Malay grammar achievement among students (Jamian et al., 2013).

Attitude is a person's tendency to respond to something learned, as a consistently good or inappropriate response to a situation. Beliefs, feelings, and thoughts that influence individuals to give value to something they are interested in or vice versa also refer to attitudes (Hasan, 2016). The problem with the attitudes of students in learning Malay is also caused by the teacher's pedagogy (Mahamod, 2011). Jalaluddin et al. (2010) found that students became bored and started to lose interest in learning the Malay language due to the

same Malay language teaching activities from the primary to secondary level. The study found that almost 20 per cent of the sample male students showed a negative attitude towards the Malay language due to the curriculum being very broad and often changing in grammar. The students experienced difficulties and confusion, thus making them not interested in learning Malay. Suppose the problem, as mentioned earlier originates from the weakness of the teacher's teaching strategy. In that case, the teachers should organise a strategy that is appropriate to strengthen the knowledge and skills of students to achieve a good level of grammar mastery in learning Malay (Jalaluddin et al., 2010).

In Malay education that applies student-centred teaching strategies, especially in learning Malay grammar, teachers should choose and utilise different cooperative learning techniques instead of focusing on or being tied to one technique only. Teachers should not only apply the Gallery Walk technique because other techniques, such as the Jigsaw II technique, can also help to improve student achievement and attitudes. Studies conducted by Yusuff and Awang (2012) and Diyazid et al. (2017) found that using the Jigsaw II technique increased student achievement in writing essays and learning traditional Malay poetry texts. The Jigsaw technique in cooperative learning was based on research developed by Elliot Aronson and his students in the early 1970s. Then Slavin adapted this technique and named it Jigsaw II. This Jigsaw II technique makes the learning session engaging, where every student has to play an important role in the learning activity. This technique promotes communication skills, teamwork, and peer sharing in students' efforts to understand a concept they are learning (Soundariya et al., 2021). In the Jigsaw II technique, each group member in the home group will get information about a concept from the expert during the discussion session in the expert group. Then they will return to their respective home group to share their acquired knowledge. Through this technique, students will be more responsible, creative, and able to guide other students. They are not only responsible for themselves but also for their learning activities (Rianto, 2016).

In addition to being the technique of choice to create a fun TnL, the Jigsaw II technique is seen as having the potential to provide optimal understanding to students, especially in learning Malay grammar. It is recommended that teachers make the Jigsaw II technique the technique of choice in the diversity of cooperative learning techniques so that teachers do not limit or focus on one cooperative learning technique only in learning Malay grammar. Therefore, the objectives of this study are based on the following research questions:

1. Is there a significant difference between the mean score of pre-test achievement and the mean score of post-test

achievement for the treatment group in learning Malay grammar after using the Jigsaw II technique?

2. Is there a significant difference in the mean score of post-test achievement between the treatment group and the control group in learning Malay grammar?

3. Is there a significant difference in the mean score of the attitude of the treatment group before and after using the Jigsaw II technique in learning Malay grammar?

4. Is there a significant influence on the attitudes of the treatment group towards achievement in learning Malay grammar based on the use of the Jigsaw II technique?

METHOD

Research design

A quasi-experimental study was conducted to identify the Jigsaw II technique's impact on Form Four students' achievement and attitudes in Malay grammar learning. A quasi-experimental approach is used to ensure that in an experiment, a procedure can determine whether it influences the outcome of the dependent variable between the two groups in the study (Alwahoub et al., 2022). This type of research is the most suitable methodology for testing hypotheses and causal relationships (Idris, 2013). In this research, the researchers observed the impact of an independent variable (Jigsaw II technique) on a dependent variable (student achievement and attitudes).

Research Sample

The study was conducted in two secondary schools. The chosen schools are equivalent, in which both are boarding schools located in the same district, in Kubang Pasu, Kedah, Malaysia. The sample included 62 Form Four students from both schools. Thirty-one students from School A were in the treatment group, whereas thirty-one students from School B were in the control group.

