

The Role of Parents' Education Level in Moderating the Relationship Between Primary Students' Reading Self-Efficacy and Reading Comprehension

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Abstract

Mastery of reading comprehension is crucial for academic success, as it enables students to effectively learn and understand material in all subjects. This study investigates level of parents' education as moderator between students' reading self-efficacy and reading comprehension. This study involved 393 fifth-grade students and their parents from fifteen primary schools in Kelantan, Malaysia. Participants were chosen through a multi-level random sampling method. The results of the study include both descriptive testing and inferential analysis utilizing structural equation modelling. Given that both parents' educational levels have significant regression coefficients, the study results suggest to a partial moderator effect, indicating that students' reading self-efficacy on reading comprehension relies on both parents' educational levels. A more thorough understanding of how students' reading self-efficacy affects reading comprehension differently according to their parents' education levels may help stakeholders in education including policy makers, school administrators, and teachers in developing more effective and comprehensive educational programs for students.

Keywords: Parents' Education Level, Reading Self-Efficacy, Reading Comprehension.

Introduction

In the context of teaching and learning in schools, reading comprehension is essential for students to fully understand the texts they read. It involves the creation of meaning and the construction process through interaction between the reader and the material (Arshad, 2008). Flood and Salus (1984) suggest that reading without comprehension is an unproductive activity. Therefore, reading skills involve more than just spelling and pronouncing words. Reading encompasses a complex cognitive process of understanding the content, aimed at grasping the author's ideas and messages and transforming them into knowledge for the reader.

Reading development is a multifaceted process impacted by both cognitive and non-cognitive elements (Boman, 2023; Karaman, 2022; Ramirez et al., 2019; Weissberg et al., 2015). The term "non-cognitive" refers to human characteristics that cannot be solely explained by cognitive or academic achievement Lee & Shute (2010) and the terms are used interchangeably to refer to non-cognitive skills, such as non-academic skills, socio-emotional skills, psychological factors, social support, and contextual factors (Garcia, 2016). Due to the substantial impact of non-cognitive factors, they are recognized as pivotal contributors to students' academic success, alongside cognitive abilities (Wanzer et al., 2019).

According to Bradley (2016), reading comprehension skills developed while students in elementary school might influence children's lifelong learning experiences. Students in elementary school with superior reading abilities perform better academically than those with less abilities (Epçaçan, 2018). The deficiency in reading comprehension undermines students' capacity to acquire knowledge, thereby impeding the academic learning process within schools (Balanadam & Jamaluddin, 2021; Rahman, 2018). Therefore, it is essential to conduct research on reading comprehension to ensure that students in educational environments can proficiently understand reading materials, thereby improving their overall comprehension of classroom content.

Students with high self-efficacy are more capable of facing challenges in learning (Wan Mohamed & Yunus, 2017). However, the influence of self-efficacy on academic achievement is low for students in Malaysia (Gholami et al., 2019). On the other hand, Li Xien dan Mydin Kutty (2021) found that the level of self-efficacy among Malaysian students is high. Contradictorily, findings by Nizam dan Rosli (2021) showed that the level of self-efficacy among students is only moderate. As a result, these findings have spurred the researcher's interest in conducting further studies to examine the influence of reading self-efficacy on students' reading comprehension in Malaysia, given that previous findings have been inconclusive.

Family socioeconomic status (SES) has consistently been proven to be related to students' academic achievement and literacy (Chiu & McBride-Chang, 2010; Selvitopu & Kaya, 2023; Willms, 1999; Zuilkowski et al., 2019). The three components of SES, which include parental income, parental education, and parental occupation are the main indicators of SES (Hauser, 1994; Mueller & Parcel, 1981). Vellymalay (2012) found that parents are actively involved with their children's education at home regardless of socioeconomic status (SES) in Malaysia. However, most students who struggle with reading skills come from low-income families who are less aware of the importance of reading (Lasan & Mahamod, 2018; Mahamod et al., 2021). This indicates a gap in previous research findings regarding the influence of SES on students' learning achievements in Malaysia. Therefore, this study involves educational level of parents to identify the influence of SES on students' reading comprehension.

