



# The Relationship between Class Size and Students' Achievement in English Reading Comprehension among Year 4 Students

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**ABSTRACT:** Class size has a significant impact on the reading comprehension of young learners. Research suggests that smaller classes can improve academic performance, including reading comprehension, by increasing student participation and individual progress. This study investigates the relationship between class size and students' achievement in English reading comprehension among Year 4 students. A quasi-experimental research design was employed, involving a mixed-methods approach incorporating quantitative and qualitative data collection methods. The results suggested that smaller class sizes have a positive impact on student's achievement in English reading comprehension compared to larger class sizes. The results of the study align with previous research, suggesting that smaller class sizes lead to better student performance. The findings of this study have implications for policy-making and educational practice, highlighting the importance of considering class size as a factor in promoting students' academic achievement.

**Keywords:** English reading comprehension, class size, students' achievement, primary school students

## 1. Introduction

The findings of this review underlined the emphasis on reading comprehension as one of the initial learned academic achievements; this area is strongly dependent on class size. Strelan et al. 's (2020) study found a direct positive relationship between class size and the amount and quality of knowledge that students take in and apply to their academic work. According to Blatchford and Russell (2020), class size refers to the ratio of students per course, class, school, district, or system of learning. Class size affects the ability of the students to comprehend what they read since each gets a certain amount of attention.

### 1.1. Independent Variable: Class size

The accumulated research evidence tends to show that larger class size generally has a negative effect on a variety of education-related metrics. Wang and Calvano (2022) further observe that the impacts of large classes are adverse on issues to do with retention, achievement, engagement, communication as well as teaching effectiveness.



According to Blatchford and Russell (2020), large classes also reduce the time that teachers spend in creating individual forms of formative assessments or enhancing friendly teaching—student relationships. These authors point out that since interaction is key to learning, it is often more difficult to achieve in large classes, although some literature has found certain advantages to those large groups. In their current research studies, Bardach et al., 2022 and Akhdan & Aminatun, 2022 supplement the idea that smaller classes have benefits, especially in the scores and perceptions of teachers. Laitsch et al. (2021) and Shen and Konstantopoulos' (2022) study show that small class sizes have the highest positive impact on learners from poorly off or ethnic backgrounds provided that innovative teaching methods are applied. These patterns mean higher classes imply greater use of lectures, thus disengaging students (Bovill, 2020; Iglesias-Pradas et al., 2021).

### **1.2. Dependent Variable: Student Achievement**

The biggest factor in achievement is student engagement, and this is impacted on by the size of the class. Small classes create increased student engagement, enthusiasm, and superior learning (Reeve et al., 2020). In turn, engagement can be described in terms of behavioral, emotional, and cognitive processes (Munna & Kalam, 2021). Namely, the small group of learners gets specific attention paid to by educators, and students, therefore, have stronger teacher relationships and improve both academic performance and the learning environment in their educational undertaking (Nduudee & Shedrack, 2024; Means & Neisler, 2021).

### **1.3. Cognitive Presence Theory**

According to the Cognitive Presence Theory which outlines the nature of online learning environments, proper management of the learning environment is highly recommended. The cognitive presence as defined by Tan in 2021 focuses on the creation and construction of knowledge in a community of inquiry through reflection on what has been learned and participation in discussions. Regarding large classes, Villanueva et al. (2022) have pointed out that cognitive presence may be fostered by organizing classroom activities that involve discussion and group work as well as critical thinking tasks. Codified-present students know how to transfer their mental/perceptual presence and can build thinking skills through activities that expand, explain, and apply their knowledge (Gutiérrez-Santiuste et al., 2021). Students who pay more attention to the English lesson feel more engaged at the cognitive level thus, showing more interest, engagement, and performance (Laitsch et al., 2021). Likewise, the Cognitive Presence Theory affirms the significance of learners' growth mindset, involvement, and communicative verbal output in enhancing their cognition. In addition, the theory proposes that combining, enhancing, and sustaining the social presence enhances the results when students apply the cognitive skills that are required for higher learning (Gutiérrez-Santiuste et al., 2021). Challenge thinking is a condition or a process of learning; cognitive presence is a crucial component of effective college learning (Laitsch et al., 2021). The cognitive presence domain also includes other elements of the practical inquiry cycle and the learning strategies used during the process of reflection.



In sum, offered by Paulsen, the Cognitive Presence Theory is a tool that enables identifying the ways of improving students' learning and performance in a given classroom no matter the count of persons in the class, with the focus on cognitive presence and critical thinking as well as participation of the students.