Teachers selected for both schools also have practically identical experience and teaching knowledge to minimize internal threats, namely study participants, treatments, and procedures (Plano Clark & Creswell, 2015). The Malay language teacher for the treatment group is a senior teacher with 13 years of experience teaching Malay subjects. Similarly, the Malay language teacher for the control group is a senior teacher with 14 years of experience teaching Malay subjects.

Sixty-two samples involved in the study were selected based on similar socioeconomics and achievements. The purpose of selecting Form Four students as samples was to allow students to prepare

ahead of time (Idris, 2013) in applying the Jigsaw II technique in learning Malay grammar, thus assisting them in the *Sijil Pelajaran Malaysia* (SPM) examination the following year when they are in form five.

Research Instruments

Pre-test and post-test questions: The researchers used pre-test and post-test questions as an instrument to answer the first and second research questions, i.e., comparing the mean pre-test achievement to the mean post-test achievement for students in the treatment group in learning Malay grammar after using the Jigsaw II technique and comparing the mean post-test achievement between the treatment group and the control group in learning Malay grammar. According to Konting (2005), the achievement test can be used to assess the student's mastery and skills as a result of a behaviour or processing, such as a perfect teaching method. As a result, achievement tests can be used to monitor and collect data efficiently.

The test questions consist of five subjective questions in the Malay grammar aspect of Form Four based on the format of the SPM issued by the Malaysian Examination Board beginning in 2021. The following are the subtopics:

1. Verbs (transitive and intransitive)
2. Adjectives
3. Noun phrases/verb phrases/adjective phrases/preposition phrases
4. Subject and predicate
5. Types of sentences (declarative, interrogative, imperative, exclamatory)

The difficulty level of the items for the test questions set is based on three difficulty levels, i.e., low, moderate, and high. To ensure that the test questions meet the study's objectives, the assessment was carried out by two senior Malay language teachers with more than 15 years of experience in the Malay language and have been examiners of Malay language papers at the SPM level.

Questionnaire: The questionnaire is utilised to answer the third and fourth research questions, with Section A containing demographic information on the students. Following that, part B contains 15 questions, while part C contains 14 questions. There are a total of 29 questions on this questionnaire that the samples must answer.

Researchers adapted a questionnaire used in the previous studies for this study. The researchers adapted the questionnaire used in the study by Iberahim et al. (2017) for the question items in part B, while the questionnaire used by Yusuff and Awang (2012) was adapted for the question items in section C. The question items in the questionnaire were modified according to the field of a study carried out by the researchers as there were

differences from the approaches and aspects to be studied in the Malay language TnL. The questionnaire was reviewed and evaluated by a lecturer who specialises in curriculum development from the School of Educational Studies, Universiti Sains Malaysia and an expert teacher with 15 years of experience in teaching Malay language subjects and has been an examiner of Malay language papers at SPM level. After a pilot study was conducted, researchers measured the reliability of the questionnaire instrument based on Cronbach's Alpha. After the analysis, the coefficient of Cronbach's Alpha for the entire question items exceeded .70.

Implementation of Jigsaw II Technique in Intervention Procedures
In this study, the researchers conducted an intervention for the treatment group (Jigsaw II) for eight weeks. The distribution of Malay grammar learning topics according to the intervention can be seen in table 1.

An example of the implementation of Malay grammar learning activities in the first week using the Jigsaw II technique for the treatment group is that at the beginning of the activity, students were divided into five groups consisting of six to seven students to form home groups. Each student moved according to a number based on a small topic,

namely verbs and their categories (number 1), the difference between complements and non-complements (number 2), intransitive verbs with complements (number 3), intransitive verbs without complements (number 4), and the difference between intransitive verbs with complements and without complements (number 5). In the group, members were given a certain number, which is the number 1-2-3-4-5. Then, all students holding number 1 would move to station number 1 to discuss with other group members holding number 1. They were called the expert group.

A group of experts would discuss a small topic by referring to the note's attachment. Likewise with numbers 2, 3, 4, and 5. Next, the expert group would return to their home group and guide their members in the home group. They would share the results of the discussion in the group with their original group members. Next, the students in the home group were asked to categorize the six examples of intransitive verbs without complements and intransitive verbs with complements found in the passage from the text *Arang Kayu Bakau di Kuala Sepetang* (Malay Language: Form Four, 2019, p. 60-61). The students were also required to build a story paragraph using both types of intransitive verbs. Next, representatives from home groups had to present the answers for their groups, and all the answers were discussed with the teacher.