The Impact of Students' Reading Self-Efficacy

Self-efficacy is a crucial factor in cultivating strong self-motivation and effective learning strategy adoption among students (Templeman, 2020). Students with high self-efficacy demonstrate the ability to engage in self-directed learning, engage in structured planning, and strive to achieve their desired objectives Coros & Madrigal (2021), consequently leading to notable academic success (Meng & Zhang, 2023). In the realm of reading, self-efficacy

reflects one's inclination towards efficiently engaging in reading activities (Schiefele et al., 2012). It plays a pivotal role in the development of reading skills due to the self-regulation mechanisms involved in the reading process, where successful decoding of printed words aids in automatic word recognition, thereby enriching vocabulary, fluency, and comprehension (Peura et al., 2022; Peura et al., 2019).

Self-efficacy in reading refers to one's desire to do reading activities efficiently. (Schiefele et al., 2012). Share (1995) stated that self-efficacy is important in the development of reading abilities because of the self-control mechanisms involved in the reading process. Successful decoding of printed words helps children learn to recognize those words automatically in the future. Previous research has found a strong relationship between reading comprehension and self-efficacy (Guthrie et al., 2007; Lee & Jonson-Reid, 2016; Taboada et al., 2009). However, other research have revealed that self-efficacy is necessary for the development of word reading ability among pupils aged eight to eleven years old; but there was no association with reading comprehension (Carroll & Fox, 2017).

Solheim (2011) revealed that students' self-efficacy in reading is related to their reading techniques, and students with low self-efficacy in reading perform worse (Mucherah & Yoder, 2008). Zimmerman (2000); Guthrie et al (2007) discovered that students with poor self-efficacy in reading choose to avoid demanding reading activities and avoid perceived difficult homework. Students who trust in their talents are more driven and enthusiastic about improving their learning (Jungert & Rosander, 2010). As a result, self-efficacy is an important factor in increasing students' learning capacity that should be considered.

The Role of Parental Education Level

Parental education is one of the components in socioeconomic status (SES). The level of parental education is among the primary factors predicting children's attitudes toward reading (Baker et al., 2001). Parents with higher levels of education place greater value on education and thus provide more literacy materials and activities for their children (Baker et al., 1995). The level of parental education is considered one of the most stable aspects of SES because it is typically formed at an early age and tends to remain relatively constant over time. Furthermore, parental education serves as an indicator of parental income as income and education are closely related to each other (Hauser & Warren, 1997).

Studies in Malaysia have found that parental occupation, parental education level, and parental income among low socioeconomic class families play a significant role in influencing their understanding and knowledge of the true value that should be given in their children's education (Abdullah, 1990; Nor, 1992; Vellymalay, 2012b). There are significant differences in achievement in Mathematics and Science subjects between students from high SES families compared to students from low SES families (Saw, 2016). Meanwhile, Ong et al (2010) found that social factors involving SES, the number of students in the family, and male gender individually and collectively contribute to weak academic achievement at the beginning of the school year. Thus, previous research has shown that there is an achievement gap among students based on SES in Malaysia.

Baker et al (1995) found that parents with higher levels of education place greater value on education and thus provide more literacy materials and activities for their children. Triwahyuningtyas et al (2020) found that the level of parental education and early learning skills of students positively correlate with opportunities for student language and literacy learning. Students whose mothers have higher levels of education receive significant opportunities for language and literacy learning compared to students with mothers with

lower levels of education. This clearly indicates that the level of parental education is among the primary factors predicting children's attitudes toward reading. Therefore, current research examines the level of parental education as a moderator between students' reading self-efficacy and students' reading comprehension.

The Study

The specific objectives of the study are as follows

1. To determine whether students' reading self-efficacy influences their reading comprehension.
2. To determine mothers' education level as a moderator on the relationship between students' reading self-efficacy and students' reading comprehension.
3. To determine fathers' education level as a moderator on the relationship between students' reading self-efficacy and students' reading comprehension.

