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Research Article

Understanding Mathematically Talented Male Learners' Perception of Teaching Mathematics as a Profession: A Path Analysis

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ABSTRACT

This descriptive-correlational research aimed to examine the predictive and mediational role of parental support, classroom environment, value, attitude, and anxiety in the perception towards teaching mathematics as a profession of mathematically talented male senior high school learners. One hundred eighteen learners from purposively selected public and private schools in Iloilo City and in the districts of the province of Iloilo participated in the study. Six adapted instruments were used to gather data, which underwent content validation and reliability testing. Means, frequency, standard deviations, Pearson's product-moment correlations, Multiple Linear Regression and Path Analysis, were the statistical tools used. Results revealed that mathematically talented male learners have moderate parental support, a positive classroom environment, a very useful value of mathematics, a strongly positive attitude, low anxiety, and a moderately high perception towards teaching mathematics. When classified according to parental support, learners who received moderate and high parental support outscored learners with low parental support in their attitude towards mathematics and perception towards teaching mathematics. Also, learners in the positive group outperformed learners in the slightly positive group in their attitude towards mathematics when classified according to the classroom environment. Parental support, value, and attitude can directly predict the perception towards teaching mathematics, but not classroom environment and anxiety. Moreover, parental support, value and attitude were partially mediated while classroom environment was completely mediated on the influence the perception towards teaching Mathematics by the other constructs included in the model. Furthermore, the classroom environment influences the perception towards teaching mathematics. Parental support has the highest contribution in predicting the perception towards teaching mathematics. In conclusion, these findings indicated that parental support has

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the biggest attribution in predicting mathematically talented male learners' perceptions towards teaching mathematics.

Keywords: *Male Learners, Mathematically Talented, Mathematics, Path Analysis, Perception, Teaching*

Introduction

Background of the Study

Mathematics, as a subject, is generally perceived by learners as difficult. Such perception of the subject will either have a negative or positive effect. On one hand, learners will take math as a challenge and, in effect, study more to prove that they can do well in the subject. On the other hand, some learners will take math as it is; thus, knowing that it is difficult, failing in the subject is explicable.

As stated by Andrini (2016) in Lumabit and Sagge (2023), it is a typical problem that most learners are less engaged, reluctant, afraid, or bashful to express their ideas during the learning process. This situation will surely hinder the learners' capacity to study effectively and use their creativity in the classroom. The primary focus of the educational process remains the instructor. The teacher frequently only conveys information in one way, allowing learners to contribute orally or through performance only sometimes. In contrast, there are learners who enjoy the subject, as highlighted in the main effects of grade and math achievements.

As mentioned by Panes and Falle (2021), teachers' formative education significantly influences the quality of education and students' academic performance. It is crucial for teachers at any educational level to develop and apply skills related to teaching mathematics to enhance the quality of education for students.

To teach mathematics effectively, teachers must be aware of what their students already know and still need to learn, as well as motivate and support them as they study. Teachers need to be skilled in selecting and utilizing a range of pedagogical strategies and learning materials, in addition to having a deep understanding of and compassion for their students as individuals and as math learners. Teachers can achieve goals that they probably could not or would not accomplish on their own with the aid of instructional materials, which surround classroom activities with text and diagrammatic representations (Joy, Tan-Espinar, & Ballado, 2017; Sagge & Bacio, 2023).

Mathematics education plays a vital role in the K-12 curriculum in the Philippines, aiming to enhance the quality of education and develop well-rounded graduates who possess the essential skills and competencies to become productive and responsible citizens (Mamolo & Sugano, 2020; Dicdiquin, Mobo & Cutillas, 2023).

The former Education Secretary Leonor Briones said in the news article in the Philippine Daily Inquirer (2016) that the Department of Education (DepEd) needed to fill up more than 30,000 teaching items, especially for the fields of science and math, as part of its implementation of the K–12 education reform program. The article also speaks of the need to recruit more teachers, noting the demand despite the employment of 195,302 public school teachers between 2010 and 2016. Scholarships and above-entry salary grades are even offered. Moreover, the Education Secretary said that the status is a lack of teachers, which is why the agency is encouraging graduates of science, math, and engineering courses to apply as teachers.