Table 1
Malay Grammar Learning Topics according to Intervention Week

No.	Malay Grammar Learning Topics	Intervention Week
1	Verbs (transitive and intransitive)	1, 2
2	Adjectives	3
3	Noun phrases/verb phrases/adjective phrases/preposition phrases	4
4	Subject and predicate	5, 6
5	Types of sentences (declarative, interrogative, imperative, exclamatory)	7, 8

Data Collection and Analysis
For the data collection process, the researchers must first obtain permission to conduct the study in the schools, i.e., the researchers must apply for written approval from the Ministry of Education Malaysia (Ismail et al., 2019). Upon approval, the researchers contacted all parties involved in the study to request permission to conduct research at two boarding schools in Kubang Pasu district, Kedah, Malaysia. The researchers selected two Malay language teachers to conduct the study in both schools. The permission letter for the student's next of kin to allow participation in this study was also given to the students online by the Malay language teachers.

The researchers could not pick the entire sample of students from the school population as a study sample. As a result, the administration gave the researchers permission to use a sample of students from the specified classes, and the Malay language teacher aided them. Class A of School A was labelled as a treatment class, while class B of

School B was labeled as a control class. Next, the researchers met with a teacher from the treatment group at School A and guided and trained the teacher using the Malay language daily lesson plan (DLP), and showed a video downloaded from YouTube related to the Jigsaw II technique. The researchers did the same to the teacher of the control group at School B, but with a different video related to the Gallery Walk technique.

The study was conducted for eight weeks (Mokles & Sheikh, 2021). A pre-test was conducted on the control and treatment groups before using the Jigsaw II technique on the treatment group. After eight weeks of TnL implementation, both groups of students were given a post-test (Alwahoub et al., 2022; Plano Clark & Creswell, 2015). Next, the questionnaire was given to the treatment group students after the end of the eight weeks of treatment. The questionnaire was solely given to the treatment group as the objective of the study was limited to identifying the attitudes of the students of

the treatment group before and after learning Malay grammar using the Jigsaw II technique.

Researchers collected and analysed data using SPSS version 26.0 software. There were two types of statistics used in this study's analysis: descriptive statistics and inference statistics. The descriptive statistics used in this study were the frequency, percentage, mean and standard deviation. In contrast, the inference statistics used in this study were paired sample t-test, independent sample t-test, and simple linear regression test to refine and test research questions.

FINDINGS AND DISCUSSION
Impact of the Use of Jigsaw II Technique on Students' Achievement in Malay Grammar Learning
To answer the first research question, a paired sample t-test was used, and the significant level was .05. Null hypothesis 1 tested in this study was: There is no significant difference between the mean score of pre-test achievement and the mean score of post-test achievement for the treatment group in learning Malay grammar after using the Jigsaw II technique.

Table 2 shows the results of the paired sample t-test analysis to compare the mean pre-test achievement with the mean post-test achievement in grammar learning for the treatment group. The results showed a negative mean difference (M = -16.55, SD = 16.65). These findings demonstrated a significant difference (t (30) = -5.53, p < .05) between the mean pre-test achievement and the mean post-test achievement for Form Four students learning Malay grammar after using the Jigsaw II technique. Based on these results, the null hypothesis was rejected because p < .05. This study showed that the Jigsaw II technique impacted on the achievement of Form Four students in learning Malay grammar for the treatment group.

The results for the first research question showed a significant difference between the mean pre-test and post-test achievement for the treatment group in learning Malay grammar after using the Jigsaw II technique. According to the findings, the increase in mean post-test achievement (M = 71.92) was greater than the mean pre-test achievement (M = 55.42). Hence, it proves that using the Jigsaw II technique in a systematic way helped the treatment group students achieve more significant mean post-test achievement in learning Malay grammar than the mean pre-test achievement. The results showed that the Form Four students' treatment group

successfully learned grammar using the Jigsaw II technique. These results align with several other studies' results (Diyazid et al., 2017; Şahin, 2010).

