A COMPARATIVE-CORRELATIONAL STUDY OF UPPER ELEMENTARY AND MIDDLE SCHOOL STUDENTS' PERCEPTIONS OF PARENTAL INFLUENCE AND SELF-EFFICACY FOR LEARNING MATHEMATICS WITH MATHEMATICS ACADEMIC ACHIEVEMENT AT PAN-ASIA INTERNATIONAL SCHOOL, BANGKOK, THAILAND

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Abstract: The purpose of this study was to investigate whether there was a significant relationship between perceived parental influence and self-efficacy for learning mathematics with mathematics academic achievement and also whether there was a significant difference in perceived parental influence on learning mathematics and in students' self-efficacy for learning mathematics for upper elementary and middle school students at Pan-Asia International School Bangkok, Thailand. The research was conducted among 41 upper elementary students, and 49 middle school students enrolled in the academic year 2020 - 2021. The Students' Perceptions of Parental Influence and Self-Efficacy for Learning Mathematics Questionnaire was used to collect data to measure students' perceived parental influence and self-efficacy for learning mathematics. The November 2020 Measures of Academic Progress (MAP) mathematics scores were used to determine the students' mathematics academic achievement. The data was used to analyze descriptive statistics such as means, standard deviations, independent samples t-test, and multiple correlation coefficient analysis. A multiple correlation coefficient analysis revealed significant, positive, and moderately strong multiple correlations between self-efficacy for learning mathematics and mathematics academic achievement for upper elementary and middle school students. However, there was a very weak and positive correlation between upper elementary students' perceptions of parental influence on learning mathematics and mathematics academic achievement. It also indicated a weak and negative correlation between middle school students' perceptions of parental influence on learning mathematics and mathematics academic achievement. Independent samples t-

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test revealed a significant difference between the upper elementary and middle school students' perceptions of parental influence on learning mathematics. At the same time, there was no significant difference between the upper elementary and middle school students' self-efficacy for learning mathematics.

Keywords: Perceptions of parental influence on learning mathematics, self-efficacy for learning mathematics, mathematics academic achievement.

Introduction

Mathematics is a vital tool that people use to solve problems in their daily lives. People who use mathematics can significantly improve their chances and choices for shaping their lives (National Council of Teachers of Mathematics, 2000). The impact of mathematics in daily life is recognized, and as a subject has long been required for students from kindergarten through high school (Sriampai, 1988). Several variables can affect learners' mathematics learning. The literature strongly conveys that parental encouragement supports children's education, including numeracy growth (Cairney, 2000). Grolnick and Ryan (1989) found that parental influence was strongly and positively related to the mathematics and reading academic achievement of Grades 3 to 6 students at selected schools in New York. According to Pajares and Miller (1995), there is a strong connection between academic success and self-efficacy. Self-efficacy is a person's belief that she can attain learning goals that affect their lives (Bandura, 1986). Therefore, mathematics self-efficacy for students can be characterized as their decisions about their ability to learn the subject effectively. This study aimed to identify the level of students' perceptions of parental influence and self-efficacy for learning mathematics to present information for school administration and mathematics teachers to assist them in enhancing their students' mathematics achievement.

Research Objectives

The following ten objectives were developed for this study.

1. To identify the level of upper elementary students' perceptions of parental influence on learning mathematics at Pan-Asia International School in Bangkok.
2. To identify the level of middle school students' perceptions of parental influence on learning mathematics at Pan-Asia International School in Bangkok.
3. To identify upper elementary students' self-efficacy level for learning mathematics at Pan-Asia International School in Bangkok.
4. To identify middle school students' mathematics self-efficacy at Pan-Asia International School in Bangkok.

5. To identify the level of upper elementary students' mathematics academic achievement at Pan-Asia International School in Bangkok.
6. To identify the middle school students' academic achievement level for learning mathematics at Pan-Asia International School in Bangkok.
7. To determine whether there is a significant relationship between upper elementary students' perceptions of parental influence and self-efficacy for learning mathematics with mathematics academic achievement at Pan-Asia International School in Bangkok.
8. To determine whether there is a significant relationship between middle school students' perceptions of parental influence and self-efficacy for learning mathematics with mathematics academic achievement at Pan-Asia International School in Bangkok.
9. To determine whether there is a significant difference in students' perceptions of parental influence on learning mathematics between upper elementary and middle school students at Pan-Asia International School in Bangkok.
10. To determine whether there is a significant difference in students' self-efficacy for learning mathematics between upper elementary and middle school students at Pan-Asia International School in Bangkok.