#### **1.4. Research Gaps**

Several studies have looked at how reading class size affects comprehension and students' academic achievement, (Shen & Konstantopoulos, 2022), but they have mostly ignored English in favor of math, science, and social studies. Both the elements that influence pupils' performance in English and the tactics employed to enhance their reading comprehension have been the subject of much research. Surprisingly, there is a lack of studies addressing the questions related to the connection between pupils' reading comprehension and their English language proficiency. In addition, there are limited studies that have focused on the relationship between class size and students' achievement in English reading comprehension. Researchers Yapp et al., (2023) sought to determine the impact of fast reading tactics on the English language comprehension development of secondary school pupils as part of a larger body of research investigating methods to enhance students' reading comprehension. However, none of the researchers has focused only on fourth-year students. Furthermore, the current research establishes a connection between reading achievement and other variables, including reading attitude and reading motivation.

#### **1.5. Importance/Relevance of Study**

The relevance of exploring the correlation between class size and students' achievement in reading comprehension among Year 4 students is multifarious, embodying students' psychological perspective as well as the policy-making. Apprehending the relationship between these two factors is crucial for several reasons, one, reading comprehension is believed as a fundamental skill for pivotal year 4 students. Reading comprehension underpins success in acquiring a second language as the transition of the students occurs from learning to read to reading the text to learn and comprehend. Hence, providing them the benefit of mastering reading comprehension may have a long-lasting effect on students' academic pursuit (Shin & Raudenbush, 2021). Also, smaller class sizes would be able to provide the necessary classroom environment for tailored instructions which might help the students with difficulties in reading (Bardech & Klassen, 2020).

## **2. Method**

### **2.1 Research Design**

A quasi-experimental research design for investigating the relationship between class size and students' achievement in English reading comprehension among Year 4 students could involve the collection and analysis of numerical data to measure and quantify the impact of class size on students' academic performance. This research design would likely involve the use of standardized tests or assessments to measure



students' reading comprehension skills in English. A quantitative research approach would entail using statistical analysis to uncover connections, links, and possible cause-and-effect associations between class size and students' performance in English reading comprehension. This might involve employing inferential statistical methods like regression analysis to assess the significance of the connection between class size and students' reading comprehension scores. Additionally, this approach could include conducting interviews to collect students' involvement from cognitive, affective and behavioral domains toward learning the English language. This qualitative data could offer further insights into the impact of class size on student academic achievements.

## 2.2. Participants

The study explores the effects of class size on English reading comprehension achievement for Year 4 students. It underscores the significance of student involvement and active participation in learning, as well as teachers' responsibility to provide personalized attention and assistance. The research covers both students and teachers from SJKT Teluk Merbau and SK Damansara Damai 2 examining how class size impacts their interactions, engagement, and overall academic performance. It also discusses the challenges and advantages associated with various class sizes, particularly regarding students' learning experiences and teachers' ability to effectively manage classroom instruction. Furthermore, it addresses Cognitive Presence Theory's theoretical framework highlighting the importance of creating an optimal learning environment while emphasizing teachers' role in fostering student engagement and cognitive development.

## 2.3. Data Collection Procedures

This study employed a mixed-methods approach, incorporating both qualitative and quantitative data collection methods to gain a comprehensive understanding of the research questions. The numerical data on students' achievement in English reading comprehension was collected through UASA standardized assessment reading text. Two sets of reading comprehension texts were prepared for both control and experimental groups. The reading texts were analyzed using Text Inspector and the level of the texts were C1(Advanced). To identify the students' perceptions 3 interview questions from cognitive, behavioral and affective domains were prepared and 6 students were randomly selected from the experimental group to participate in. The UASA standardized assessment reading texts and three interview questions were submitted to the expert. This is to check the validity and quality of the research instruments used to conduct this study.

## 2.4. Data Analysis Procedures

Quantitative data analysis procedures were utilized to analyze the collected data. Statistical techniques, such as correlation analysis, and inferential statistics, were employed to examine the relationship between class size and students' achievement in English reading comprehension using SPSS V.26 statistics software. These analytical

methods provided quantitative insights into the impact of class size on students' achievement. Thematic analysis was employed to analyze the semi-structured interview data to determine the students' perceptions from cognitive, behavioral and affective domains. The recordings of the interview were transcribed using the Cockatoo application as it can convert audio files to text precisely. The ATLAS.ti software was used to code and analyze the data collected systematically. Thematic coding was carried out to determine the underlying themes.

### 3. Findings and Discussion

#### 3.1. Findings

To answer research questions 1 and 2, the quantitative data obtained from the pre-tests and post-tests were analyzed and tabulated using SPSS V.26; whereas to answer research question 3, the thematic analysis was conducted to reveal students' perceptions from their cognitive, behavioral and affective domains to draw conclusions pertaining the class size and students' participation.