In this study, students in the treatment group who used the Jigsaw II technique improved their Malay grammar learning. Diyazid et al. (2017) found similar results in accomplishment improvement, e.g., the Jigsaw II group, which is an experimental group, had higher mean post-test achievement than the mean pre-test achievement when learning classic poetic compared to the use of traditional methods. However, Diyazid et al. (2017) implemented cooperative learning using the face-to-face Jigsaw II technique for four weeks with a three-week gap between the pre-test and post-test, in contrast to the present study, which carried out the cooperative learning using the Jigsaw II technique online for eight weeks with an eight-week gap between pre-test and post-test. Since this study was conducted over a longer period than Diyazid et al.'s (2017) study and was conducted online, it became more interactive. As a result of the observations made on the use of the Jigsaw II technique for eight weeks, which is more interesting for students to learn grammar, the grammar achievement of the treatment group after using the Jigsaw II technique increased.

In this study, there was an increasing achievement in learning Malay grammar for students in the treatment group after using the Jigsaw II technique. Şahin's (2010) study is also in line with the results of this study, which is that the use of the structured Jigsaw II technique had helped students in the experimental group obtain a higher and significant increase in mean post-test achievement compared to mean pre-test achievement. Şahin's (2010) study showed that the experimental group also gave a positive view on the use of the Jigsaw II technique when there was an increase in the mean score before and the mean score after in the Turkish written expression achievement test. This increase in achievement was due to the Jigsaw II students being responsible for learning the entire topic and sharing their understandings with other friends, thus generating engaging and effective interaction. The active involvement of students is supported by the theory proposed in this study, which is Vygotsky's Social Constructivism Learning Theory. According to Fadzilah (2017), when students help each other find solutions to problems, this action has already achieved the requirements of Vygotsky's theory related to social reality, which is learning.

Table 2
Paired Sample t-Test of Pre-Test and Post-Test for Treatment Group

Test	N	Mean	Mean Difference	Standard Deviation	t	df	p (2-tailed)
Pre	31	55.42	-16.55	16.65	-5.53	30	.01
Post	31	71.97					

*p < .05

However, the researchers' learning content is different from studies by Diyazid et al. (2017) and Şahin (2010) because the researchers used five subtopics of the Malay language grammar, namely transitive/intransitive verbs, adjectives, nouns phrases/verb phrases/ adjectives phrases/ adjective phrases/ preposition phrases, subjects/predicates, and types of sentences (declarative, interrogative, imperative, exclamatory). The goal was to see if students in the treatment group who utilised the Jigsaw II technique online could demonstrate a significant improvement in these five subtopics of Malay grammar learning. The researchers found a significant improvement in the achievement of the experimental group before and after using the treatment method. In this regard, it can be concluded that the Jigsaw II technique is suitable for improving students' achievement in Malay grammar. The Jigsaw II technique is also seen as the choice technique in student-centred cooperative learning since it is more interactive when implemented online. The reason is that the students can continue interacting with their teacher and friends without requiring much movement, as shown in the observation result. This situation can aid them in discussing actively, thus eliminating their boredom and influencing their achievement in Malay grammar.

Next, to answer the second research question, null hypothesis 2 was tested using an independent sample t-test, and the significance level was .05. The null hypothesis 2 tested in this study was: There is no significant difference in the mean score of the post-test achievement between students in the treatment group and students in the control group in learning Malay grammar.

Levene's test was carried out to ensure that both samples had equivalent variance before implementing the independent sample t-test. Table 2 shows Levene's test for pre-test and post-test achievement between the control and treatment groups. Next, Table 3 shows the mean and standard deviation of pre-test achievement between the control and treatment groups.

Referring to Table 3, Levene's test shows $p = .13$ for the pre-test while $p = .28$ for the post-test. These values indicate $p > .05$, so the variance of both groups, i.e., the treatment and control groups in the pre-test and post-test achievement, were equivalent. Analysis of pre-test achievement in Table 3 showed the mean pre-test achievement for the treatment and control groups did not differ significantly in population, $t(60) = .43$, $p = .67$ ($p > .05$). Hence, the null hypothesis failed to be rejected because $p > .05$. Thus, independent t-test showed no significant difference to the achievement of pre-test Malay grammar for the treatment and control groups. Therefore, an independent sample t-test can be conducted to identify the mean post-test achievement of Form Four students in learning Malay grammar for the treatment and control groups.