Conceptual Framework

This study aimed to determine if there was a significant relationship between students' perception of parental influence and self-efficacy for learning mathematics with mathematics academic achievement and investigate if there was a significant difference between students' perception of parental influence and self-efficacy for learning mathematics between upper elementary and middle school students at Pan-Asia International School. This is presented in Figure 1.

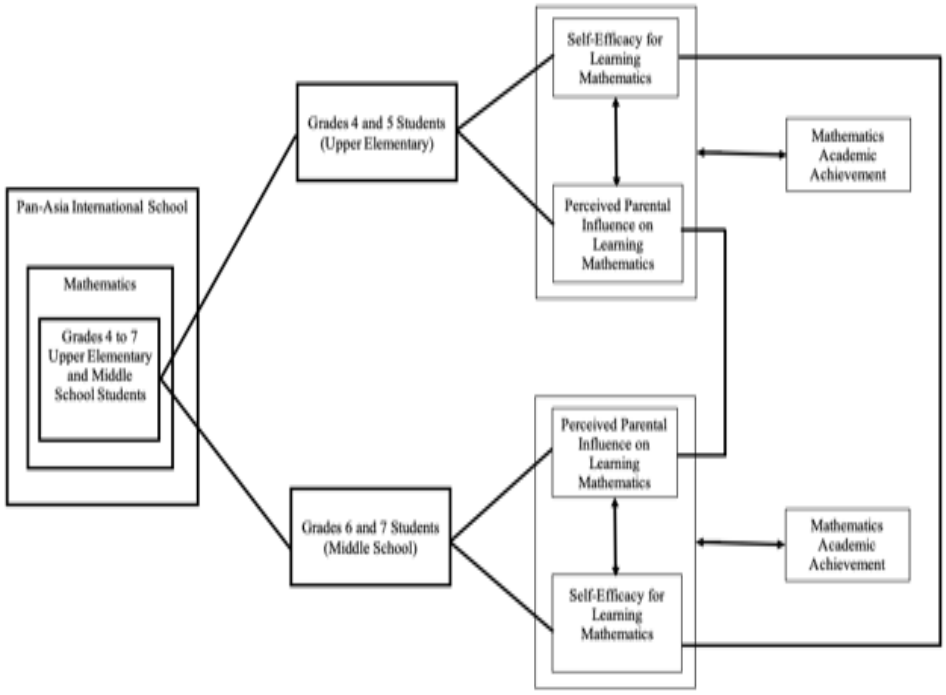

Figure1. ***Conceptual Framework of the Study***

Literature Review

Self-Determination Theory

Self-determination theory (SDT) explores the idea of natural, fundamental, psychoanalytical desires to understand the individual motivation (Ryan & Deci, 2000a). All individuals should feel connected, capable, and independent of evolving and growing as effectively as possible. SDT is mainly concerned with fostering an interest in learning, understanding learning, and trust in the students' skills and qualities (Deci et al., 1991). Self-determination theory differentiates between two specific incentive types: intrinsic motivation and extrinsic motivation. Intrinsic motivation refers to actions for the inherent benefit or satisfaction of participation. Extrinsic motivation depends on actions with outcomes (Ryan & Deci, 2000b). Parental support is positively related to children's learning motivation and academic scores (Grolnick et al., 1997).

Social Cognitive Learning Theory

Social cognitive learning theory (SCLT) assumes that people learn and acquire new abilities by observing others and through interpersonal interactions involving personal cognitive and environmental influences (Bandura, 1986). The SCLT explains how people acquire competencies, values, and behavior styles and motivate and regulate their behavior. As a triadic reciprocal causation model, it integrates continuous interaction among behaviors,

personal factors, and the environment. In this model, all the attitudes, perceptions, and related internal and social variables affect one another bidirectionally (Bandura, 1989).