The study hypothesises are as follows

H1: There is a significant direct influence between students' reading efficacy and their reading comprehension.

H2: The mother's education level is a significant moderator between students' reading self-efficacy and their reading comprehension.

H3: The father's education level is a significant moderator between students' reading self-efficacy and their reading comprehension.

Figure 1 shows the model of this study that testing parents' education level as a moderator for the relationship between students' reading self-efficacy and reading comprehension.

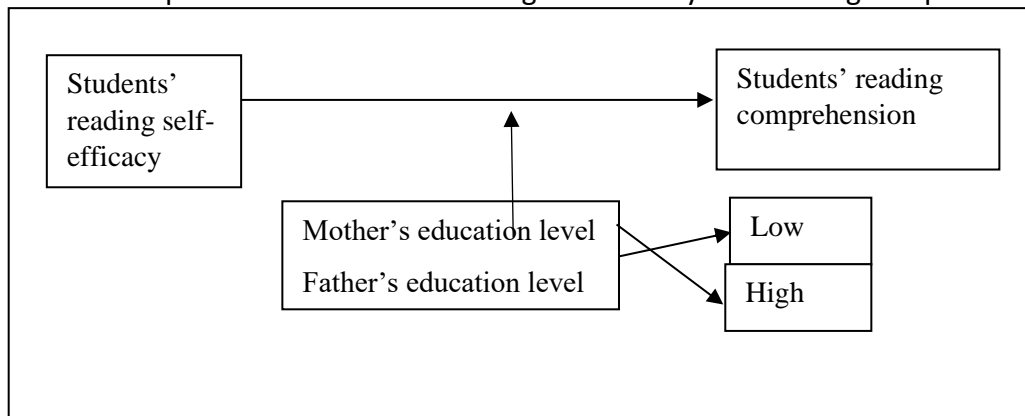


Figure 1: The model testing parents' education level as a moderator for the relationship between students' reading self-efficacy and reading comprehension.

Methodology

Participants and Procedure

This study implemented a quantitative approach utilizing a correlational research design. A cross-sectional survey approach was selected for data collection, enabling the gathering of study data at a specific time from a sample of the population. The questionnaires used in this study were divided into two sections: one for students and another for their parents. The students completed the questionnaire at the school and were provided the questionnaire to be completed by their parent at home. These questionnaire sets for students and parents

were administered together, facilitating the simultaneous input of data from both sets into the Statistical Package for the Social Sciences (SPSS) software.

Students in their fourth year of formal education and above are the right age range for reading comprehension assessment Mullis & Martin (2019) since fourth grade and above is an essential transition moment in the development of students as readers. Therefore, this study involved students in the fifth grade studying in Kelantan, Malaysia. According to the State Education Department of Kelantan in 2022, the total number of fifth-grade students in Kelantan was 28,953. Utilizing Cochran's formula Cochran (1977) the minimum sample size required was calculated to be 264. Additionally, according to Salkind (2018) by adding 40% to 50% to the sample size, 50% of the initial sample size was added ($264 * 50\% = 132$). Therefore, the total minimum sample size needed was 396, inclusive of the 132 additional samples, representing 50% of Salkind (2018) recommendation. After considering both Cochran's calculation and Salkind's suggestion, the researcher decided on a total sample size of 396 for this study.

The sample selection process utilized a multi-level random sampling procedure, employing stratified random sampling to ensure the representative quality of the samples. The determination of strata is based on location, whereby ten districts in Kelantan are divided into four zones based on the similarity of distances between adjacent districts, as suggested by (Yusoff, 2022). The first stage involves a stratified random sampling process, where groups of students are identified according to four zones within the state of Kelantan. Population data and the percentage of students in each zone serve as the basis for determining the required number of students as samples for each zone. Fifteen schools were then randomly selected; proportional to the population in each zone, and thirty students were randomly chosen from each selected school. Table 1 shows the number of students and the number of schools resulting from the proportional stratified random selection for each zone as participants in this study.