Relative to the said article is the need to know the factors with which mathematically talented learners' choice of profession is contingent. It is noteworthy to identify the factors that greatly impact the learners' choices.

Still, the question remains. Why are men not inclined to choose teaching as a profession? In the article "The Importance of Male Teachers" by Kadane (2016), she wrote that school boards are trying to get more men into the classroom, and the key may be raising the profession's profile so that it's more valued in the public eye. The associate dean in the Werklund School of Education at the University of Calgary also said: "Men need to be visible in the teaching profession; similarly, we need to see males

in nursing or see that females can be firefighters."

The purpose of this study was to ascertain if parental support, classroom environment, value, attitude, and anxiety would predict and have mediational role in the perception towards teaching Mathematics as a profession of mathematically talented male learners. This study is important attempt because it aims to understand the factors that influence mathematically talented male learners' perceptions of teaching mathematics as a profession. By examining the roles of parental support, classroom environment, value, attitude, and anxiety, the study seeks to identify predictors and mediators that shape these perceptions. This understanding can help in developing strategies to encourage mathematically talented individuals to pursue teaching careers, address any barriers they might face, and ultimately contribute to improving the quality of mathematics education.

Research Objectives

This study aimed to determine the relationship of probable factors in predicting the perception of mathematically talented male senior high school learners (Grade 11 and Grade 12) toward teaching Mathematics as a profession.

Specifically, this study sought to answer the following questions:

1. What is the level of parental support, classroom environment, value, attitude, anxiety, and perception towards teaching Mathematics of mathematically talented male learners?
2. What is the level of value, attitude, anxiety, and perception towards teaching Mathematics of mathematically talented male learners when classified as to parental support and classroom environment?
3. Does each of the variables and constructs, namely, parental support, classroom environment, value, attitude, and anxiety make an independent contribution in the prediction of perception towards teaching Mathematics as a profession of mathematically talented male learners when all other variables are parts of the path analysis model?
4. Do value, attitude, and anxiety have mediational role in the perception towards teaching Mathematics as a profession of mathematically talented male learners when all other variables are parts of the path analysis model?
5. Among the identified variables, which ones can predict mathematically talented male learners' perception towards teaching Mathematics as a profession?

Limitation of the Study

The context of the study was limited to the predictive and mediational role of parental support, classroom environment, value, attitude, and anxiety in the perception of mathematically talented male learners towards teaching mathematics as a profession.

This survey study limited its coverage on the mathematically talented male senior high school learners (Grade 11 and Grade 12) from purposively selected public and private schools in the City of Iloilo and in the districts of the Province of Iloilo during the school year 2018-2019. The following inclusion criteria was used to select qualified participants: (a). the learner must be identified by his/her Math teacher as one of the top ten learners in the Math class; and (b). the learner must have joined a Math-related competition at least once.

Data gathered for the variables, namely parental support, classroom environment, value, attitude, anxiety, and perception towards teaching mathematics as a profession were obtained from rating scales and demographic questionnaire.

Methodology

Research Design

Descriptive-correlational was used in this study. Gay (1992) in Lumabit and Fernandez (2024) states that descriptive analysis entails gathering information to verify theories or react to inquiries about the status of the participants. It assesses and documents the current situation. A correlational research design investigates relationships between variables without the researcher controlling or manipulating any of them. A correlation reflects the strength and/or direction of the relationship between two or more variables. The direction of a correlation can be either positive or negative (Devi, Lepcha, & Basnet, 2023).

Research Participants

The participants of the study were 118 mathematically talented male senior high school learners (Grade 11 and Grade 12) from purposively selected public or private schools in Iloilo City and in the districts of the province of Iloilo during the school year 2018-2019.