Self-Efficacy

Self-efficacy is an individual's belief that she can attain a specific goal. It defines how people perceive, learns, inspires, and perform. It is an important aspect of the social cognitive theory that plays a central role in analyzing changes in fearful and avoidable behavior (Bandura, 1977). Perceived self-efficiency is another cognitive aspect that plays an important role in the practice of personal motivational influence (Bandura, 1989). People with higher efficacy gain more ability through continuous commitment, but people with low efficacy prevent and delay the growth of necessary skills (Bandura, 1986).

Method

The purpose of this study was to determine whether there was a significant relationship between perceived parental influence and self-efficacy for learning mathematics with mathematics academic achievement for upper elementary and middle school students and to investigate whether there was a significant difference in perceived parental influence on learning mathematics and in students' self-efficacy for learning mathematics between upper elementary, middle school students. The researcher designed a quantitative, comparative, and correlational study that utilized descriptive statistics, independent samples t-test, and multiple correlation coefficient analysis to fulfill this study's purposes.

Population and Sample

This study's sample was all the students living with both parents and who studied in the upper elementary (Grades 4-5) and middle school (Grades 6-7) sections of Pan-Asia International School in the second semester of the academic year 2020-2021.

Research Instruments

The Students' Perceptions of Parental Influence and Self-Efficacy for Learning Mathematics Questionnaire and the Measure of Academic Progress (MAP) tests were used to collect data on the level of students' perceived parental influence and self-efficacy for learning mathematics and mathematics academic achievement.

Students' Perceptions of Parental Influence and Self-Efficacy for Learning Mathematics Questionnaire

This questionnaire contains three sections. The first asked for the students' demographic information. The second assessed the students' perceptions of parental influence on learning mathematics, developed by Cao et al. (2006). The last section assessed only the mathematics self-efficacy subscale of the Mathematics Self-Efficacy and Anxiety Questionnaire (MSEAQ) developed by May (2009).

The Perceived Parental Influence Subscale was chosen to determine students' perceptions of parental influence on learning mathematics. This is a 16-item questionnaire developed by Cao et al. (2006). The items are measured on a 4-point Likert scale from 1 (strongly disagree) to 4 (strongly agree) for students to indicate the degree to of the statement applies to them, as in Table 1.

Table 1. *Interpretation Scale of Perceived Parental Influence Subscale*

Agreement Level	Score	Score Range	Scale	Perceived Parental Influence Level
Strongly Disagree	1	0-16	1.00-1.75	Very Low
Disagree	2	17-32	1.76-2.50	Low
Agree	3	33-48	2.51-3.25	High
Strongly Agree	4	49-64	3.26-4.00	Very High

Table 2 shows Cronbach's alpha results, as reported by the original developers Cao et al. (2006), Moutsios-Rentzos et al. (2015), and this study.

Table 2. *Reliability Statistics on Different Studies of Perceived Parental Influence Subscale*

Number of Items	Cao et al. (2006)	Moutsios-Rentzos et al. (2015)	Current Study
16	.88	.80	.85

The Mathematics Self-Efficacy Subscale was adapted from The Mathematics Self-Efficacy and Anxiety Questionnaire (MSEAQ). This is a 28-item questionnaire developed by May (2009), where students are asked to respond to statements relating to their mathematics self-efficacy and mathematics anxiety levels. In the current study, the self-efficacy items of the MSEAQ were used to collect data from the targeted sample of students to identify their mathematics self-efficacy. The items were measured on a 5-point Likert-type

scale from 1 (never) to 5 (usually) for students to indicate the degree to of the statement applies to them. Table 3 details the scale and interpretation of the students' perceived self-efficacy.

Table 3. *Interpretation Scale of Students' Perceived Self-Efficacy Subscale*

Agreement Level	Score	Score Range	Scale	Self-Efficacy Level
Never	1	13-23	1.00-1.80	Very Low
Seldom	2	24-34	1.81-2.60	Low
Sometimes	3	35-44	2.61-3.40	Moderate
Often	4	45-55	3.41-4.20	High
Usually	5	56-65	4.20-5.00	Very High

Table 4 shows the results of Cronbach's alpha reported by the original developer May (2009), Parsons and Gonzalez (2018), and this study.