Table 4 shows that the mean post-test achievement of the treatment group ($M = 71.97$, $SD = 11.59$) was higher than the mean post-test achievement of the control group ($M = 64.19$, $SD = 13.36$). There was a significant difference in mean post-test achievement between the treatment and control groups in the population, $t(60) = -2.45$, $p = .02$ ($p < .05$). Hence, the null hypothesis was rejected because $p < .05$.

Table 3
Levene's Test of Pre-Test and Post-Test Achievement between Treatment Group and Control Group

Test		Levene's Test for Variance Equality		t-Test for Mean Equality		
		F	*P*	*t*	*df*	*p (2-tailed)*
Pre	Homogeneity of Variance Assumption	2.34	.13	.43	60	.67
	Homogeneity of Variance Non-assumption			.43	56.51	.67
Post	Homogeneity of Variance Assumption	1.18	.28	-2.46	60	.02
	Homogeneity of Variance Non-assumption			-2.46	58.83	.02

Table 4
Independent t-Test of Pre-Test and Post-Test Achievement between Treatment Group and Control Group

Group	N	Mean	Standard Deviation	df	t	p (2-tailed)
Treatment	31	71.97	11.59	60	-2.45	.02
Control	31	64.19	13.36			

*$*p < .05$

Thus, the independent sample t-test showed a significant difference between the mean post-test achievement of the treatment and control groups, in which the mean post-test achievement of the treatment group is higher than the mean post-test achievement of the control group. This study showed that the Jigsaw II technique had an impact on Form Four students learning Malay grammar.

The results for the second research question also showed a significant difference in the mean post-test achievement (M = 71.97) for the treatment group compared to the mean post-test achievement (M = 64.19) for the control group in learning Malay grammar. It implied that using the structured Jigsaw II technique increased the mean post-test achievement of the treatment group compared to the control group. These findings revealed that the Form Four students in the treatment group learned Malay grammar more effectively than the conventional method, the Gallery Walk technique. These results align with several previous studies (Diyazid et al., 2017; Yusuff & Awang, 2012).

This study showed an increase in the mean post-test achievement of the treatment group compared to the control group. Diyazid et al.'s (2017) study showed similar results, i.e., the students of the Jigsaw II group had higher achievement in learning traditional Malay poetry texts significantly in the post-test. However, the content of TnL and the Diyazid et al. (2017) sample size were not the same as the present study. Diyazid et al. (2017) included 60 Vocational College students learning traditional Malay poetry texts such as *Syair Bidasari* and *Gurindam Dua Belas Fasal Ketiga*. Meanwhile, the present research included learning Malay grammar, which was divided into five subtopics, namely transitive/intransitive verbs, adjectives, nouns phrases/verb phrases/ adjectives phrases/ adjective phrases/ preposition phrases, subjects/predicates, and types of sentences (declarative, interrogative, imperative, exclamatory). This study has found that using the Jigsaw II technique in grammar learning improved student achievement. According to Harun et al. (2012), grammar is a fundamental component of language that serves as the foundation for developing all language skills, including listening, speaking, reading, and writing. Moreover, the Jigsaw II technique was used in this study to quantify and highlight the fundamentals of grammatical proficiency.

The Jigsaw II technique also impacted achievement in learning grammar for the treatment group. The present study's findings were comparable to the study by Yusuff and Awang (2012), in which the researchers found that the Jigsaw II technique increased student essay writing achievement for the experimental group over the control group. This success is due to the Jigsaw II technique's positive input, which allowed students to grasp and develop ideas in essay writing in the study of Yusuff and Awang (2012). This previous study differed from the present study in that it used a different sample, 60 samples of form two students, and examined the students' writing skills. However, in the present study, a sample of Form Four students and grammar learning was focused on aligning with the study by Yusuff and Awang (2012) on writing skills, in which the grammar aspect of the Malay language is viewed as highly significant in mastering writing skills. Students need to master the appropriate grammar and linguistic register to use information in various forms of writing (Kementerian Pendidikan Malaysia, 2018). Therefore, there was a significant impact on the Jigsaw II technique in Malay language learning for the treatment group compared to the control group.