Table 1
Number of study samples and schools based on Zone

Zone	Population Number of students	Percentage	Number of Students for sampling (n)	Number of School
Zone 1	15 006	51.82	205	7
Zone 2	4882	16.86	67	3
Zone 3	4756	16.42	65	3
Zone 4	4309	14.90	59	2
Total	28 953	100	396	15

Instrumentation

The parental instrument includes a formative construct, namely socioeconomic status (SES), which is formed by six items: the education level of the mother and father, the occupation of the mother and father, and the income of the mother and father. All items for SES are real and precise values, thus no measurement error is required in the analysis.

Data from students were collected using particular items from the Progress in International Reading Literacy Study (PIRLS) 2016 Learning to Read Survey for Student Questionnaire and

the Malay Language reading comprehension assessment. The instrument involves a formative construct, namely the Reading Comprehension Test, which has actual values and requires no measurement error analysis. Meanwhile, students' reading self-efficacy is reflective constructs measured on an interval scale ranging from 1 to 5. The questionnaire takes 50 to 60 minutes for students to complete.

The PIRLS Learning to Read Survey for Student questionnaire

Selected items from the PIRLS 2016 Learning to Read Survey for Student IEA (2016) were adapted for this study to evaluate students' self-efficacy towards reading activities. The questionnaire exhibited high reliability, with a coefficient of .81 (Chen et al., 2021).

This study includes four questions and the chosen items received approval from the International Association for the Evaluation of Educational Achievement (IEA) for adaptation and translation from English to Malay. The questionnaire measures students' self-efficacy using a response scale with images (e.g., a smiling face to indicate agreement) as markers on a ranged scale from 1 (very sad), 2 (sad), 3 (Uncertain), 4 (happy), to 5 (very happy). Images were utilized to provide students with a better understanding of completing the questionnaire more accurately, as suggested by (Reynolds and Johnson, 2019).

Reading Comprehension Assessment

The Malay Reading Comprehension Test for Primary School Students, or *Ujian Kefahaman Bacaan Bahasa Melayu Murid Sekolah Rendah*, was developed by Hashim et al (2006) to evaluate reading comprehension in the Malay language among primary school students in grades four, five, and six. This instrument consists of 50 questions, and this study adapted 34 questions covering literal, inferential, and critical-creative comprehension to assess students' reading comprehension ability. The test includes reading passages, questions or items, and answer options. The reliability of the constructed 50-item test is 0.815 (Hashim et al., 2006).

Data Collection Process

Prior to commencing the study, approval from the Ethics Committee from University of Putra Malaysia was secured. Additionally, the approval to carry out study was granted from the Planning and Research Division of the Ministry of Education Malaysia, Kelantan State Education Department, as well as the respective headmasters of the participating schools.

Before collecting data from students, parents were briefed about the study through an informed consent form. The study only included students whose parents gave their approval. Parents completed a questionnaire about family SES at home, which usually took approximately 10 minutes to complete. Students were informed about the study's objectives prior to data collection, and confidentiality of all information provided by respondents was ensured by the researcher. Data collection occurred within classroom settings. Students were given the choice to withdraw from the study at any time if they decided not to get involved. Following thorough review and analysis of the returned questionnaires from both students and their respective parents or caregivers, the researcher obtained 393 completed questionnaires.

Data Analysis

The data were descriptively analyzed using the IBM 26.0 Statistical Package for Social Science (SPSS), and inference analysis was performed using the Structural Equation Modelling (SEM)

AMOS 26.0 software. Initially, a confirmatory factor analysis (CFA) was used to generate quantitative indicators for assessing the validity and reliability of the proposed theoretical model. The researcher employed Goodness-of-Fit indices to evaluate model fit. Hair et al. (2010) categorized indicators into three types: absolute fit, incremental fit, and parsimonious fit. This study utilized three distinct indices: the Root Mean Square of Error Approximation (RMSEA) for absolute fit, the Comparative Fit Index (CFI) for incremental fit, and the Chi-square for parsimonious fit.