Table 4. *Reliability Statistics on Different Studies of Students' Perceived Self-Efficacy Subscale*

Number of Items	May (2009)	Parsons & Gonzalez (2018)	Current Study
13	.93	.93	.92

The Measure of Academic Progress (MAP) Test

The Measures of Academic Progress (MAP) is a standardized, adaptive, and computerized assessment that measures students' achievement in mathematics, reading, and science (Northwest Evaluation Association, 2011). The MAP test was produced by the Northwest Evaluation Association (NWEA) in Portland, Oregon, the USA, in 2000. The test is administered to kindergarten (KG) 3 to Grade 11 students with an average time of 40 minutes per student or group adaptive computer test. Every student gets a unique set of test questions based on previous question responses. As the student answers correctly, problems get more challenging. If the student answers incorrectly, the questions get easier. By the end of the test, most students will answer about half the questions correctly. The MAP test determines the appropriate challenge level for each student (Northwest Evaluation Association, 2011). The measurement scale in Table 5 was from the 2015 NWEA Measures of Academic Progress normative data. It estimates students' achievement status within a subject from kindergarten to 11th grade (Northwest Evaluation Association, 2015).

Table 5. *Interpretation of the MAP Mathematics Scores*

Grade levels	Below norm level	On norm level	Above norm level
Upper Elementary (Grade 4 and 5)	Below 206	206-217	Above 217
Middle School (Grade 6 and 7)	Below 220	220-227	Above 227

A summary of Cronbach's alpha coefficient for the reliability of MAP is shown in Table 6.

Table 6. *Cronbach's Alpha Coefficient for Reliability of MAP Test*

MAP test	Grade level	Content area	Cronbach's alpha (NWEA, 2008)
Reliability	4 to 7	Mathematics	.95 to .97

Findings

The quantitative, comparative, and correlational study findings are presented. The first six objectives were combined, which have the same variables.

Findings for Research Objectives 1 and 2

Table 7 presents overall mean scores, standard deviations, and interpretations for the level of upper elementary and middle school students' perceptions of parental influence on learning mathematics at Pan-Asia International School, Bangkok, Thailand.

Table 7. *Means, Standard Deviations, and Interpretations of Pan-Asia International School, Upper Elementary and Middle School Students' Perceptions of Parental Influence on Learning Mathematics*

Grade Level	*n*	*M*	*SD*	Interpretation
Grade 4 and 5 (Upper Elementary)	41	3.13	.43	High
Grade 6 and 7 (Middle School)	49	2.80	.48	High

Table 7 indicates that the mean scores of Grades 4-5 and Grade 6-7 students were 3.13 and 2.80, respectively. The interpretation of the mean scores of both groups was high (see Table 1). However, upper elementary students' mean score was higher than the mean score of middle school students. Furthermore, the details of upper elementary students' perception of parental influence subscale for learning mathematics showed that all items indicated either high

or very high. However, for middle school students, some items indicated low levels.

Findings from Research Objectives 3 and 4

Table 8 presents overall mean scores, standard deviations, and interpretations for the level of upper elementary and middle school students' self-efficacy for learning mathematics at Pan-Asia International School, Bangkok, Thailand.

Table 8. *Means, Standard Deviations, and Interpretations of Pan-Asia International School, Upper Elementary and Middle School Students' Self-Efficacy for Learning Mathematics*

Grade Level	*n*	*M*	*SD*	Interpretation
Grade 4 and 5 (Upper Elementary)	41	3.74	.80	High
Grade 6 and 7 (Middle School)	49	3.48	.77	High

Table 8 indicates that the mean scores of Grades 4-5 and Grades 6-7 students were 3.74 and 3.48, respectively. The interpretation of the mean scores of both groups was high (see Table 3). However, upper elementary students' mean score was higher than the mean score of middle school students. Pan-Asia International School uses the American Common Core Curriculum that empowers students to enhance their ability to grasp mathematics concepts as part of an attempt to foster students' learning via inquiry and investigation.

Findings from Research Objectives 5 and 6

Table 9 presents overall mean scores, standard deviations, and interpretations for the level of upper elementary and middle school students' mathematics academic achievement at Pan-Asia International School, Bangkok, Thailand.