The Jigsaw II technique clearly had an impact on the performance of Form Four students in learning Malay grammar. Although the control group used an equivalent cooperative learning technique, an online Gallery Walk technique, and had nearly the same level of student knowledge based on pre-test results that showed no significant difference between the two groups, the findings showed that the treatment group using the Jigsaw II technique was able to achieve a better post-test score. Thus, the Jigsaw II technique can overcome the problem of students using advanced Malay language inefficiently and weak in vocabulary and grammar (Kementerian Pendidikan Malaysia, 2017).

Differences in Students' Attitudes Towards Learning Malay Grammar Using The Jigsaw II Technique

A paired sample t-test with a significance level of .05 was utilised to answer the third research question. In this study, null hypothesis 3 was tested: there is no significant difference in the mean score of the treatment group attitude before and after using the Jigsaw II technique in learning Malay grammar.

Table 5
Paired Sample-Test of Pre-Attitude and Post-Attitude of Treatment Group

	N	Mean	Mean Difference	Standard Deviation	t	df	p
Pre-Attitude	31	3.75	-.49	.22	-5.41	30	.01
Post-Attitude	31	4.24	?	.44			

*$p < .05$

Table 5 shows the results of a paired sample t-test of the mean score before and after using the Jigsaw II technique in learning Malay grammar for the treatment group. There was a significant difference between post-attitude (M = 4.24, SD = .44) and pre-attitude (M = 3.75, SD = .22), (t (30) = -5.41, p < .05. Since p < .05, the null hypothesis was rejected. The paired t-test revealed that the mean pre-attitude and mean post-attitude scores for Form Four students learning Malay grammar after using the Jigsaw II technique differed significantly. This study found that the Jigsaw II technique influenced the attitudes of the Form Four students in the treatment group toward learning Malay grammar.

The third research question revealed a significant difference in the mean score of students' attitudes in the treatment group before and after using the Jigsaw II technique in learning Malay grammar. Compared to the mean pre-attitude score (M = 3.75), the mean post-attitude score (M = 4.24) improved. These findings demonstrated that using the Jigsaw II technique systematically helped the treatment group improve their mean attitude score in learning Malay grammar. The findings of this study matched those of Yusuff and Awang (2012) and Basyah and Hussin (2014). Yusuff and Awang's (2012) study showed the same results; namely, the students of the Jigsaw II group showed a positive attitude towards learning essays using the Jigsaw II technique. Furthermore, the respondents agreed that they obtained a lot of essay content when discussing with friends in learning using the Jigsaw II technique, thus showing that they understand the content of the lesson better, in addition to improving their writing skills. A positive attitude towards the use of the Jigsaw II technique also has an impact on achievement in essay writing skills.

The study of Basyah and Hussin (2014) also found a significant difference between the control and experimental groups in terms of student attitudes in Economics subjects. The findings of the study revealed that students successfully cultivated a positive attitude towards Economics subjects when they applied cooperative learning that used the Jigsaw II technique through attitude variables in the questionnaire. Nevertheless, the study of Basyah and Hussin (2014) is quite different from that of researchers who studied Malay grammar, even though they use the same variable, the Jigsaw II technique.

In this study, there were two parts of the attitude used to measure the attitudes of students towards Malay grammar learning using the Jigsaw II technique, namely the attitudes of students towards Malay grammar subject and the attitudes of students towards the use of Jigsaw II technique in Malay language TnL. Both parts of the questionnaire were given to the treatment group to measure the students' attitudes towards learning Malay grammar before and after using the Jigsaw II technique in a systematic way for eight weeks. The findings of this study showed that the use of the Jigsaw II technique has successfully fostered a positive attitude in students learning Malay grammar. Furthermore, the observation results showed that when entering the third week of using the Jigsaw II technique in learning Malay grammar, the students in the treatment group were confident to express their opinions when they were in the home group. Sometimes they asked for additional time to allow each group member to present their opinion and provide feedback on the opinion of their fellow group members. The increase in the mean score of attitudes for the treatment group in learning Malay grammar after using the Jigsaw II technique is seen as convincing teachers to diversify their strategies to strengthen the student's knowledge and skills in achieving a good level of grammar proficiency (Jalaluddin et al., 2010).