Before testing the moderator effect, the researcher needs to ensure that the direct effect of the independent variable (i.e. students' reading self-efficacy) on the dependent variable (reading comprehension) is significant. The independent variable (i.e. students' reading self-efficacy) is hypothesized to influence student reading comprehension, while the education level of parents/guardians plays a role in modifying the relationship between the variables.

Results

The first step was conducting a confirmatory factor analysis (CFA) in order to identify quantitative metrics for assessing the reliability and validity of the students' self-efficacy survey. The reliability and convergent validity analyses of students' reading self-efficacy ($\alpha = 0.778$, CR = 0.794, AVE = 0.566) are significantly higher than their threshold levels, as shown in Table 2.

Table 2

CFA result of the for students' reading self-efficacy construct.

Construct	Cronbach alpha (>0.7)	CR (>0.6)	AVE (>0.5)
Students' reading self-efficacy	.778	.794	.566

The direct effect model for the correlation between students' reading comprehension and reading self-efficacy is shown in Figure 2. RMSEA index which is .000 (range .05 to .10 is acceptable), CFI = 1.00 (<.90) and Chisq/df = 0.494 (<5.0). It shows that the measurement model for students' reading self-efficacy and students' reading comprehension adhere to fitness indexes. One item from students reading self-efficacy is dropped owing to insufficient factor loading. Thus, the validity and reliability of the questionnaire used in the current study have been demonstrated.

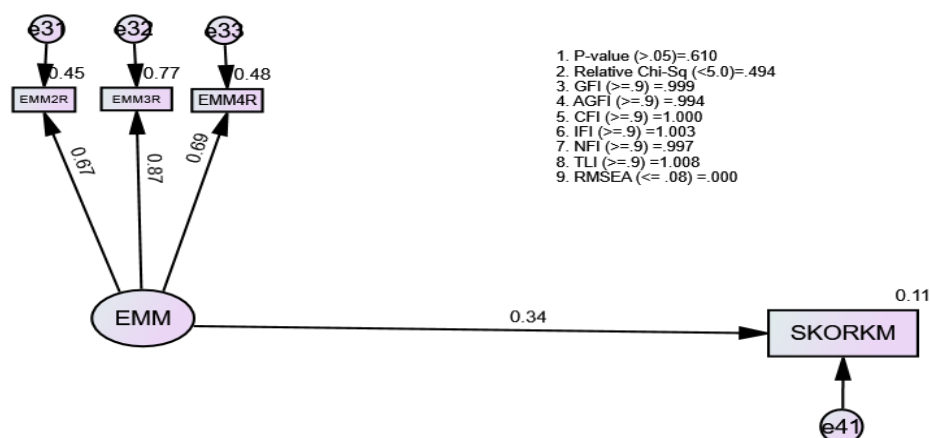


Figure 2: The direct effect model for students' reading self-efficacy (EMM) on students' reading comprehension (SKORKM).

Table 3 illustrates the beta coefficient value of ($\beta=.338$, C.R=5.978, $p=0.000$) that reveals the impact of students' reading attitudes on their reading comprehension; suggesting students' reading self-efficacy have a direct and substantial impact on their reading comprehension. In other words, children with a more positive reading attitude had higher reading attitude comprehension. Since there is significant effect between students' reading self-efficacy and reading comprehension, the moderation testing can be conducted.

Table 3

The relationship between students' reading self-efficacy and reading comprehension.

DV		IV	Beta	Estimate	S.E.	C.R	p
SKORKM	<---	EMM	0.338	2.144	.359	5.978	0.000

Descriptive Findings of Parental Education Level

The education level of mothers of students who participated in this study consists of 7 layers. Based on Table 4 below, the lowest frequency for mothers' education level is no schooling, with 2 individuals (0.5%), while the highest frequency is secondary school (SPM), with 138 individuals (35.1%). For fathers' education level, the lowest frequency is no schooling and primary school, each with 6 individuals (1.65%), while the highest frequency is secondary school (SPM), with 144 individuals (36.6%).