Table 9. *Means, Standard Deviations, and Interpretations of Pan-Asia International School, Upper Elementary and Middle School Students' Mathematics Academic Achievement*

Grade Level	*n*	*M*	*SD*	Interpretation
Grade 4 and 5 (Upper Elementary)	*41*	*206.56*	*15.19*	On norm level
Grade 6 and 7 (Middle School)	*49*	*217.37*	*15.23*	Below norm level

Table 9 indicates that the mean scores of upper elementary and middle school students in mathematics tests were 206.56 and 217.37, respectively. The interpretation of the mean score of upper elementary students was on the norm level. However, the interpretation of the mean score of middle school students was below the norm level (see Table 5). Pan-Asia International School uses

IB Middle Years Program (IBMYP) for Grades 6 to 10. So, the way of conducting lessons is different from the primary level. It can be concluded that this could be one reason behind the low level of middle school students' mathematics academic achievement.

Findings from Research Objective 7

Table 10 shows the bivariate correlations between these three variables: upper elementary students' perceptions of parental influence on learning mathematics, self-efficacy for learning mathematics, and their mathematics academic achievement.

Table 10. *Bivariate Correlations Among Upper Elementary Students' Perceptions of Parental Influence on Learning Mathematics, Self-Efficacy for Learning Mathematics and Mathematics Academic Achievement. (n=41)*

Variables	1	2	3
1. Parental Influence on Learning Mathematics	-		
2. Self-Efficacy for Learning Mathematics	.58*(<.001)	-	
3. Mathematics academic achievement	.17 (.30)	.50*(<.001)	-

Note. *denotes a statistically significant relationship (statistical significance level set at p = .05, two-tailed). *P*-values appear within parenthesis below the correlation coefficients.

The findings from research objective 7 indicated significant, positive, and moderately multiple solid correlations between the upper elementary students' self-efficacy for learning mathematics and mathematics academic achievement. Furthermore, the finding indicated that upper elementary students' mathematics self-efficacy was a reliable predictor of mathematics academic achievement, which means upper elementary students with stronger self-efficacy for learning mathematics had a higher level of mathematics academic achievement. However, there was a very weak and positive correlation between upper elementary students' perceptions of parental influence on learning mathematics and mathematics academic achievement. The finding indicated that 3% of the variance in upper elementary students' mathematics academic achievement could be explained by perceived parental influence on learning mathematics.

Findings from Research Objective 8

Table 11 shows the bivariate correlations between these three variables: middle school students' perceptions of parental influence on learning

mathematics, self-efficacy for learning mathematics, and their mathematics academic achievement.

Table 11. *Bivariate Correlations Among Middle School Students' Perceptions of Parental Influence on Learning Mathematics, Self-Efficacy for Learning Mathematics and Mathematics Academic Achievement. (n=49)*

Variables	1	2	3
1. Parental Influence on Learning Mathematics	-		
2. Self-Efficacy for Learning Mathematics	.24*(.10)	-	
3. Mathematics academic achievement	-.16(.26)	.55*(<.001)	-

Note. *denotes a statistically significant relationship (statistical significance level set at p = .05, two-tailed). *P*-values appear within parenthesis below the correlation coefficients.

The findings from research objective 8 indicated significant, positive, and moderately multiple solid correlations between the middle school students' self-efficacy for learning mathematics and mathematics academic achievement. Thirty percent of the variance in mathematics academic achievement of middle school students could be explained by students' mathematics self-efficacy level. The finding supports the notion that self-efficacy in learning mathematics is a strong indicator of mathematics academic achievement. However, there was a very weak and negative correlation between middle school students' perceptions of parental influence on learning mathematics and mathematics academic achievement. The negative correlation indicated that the level of middle school students' perception of parental influence was high, but their mathematics achievement was low. The level of middle school students' perception of parental influence could be the result of misrecognizing parental influence on the students.

Findings from Research Objective 9

Table 12 shows the statistical analysis from a two-tailed independent samples t-test of the difference in students' perceptions of parental influence on learning mathematics between upper elementary and middle school students.