The Influence of Students' Attitudes on Their Achievement in Learning Malay Grammar Using the Jigsaw Technique II

Next, null hypothesis 4 was tested using a simple linear regression test to answer the fourth research question, and the significant level was .05. The null hypothesis 4 tested in this study is: There is no significant influence on the attitude of the treatment group towards achievement in Malay grammar learning based on the use of the Jigsaw II technique.

Table 6
Simple Linear Regression Test for Influence on Student' Attitudes of Treatment Group

Variable	*B*	B	*T*	*p*	Contribution
Constant	118.63				
Attitude	-11.01	-.42	-2.46	.02	17.2%

F = 6.04   *R* = .42
Sig. F = .05   *R*^{2} = .17
*Significant at level *p* < .05
Notes: β = *Standardized Beta*

Based on Table 6, a simple linear regression test was carried out to predict the influence of students' attitudes on their achievement in learning Malay grammar. There was a significant regression equation ($F_{(1, 29)} = 6.04$, $P < .05$), with R^2 .17. The influence of students' attitudes on Malay grammar mean score achievement was equal to 118.63-11.01 (attitude). Student achievement dropped by 11.01 on average per attitude. The null hypothesis was rejected because $p < .05$. In this study, the attitude variable had an influence which contributed 17.2 per cent to their achievement in the grammar of the Malay language. Therefore, there was a significant influence on the attitude of the treatment group towards their achievement in learning Malay grammar based on the use of the Jigsaw II techniques. The results of this study match the studies of Basyah and Hussin (2014). The previous study showed that in learning Economics subjects using the Jigsaw II technique, the students' attitudes variable was a predictor that had a significant correlation and influence on their achievement in Economics subjects.

The study by Basyah and Hussin (2014) also showed that students utilising the Jigsaw II technique had a positive attitude towards Economics subjects. The researchers also examined the relationship between student attitudes towards Economics subjects and family income. As a result, there was no significant relationship between the two variables.

In contrast to the present study, the researchers looked at the influence of students' attitudes on their achievement in learning Malay grammar without considering a correlation with other demographic aspects. The attitude had a significant influence on the grammar achievement of the Malay language and other factors that contributed to the student achievement, including the teacher's teaching style. According to Esa and Mahbib (2014), Vygotsky highlighted that teachers and peers also influence student cognitive development more than individual self-learning. Group learning through cooperative learning is seen to accelerate children's development.

CONCLUSION

This study examined the effect of using the Jigsaw II technique on the achievement and attitude of Form Four students in learning Malay grammar. This study also aimed to see the influence of students' attitudes on their achievement in learning Malay grammar using the Jigsaw technique II. The use of the Jigsaw II technique turned out to influence student achievement when the analysis of research data showed that student achievement increased in the post-test of learning Malay grammar which includes five subtopics in grammar, namely verbs (transitive and intransitive), adjectives, noun phrases/verb phrases /adjective phrases/noun phrases, subjects and predicates, types of sentences (statements, questions, commands, exclamations). This result shows that the Jigsaw II technique is suitable for learning Malay grammar for Form Four students. This success is also closely related to the students' positive attitude towards learning Malay grammar and using the Jigsaw II technique. This positive student attitude also influences their achievement in learning Malay grammar. The teacher's commitment to practicing the Jigsaw II technique also proves that this technique can be used as the preferred technique for student-centred cooperative learning, especially in grammar learning.

Teachers should choose and use different techniques in learning grammar to attract and maintain students' interest in learning. This finding also shows that the Jigsaw II technique coincides with the basis of Vygotsky's Social Constructivism Learning theory, which is that active learning in a group certainly provides the best results for student achievement and the formation of their positive attitude towards language learning.

The findings of this study also have implications for schools. This study suggests that schools should encourage teachers to apply cooperative learning techniques in language learning. Teachers can also conduct action research to improve teaching practices based on the Jigsaw IV technique or Round Robin technique in learning grammar, especially online TnL situations.

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