Table 4

Education level of mothers and fathers/guardians of student respondents

Level	Mother		Father	
	Frequency	Percentage	Frequency	Percentage
No Schooling	2	0.5	6	1.6
Primary School (UPSR)	5	1.3	6	1.6
Secondary School (PMR)	8	2.0	26	6.6
Secondary School (SPM)	138	35.2	144	36.6
Certificate/ STPM/ Diploma	111	28.2	100	25.4
Bachelor's Degree	116	29.5	93	23.6
Masters/ PHD	13	3.3	18	4.6

In this study, the education level of mothers and fathers/guardians is categorized into two levels: the low education category includes education levels from primary school to secondary school and obtaining the Malaysian Certificate of Education (SPM). Meanwhile, the high education level includes studies after completing secondary school, which encompasses certificate/diploma levels to bachelor's/PhD levels. Table 5 shows the findings of parents' respondents grouped according to low and high education levels for mothers and fathers/guardians. The purpose on this categorising is for testing moderator effect; in which the moderator data need to be divided into two levels (i.e., low and high) before it can be tested as a moderator in AMOS-SEM analysis.

Table 5

Education level of mothers and fathers/guardians according to categories.

Level	Frequency	
	Mother	Father
Low	153	182
High	240	211

The moderation effect of mother' education level on the relationship between students' reading self-efficacy and reading comprehension

To test the presence of a moderator effect, the unconstrained model (variance-group) and the measurement residuals model (invariance-group) must be compared first (Azim & Hassan, 2020). Both models are examined to determine the extent to which structural parameters differ between the two groups. If the chi-square (CMIN) value differs significantly between the unconstrained and measured residuals models, it suggests the presence of a moderator effect in general.

Table 6

Results of moderator test in AMOS output for mothers' education level.

Model	NPAR	CMIN	DF	P	CMIN/DF
Unconstrained	16	.507	4	.973	.127
Measurement residuals	8	36.304	12	.000	3.025

Based on the results displayed in Table 6, the chi-square (CMIN) value for the unconstrained model is 0.507, which is smaller than the chi-square (CMIN) value for the measurement residuals model, which is 36.304. This means that there is a moderator effect on the analysed model in general. However, to ensure that a moderator effect exists, a more detailed examination is required to determine whether there is a moderator effect through the difference between the two groups.

Table 7

Moderator findings (mother's education level) for low education level group and high education level group

Hypothesis	Low Level		High Level		Indicator
H2: The mother's education level is a significant moderator between students' reading self-efficacy and their reading comprehension.	BETA	p	BETA	p	Partial Moderator
	.262	.002	.334	.000	

Referring to Table 7, the examination of standardized beta values in the low education level group of mothers ($\beta = .262$, $p = .002$) and the high education level group of mothers ($\beta = .334$, $p = .000$), both values are significant. The estimated regression coefficient for the high education level group is .334, while the estimated regression coefficient for the low education level group is .262. Therefore, the researcher can conclude that the effect of student reading efficacy on reading comprehension is more pronounced in the high education level group of mothers compared to the low education level group. Since both beta regression coefficients for low and high education level groups of mothers are significant, the type of moderator effect observed is a partial moderator (Awang, 2018).

The moderation effect of father' education level on the relationship between students reading self-efficacy and reading comprehension

Based on the displayed results in Table 8, the chi-square (CMIN) value for the unconstrained model is 1.950, which is smaller than the chi-square (CMIN) value for the measurement residuals model, which is 39.026. This means that there is a moderator effect on the analyzed model in general. However, to ensure that a moderator effect exists, a more detailed examination is required to determine whether there is a moderator effect through the difference between the two groups.