##### 1. Research Questions 1 and 2

The study aimed to investigate the relationship between the class size and the students' achievement in English reading comprehension among year 4 students. Prior to participating in the test, participants completed the standardized UASA assessment from Selangor. The results of the study revealed that both control and experimental groups have statistically significant findings for the standardized assessment despite their class size (refer **Figure 1**).

Figure 1: Paired Sample Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PreTestScores_Control - PostTestScores_Control	-2.529	1.237	.212	-2.961	-2.098	-11.926	33	.000
Pair 2	PreTestScores_Experimental - PostTestScores_Experimental	-8.000	2.530	.632	-9.348	-6.652	-12.649	15	.000

The mean score on the pre-test scores for the control group was 9.24(SD=1.208) while for the experimental group was 10.13(SD=3.538) indicating that the pre-test scores are relatively consistent to the data set and that it is true that the data is considered as a normal distribution (refer **Figure 2**).

Figure 2: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PreTestScores_All	Equal variances assumed	26.319	.000	-1.324	48	.192	-.890	.672	-2.241	.462
	Equal variances not assumed			-.979	16.667	.341	-.890	.908	-2.809	1.030

According to **Figure 2**, it can be seen that there are no significant differences before the intervention took place for both control and experimental group.

Following the completion of the 4-weeks difference, and the class size, participants were again assessed **using** another set of UASA standardized assessment for reading comprehension. The mean score on the post-test for the control group was 11.76(SD=1.372) suggesting slight variability in scores over time without any interventions. The slight changes over time suggests that scores may have varied more among the students in the control group as time progressed. The mean score for the experimental group was 18.13(SD=1.544). The reduction suggested that after the exposure to a smaller class size, the intervention had led to more consistent scores among the students. Figure 3 demonstrates the significance between post-test scores for both control and experimental groups. With the observed results, it is evident that there is a significant difference between the post-test scores with  $p < 0.05$  which was  $p = 0.000$  indicating that intervention was a success on the experimental group but it is also evident that the control group was able to achieve higher scores despite the class size.

Figure 3: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PostTestScores_All	Equal variances assumed	.238	.628	-14.692	48	.000	-6.360	.433	-7.231	-5.490
	Equal variances not assumed			-14.071	26.555	.000	-6.360	.452	-7.288	-5.432

Moving onto the correlation between class size and students' achievement in English reading comprehension, the chi-square test results show a statistically significant association between the group type (Control vs. Experimental) and post-test scores (refer **Figure 4**). The p-value of 0.000 is less than the typical significance level of 0.05, indicating that the observed differences in post-test scores between the two groups are unlikely. The experimental group appears to have a significant effect on post-test scores. There is a clear difference in the distribution of scores between the control and experimental groups.

Figure 4: Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	50.000 <sup>a</sup>	5	.000
Likelihood Ratio	62.687	5	.000
Linear-by-Linear Association	40.086	1	.000
N of Valid Cases	50		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is 1.28.

## 2. Research question 3

### *Cognitive Domain: Reading Comprehension Performance in Different Class Sizes*

**Theme:** Enhanced Performance in Smaller Classes

The responses indicate that students generally experience better reading comprehension performance in smaller classes due to increased engagement and a greater desire to improve. This theme is reflected in statements about performing well and finding it easier to engage in lessons and activities in smaller class settings.

**Consistent Performance:** Students repeatedly mention their ability to perform well in smaller classes (S1, S2, S4, S6).

**Ease of Performance:** Students find it easier to perform in smaller classes (S5).

**Increased Engagement:** Smaller classes facilitate better engagement and a desire to improve (S3).

### *Affection Domain: Feelings of Support or Encouragement from Teachers*

**Theme:** Increased Teacher Support and Encouragement in Smaller Classes

The responses indicate that students feel more supported and encouraged by their teachers in smaller classes. This theme is reflected in statements about teachers actively encouraging participation, providing consistent support, and making students feel happy and appreciated.

**General Encouragement and Happiness:** Students feel encouraged and happy due to the teacher's support in smaller classes (S1, S5).

**Active Encouragement and Participation:** Teachers actively encourage students, leading to more active participation than larger classes (S2, S3).

**Consistent Support and Appreciation.** Teachers provide consistent support and appreciation in smaller classes (S4, S6).





### *Behavior Domain: Likelihood of Active Participation in Reading Discussions*

#### **Theme:** Increased Active Participation in Smaller Classes

The responses indicate that students are more likely to actively participate in reading discussions in smaller classes. This theme is reflected in statements about increased participation, engagement, and the influence of teacher encouragement in smaller class settings.

**Active Participation:** Students consistently report active participation in smaller classes (*S1, S4, S6*).

**Engagement in Discussions.** Students find themselves more engaged in classroom discussions in smaller classes (*S2*).

**Teacher's Influence on Participation:** Teacher encouragement plays a significant role in leading to active participation in smaller classes (*S3*).