Table 12. *Result of the Independent Samples t-Test of Students' Perceptions of Parental Influence on Learning Mathematics Between Upper Elementary and Middle School Students (n=90)*

Participants	N	M	SD	*df*	*t*	Sig. (2-tailed)
Upper Elementary Students (Grade 4 and 5)	41	3.13	.43	88	3.44	.001

Middle School Students (Grade 6 and 7)	49	2.80	.48

The findings indicated a significant difference between the upper elementary and the middle school students' perceptions of parental influence on learning mathematics. The upper elementary students' perception of parental influence was slightly higher than middle school students. It can be concluded that parents are more engaged in helping their children with an elementary level of mathematics due to their arithmetic abilities.

Findings from Research Objective 10

Table 13 shows the statistical analysis from a two-tailed independent samples t-test of the difference in students' self-efficacy for learning mathematics between upper elementary and middle school students.

Table 13. *Result of the Independent Samples t-Test of Students' Self-Efficacy for Learning Mathematics Between Upper Elementary and Middle School Students (n=90)*

Participants	N	M	SD	*df*	*t*	Sig. (2-tailed)
Upper Elementary Students (Grade 4 and 5)	41	3.74	.80	88	1.58	.117
Middle School Students (Grade 6 and 7)	49	3.48	.77			

The findings indicated no significant difference between the upper elementary and middle school students' self-efficacy for learning mathematics. Furthermore, the mean score of upper elementary students' self-efficacy was determined to be slightly higher than the mean score of middle school students' self-efficacy. Still, it did not have a significant impact on the groups.

Discussion

Parental Influence on Learning Mathematics and Mathematics Academic Achievement

This study's findings indicated significant relationships among upper elementary and middle school students' perceptions of parental influence on learning mathematics, with mathematics academic achievement, and significant differences between the groups. The study revealed that upper elementary and middle school students' perceptions of parental influence on learning mathematics were high. The researcher collected the MAP mathematics test results and compared NWEA's most recent scores of grade-level achievement norms. The upper elementary students' scores were on the norm level, while middle school students' scores were below than norm level.

In terms of the association between upper elementary students' perceptions of parental influence on learning mathematics and mathematics academic achievement, the current study revealed a very weak and positive relationship which was aligned with Ing's (2014) study where the relationship between parental motivational practices and children's mathematics achievement was found. The study Ing assessed around sixty Grade 7 students' perceptions of their parental motivation using a six-item questionnaire and their mathematics achievement using items from the National Assessment of Educational Progress in the USA. Svrcek (1990) conducted a study among one hundred eighty-seven students from Grade 4-6 in New York, Oregon, and North Carolina, where a significant positive relationship between mathematics achievement and parental help was found.

Silinskas and Kikas (2019) conducted a study among 338 students from Grade 6 in Estonia to explore the connections between perceived parent involvement in homework and the children's mathematics motivation and performance. Ferraces Otero et al. (2021) conducted a study among one thousand, three hundred sixteen Grade 6 and 7 students in Spain to examine the relationship between family involvement and mathematics and language achievement. Both studies revealed that students with stronger perceived parental support have greater intrinsic motivation, significantly related to higher mathematics performance.

Pan (2007) conducted a study among one hundred fifty-five children from China and the United States during the first and seventh-grade transition to examine how American and Chinese parents were involved with their children's mathematics learning. The study by Pan (2007) showed that parental involvement predicted children's enthusiasm for learning mathematics and mathematics achievement for both cultural groups. In addition, this study showed that parents were less interested in their children's academic learning as they entered middle school because of the complexity of the learning material. The current study's findings also found a significant difference between the upper elementary and middle school students' perceptions of parental influence on learning mathematics.