Table 8

Results of moderator test in AMOS output for fathers' education level

Model	NPAR	CMIN	DF	P	CMIN/DF
Unconstrained	16	1.950	4	.745	.487
Measurement residuals	8	39.026	12	.000	3.252

Table 9

Moderator findings (fathers' education level) for low education level group and high education level group

Hyphotesis	Low Level		High Level		Indicator
H3: The father's education level is a significant moderator between students' reading self-efficacy and their reading comprehension.	BETA	p	BETA	p	Partial Moderator
	.324	.000	.312	.000	r

Referring to Table 9, the examination of standardized beta values in the low education level group of fathers ($\beta = .324$, $p = .000$) and the high education level group of fathers ($\beta = .312$, $p = .000$), both values are significant. The estimated regression coefficient for the low education level group is .324, while the estimated regression coefficient for the high education level group is .312. Therefore, the researcher can conclude that the effect of student reading self-efficacy on reading comprehension is more pronounced in the low education level group of fathers compared to the high education level group. Since both beta regression coefficients for low and high education level groups of fathers are significant, the type of moderator effect observed is a partial moderator (Awang, 2018).

Discussion

This study found that students' reading self-efficacy significantly predicts their reading comprehension ($\beta = .232$, $p < .000$). These findings are consistent with prior research indicating a substantial association between self-concept and reading comprehension (Guthrie et al., 2007; Lee & Jonson-Reid, 2016; Taboada et al., 2009). The results of this study support the idea that reading comprehension is influenced by students' reading self-efficacy. These findings emphasize the necessity of developing a strong feeling of reading self-efficacy in students to improve their overall academic achievement.

The educational level of parents has acted as moderator in this study regarding the relationship between reading efficacy and reading comprehension of students. The analysis results indicate a partial moderator effect because there are significant regression coefficients (beta) for both the educational levels of mother's and father's, demonstrating that student reading efficacy's impact on reading comprehension depends on the educational levels of parents. These findings are consistent with previous studies Considine & Zappalà (2002); Magnuson (2007); Westerlund & Lagerberg (2008) that found parental education levels to be a factor that can influence and predict children's attitudes towards reading.

This study offers practical insights for educational stakeholders—including policymakers, school administrators, teachers, and parents or guardians—by elucidating the moderating

effects of parental education levels on students' reading self-efficacy and comprehension. Therefore, in planning educational programs, differences in parents' education levels need to be carefully considered. These initiatives should be culturally sensitive and inclusive, addressing the needs of families from various socioeconomic backgrounds. Campaigns should not only provide information but also function as support networks, emphasizing collective responsibility and the significant impact of parental involvement, especially considering the parents' education levels, on children's literacy development. By fostering these programs, a knowledgeable and engaged community of parents can be created, which is essential for the comprehensive development of students' reading comprehension skills.

Additionally, parents need to be made aware that reading comprehension is not just a school skill, but a fundamental life skill that influences children's cognitive development, academic achievement, and future job prospects. Moreover, the essence of parental awareness campaigns should also include practical guidelines that parents can implement to engage in reading activities at home with their children. Schools should strive to establish effective approaches for regular meetings and discussions between parents and teachers, especially for students who show difficulties in mastering reading comprehension. This approach not only fosters a more inclusive learning environment but also ensures that all students receive the necessary resources and support to succeed academically, regardless of their parents' educational attainment.

Limitations and Suggestion for Further Study

While this study adds valuable insights to the literature on students' reading comprehension, it is not without limitations. This study was only undertaken in the state of Kelantan, limiting the geographical scope of the research. Future studies could explore the same research model in different state locations to enhance the generalizability of the findings. Overall, while the study results offer promising insights, there is potential for further research to investigate larger populations and provide more precise generalizations.

The research focused on a specific population and sample of fifth-grade students, aged 11 years, in government primary schools. As a result, the findings may not be generalizable to the complete population of primary school students due to the specific characteristics of the sample. Future research could aim to replicate the study model with groups of students at different ages, such as third-grade students aged nine years, to facilitate broader generalization across various age groups and validate the findings.

Conclusion

This study has identified the moderating role of parents' educational level between students' reading self-efficacy and reading comprehension. The findings indicated that both parents' educational levels have partial moderator effect, indicating that students' reading self-efficacy on reading comprehension relies on both parents' educational levels.

A deeper understanding of how students' reading self-efficacy impacts reading comprehension based on parents' education levels can aid in developing more effective and comprehensive educational strategies for students.

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