**Increased Opportunities for Participation:** Smaller classes provide more opportunities for active participation (*S5*).

### **3.2. Discussion**

The purpose of this study was to investigate the relationship between the class size and students' achievement in reading comprehension among year 4 students. The findings of the study were analyzed using both SPSS V26 software and thematic analysis. The findings of this study highlight the significant outcomes for the both control and experimental groups on the standardized assessment for reading comprehension. The control group demonstrated the progression of the students without the intervention, which was the class size. This depicts that the results obtained are due to coincidence alone. The integration of this quantitative study suggests that smaller class sizes lead to better students' performance compared to larger class size even if both groups demonstrated the significant relationship.

The results of this study align with recent research conducted Laitsch et al. (2021) and Shen and Konstantopoulos' (2022) suggesting that smaller class sizes have a positive impact on students' achievement in comparison with larger class size. Although the study conducted reflected both the control and the experimental groups had high scores, it is evident that the experimental group projected promising results. These results indicate that both groups show a positive relationship between pre-test and post-test scores, with the experimental group exhibiting a stronger correlation compared to the control group.

The findings of this study support previous research on the influence of class size on student accomplishment, particularly in the domain of reading comprehension. Strelan et al. (2020) discovered a direct positive association between class size and knowledge acquisition quality, which is consistent with previous research showing that lower class sizes improve student engagement and performance. This study delves deeper into these links by conducting a thematic analysis of student responses, with an emphasis on cognitive, affective, and behavioral domains.





### *1. Cognitive Domain: Reading Comprehension Performance in Different Class Sizes*

The study found that pupils do better in reading comprehension in smaller courses. This is congruent with findings by Laitsch et al. (2021) and Shen and Konstantopoulos (2022), who discovered that lower class sizes benefit learners, particularly those from disadvantaged backgrounds. In smaller courses, students receive more personalized attention, which improves their capacity to comprehend and remember material. This validates Reeve et al.'s (2020) results, which emphasize the importance of student participation in accomplishment. The greater engagement and subsequent improvement in academic achievement in smaller courses highlight the necessity of maintaining low student-to-teacher ratios in order to establish successful learning environments.

### *2. Affective Domain: Feelings of Support or Encouragement from Teachers*

The thematic analysis shows that students feel more supported and encouraged by their professors in smaller courses. This is consistent with the results of Blatchford and Russell (2020), who discovered that big classrooms limit the time instructors can devote to developing individualized evaluations and cultivating student-teacher connections. The sense of support and encouragement in smaller courses boosts students' emotional engagement, resulting in a more enjoyable learning experience. As Nduudee and Shedrack (2024) and Means and Neisler (2021) point out, excellent teacher-student interactions are critical for enhancing academic achievement and providing a positive learning environment.

### *3. Behavioural Domain: Likelihood of Active Participation in Reading Discussions*

The study also found that students are more likely to actively participate in reading discussions in smaller courses. This greater participation is vital for cognitive development because it encourages pupils to think critically and engage more deeply with the topic. The Cognitive Presence Theory, as addressed by Tan (2021) and Villanueva et al. (2022), emphasizes the necessity of developing cognitive presence through debates and group activities. The data lend credence to this notion, demonstrating that lower class numbers promote greater involvement and engagement in conversations, both of which are necessary for the development of higher-order thinking abilities.

### *4. Integration of Cognitive Presence Theory*

The Cognitive Presence Theory provides a framework for analyzing the effects of class size on learning outcomes. According to Paulsen, this theory emphasizes the need of providing a learning environment that fosters critical thinking and active engagement. Smaller classrooms allow for better organization of classroom activities that promote cognitive presence, resulting in higher student engagement and performance. The findings of this study are consistent with Gutiérrez-Santiuste et al. (2021), who said that cognitive presence and critical thinking are required for optimal learning regardless of class size. Teachers may improve the learning experience and academic performance in big courses by ensuring that students are cognitively engaged and implementing tactics that encourage active participation and critical thinking.



## 4. Conclusion

In conclusion, the study provides evidence that class size is a significant factor influencing Year 4 students' achievement in English reading comprehension, with smaller class sizes leading to more substantial improvements in students' performance on standardized assessments. However, the study also acknowledges that while class size is an important variable, it is not the sole determinant of academic success. Other factors such as the quality of instruction, student engagement, and the effectiveness of pedagogical strategies also play crucial roles in student learning outcomes. The findings underscore the potential benefits of smaller class sizes but also suggest that effective teaching practices and student-teacher interactions are essential for enhancing student achievement, regardless of the class size.

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