Self-Efficacy for Learning Mathematics and Mathematics Academic Achievement

In terms of the association between mathematics self-efficacy and mathematics academic achievement of Pan-Asia International School upper elementary and middle school students, the current study revealed significant, positive, and moderately strong multiple correlations between mathematics

self-efficacy and mathematics academic achievement, which was in line with the study of Nicolaidou and Philippou (2004) which indicated that there was a significant correlation between mathematics self-efficacy and mathematics performance. Nicolaidou and Philippou (2004) examined the association between two hundred thirty-eight Grade 5 students' attitudes towards mathematics and self-efficacy for problem-solving and mathematics performance in Cyprus. Perez and Ye (2013) investigated the relationship between one hundred ninety-eight Grade 6 to 8 students' mathematics self-efficacy and mathematics achievement in Bangkok, indicating that students who believed they were good at mathematics achieved higher test scores. Recber et al. (2018) researched the relationship between Grade 7 students' mathematics self-efficacy and mathematics achievement in Ankara, Turkey, and found out the most significant contribution was self-efficacy to the students' mathematics achievement.

Chang (2015) examined the impact of fifth-grade mathematics teachers on their 1,244 students' mathematics self-efficacy and mathematics achievement from an elementary school in Taiwan which showed that students who scored higher on mathematics self-efficacy tests scored higher on mathematics achievement tests. Yıldız et al. (2019) conducted a case study, a qualitative research design to examine the relationship between mathematics self-efficacy beliefs and sources of self-efficacy in two Grade 4 elementary school students, which indicated that students' mathematics self-efficacy and mathematics achievement were found to be directly related.

Parsons and Gonzalez (2018) conducted comparative experimental research to investigate the implementation of the e-learning application website Khan Academy to improve mathematics self-efficacy and lower mathematics anxiety levels for one hundred fifty-six Grade 10 to 12 students. The study's findings indicated that average mathematics self-efficacy improved after 16 weeks, which is not aligned with the current study's findings.

Recommendations

Recommendations for School Administrators

The upper elementary and middle school students' self-efficacy for learning mathematics and their mathematics academic achievement were shown to be strongly associated in this study. School administrators should provide professional development opportunities for teachers to grasp better the connection between students' mathematics self-efficacy and achievement. According to the findings of this study, there was a weak and positive correlation between upper elementary students' perceptions of parental influence on learning mathematics and mathematics academic achievement.

Hence, school administrators should conduct seminars that help parents understand their children's mathematics education role.

Recommendations for Teachers

This research indicated a statistically significant correlation between upper elementary and middle school students' self-efficacy for learning mathematics and their mathematics academic achievement. Teachers should be aware of self-efficacy's four sources: mastery experiences, vicarious experiences, social persuasion, and physiological states. Teachers can use the first three sources to build confidence in students' mathematics learning. Teachers should periodically review past lessons, communicate daily goals, check to see if their daily goals have been accomplished, monitor the progress of their students, help students who are not doing well to realize that their failures are due to lack of effort and encourage those who are struggling to try harder. The level of self-efficacy for learning mathematics of upper elementary and middle school students at Pan-Asia International School was high. However, with the help of their teachers providing efficacy feedback, it could be raised to a higher level. This study indicated a weak and positive correlation between upper elementary students' perceptions of parental influence on learning mathematics and mathematics academic achievement. Hence, teachers should discuss students' mathematics performances and the role of parents in students' performance with parents during parent-teacher conferences.

Recommendations for Students

Students should spend time observing their classmates see how they perform. Students should discuss their mathematics performance with their teachers and listen to and apply the recommendations by their teachers. When students feel uncomfortable and nervous with the learning environment or any mathematics task, they should share their concerns with their teachers or parents to solve this problem.

Recommendations for Parents

According to the findings of this study, there was a very weak and positive correlation between upper elementary students' perceptions of parental influence on learning mathematics and mathematics academic achievement. Parents should be aware of their effect on their child's learning experiences. Parents should talk about mathematics and guide their children in comprehending how mathematics contributes to their daily lives. Parents should consult their child's mathematics teacher when they have difficulties. Teachers and parents must collaborate to benefit the children.

Recommendations for Future Researchers

A suggestion for future researchers would be to extend the scope of the study by including more grade levels and increasing the number of schools. The researcher strongly recommends that future researchers investigate this study with diverse demographic factors such as race, gender, and educational background of parents. Another suggestion for future researchers would be to expand the sample size of middle school students to provide an accurate result. Future researchers would consider conducting a mixed research design that employs both quantitative and qualitative approaches to explore more deeply the relationship between students' perceptions of parental influence and self-efficacy for learning mathematics with mathematics academic achievement.

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