Table 1. The Distribution of Participants

Category	F	%
Entire group	118	100
Grade level		
Grade 11	72	61.02
Grade 12	46	38.98
School category		
Public school	97	82.20
Private school	21	17.80
School location		
Province of Iloilo	63	53.39
1st District		
School A	6	5.08
School B	5	4.24
School C	1	0.85
School D	5	4.24
2nd District		
School E	5	4.24
School F	4	3.39
School G	3	2.54
School H	4	3.39
School I	1	0.85
School J	4	3.39
School K	3	2.54
3rd District		
School L	3	2.54
School M	1	0.85
School N	7	5.93
School O	6	5.08
School P	5	4.24
Iloilo City	55	46.61
Lone District		
School Q	14	11.86
School R	8	6.78
School S	4	3.39
School T	9	7.63
School U	4	3.39
School V	2	1.70
School W	3	2.54
School X	3	2.54
School Y	8	6.78
Parental Support		
Low Support	16	13.56
Moderate Support	78	66.10
High Support	24	20.34

Category	F	%
Classroom Environment		
Negative	0	0.00
Slightly Negative	0	0.00
Slightly Positive	49	41.53
Positive	69	58.47

Data Gathering Instruments

The study involved the use of six adapted instruments: (a) Attitude Towards Math Inventory; (b) Parental Involvement Questionnaire; (c) Classroom Learning Environment Questionnaire; (d) Abbreviated Math Anxiety Rating Scale; (e) Fennema-Sherman's Usefulness of Mathematics Scale; and (f) Perception Towards Teaching Math as a Profession Scale.

The tests underwent content validation and reliability testing. The researcher consulted with a professional psychometrician and four experts in the field of mathematics for the validation of Perception Towards Teaching Mathematics as a Profession Scale. Pilot testing was also conducted by administering all six instruments to 50 mathematically talented male senior high school learners (Grade 11 and Grade 12) from purposively selected public schools in the 4th and 5th Districts of the province of Iloilo during the school year 2018-2019.

Attitude Towards Math Inventory (ATMI). The ATMI is used to measure the learners' attitude towards mathematics. Developed by Tapia and Marsh (2004), ATMI is a 40-item test that measures factors such as self-confidence (the self-concept of learners' performance in math), enjoyment (the degree to which learners have fun attending their math classes or working on mathematical problems), and motivation (the extent to which learners are interested in acquiring mathematical knowledge). Sample items include "Mathematics is a worthwhile and necessary subject," "My mind goes blank and I am unable to think clearly when working with mathematics," and "I am confident that I could learn advanced mathematics."

The test used a 4-point Likert scale of agreement (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree) and can be completed within 10 to 20 minutes. Positive statements were scored with 4 points, 3 points, 2 points, and 1 point for Strongly Agree, Agree, Disagree, and Strongly Disagree, respectively. Negative statements were scored 1 point, 2 points, 3 points, and 4 points for Strongly Agree, Agree, Disagree, and Strongly Disagree, respectively. The mean scores were utilized to interpret the level of attitude towards mathematics. It has been widely and extensively used in the field of educational research that most of the studies relating to mathematical education have used the questionnaire to assess learners' attitudes towards the subject.

The scale below shows the verbal interpretation for every mean score obtained:

Scale	**Interpretation**
3.25 – 4.00	Strongly Positive
2.50 – 3.24	Positive
1.75 – 2.49	Negative
1.00 – 1.74	Strongly Negative

The test has fairly good psychometric properties. It was found to have a Cronbach's alpha of 0.963 and a test-retest coefficient of 0.89, which attests to its good reliability. The reliability values of the subscales were also acceptable, ranging from 0.70 to 0.88 (Tapia & Marsh, 2004). Its normative sample consisted of high school learners, which makes it more suitable for this study. Majeed, Darmawan, and Lynch (2013) investigated the construct validity of the ATMI through confirmatory factor analysis, and the results found the same factors that the test measures. Another study conducted by Khine and Afari (2014) proved the test's convergent validity was within the acceptable range of 0.56 to 0.88. The same research also confirmed the factors being measured by the instrument. The strength of the instrument lies in its broad scope, as it does not only focus on mere anxiety and competence, unlike most tests used in attitudinal research. In addition, it left out items involving the learners' parents or teachers due to the low total-item correlation, despite these people having huge influences on

learner attitude (Tapia & Marsh, 2004). Thus, it assures its users that items were not just constructed out of logic; they were also included for good psychometric reasons.

The result of pilot testing on Filipino learners yielded a Cronbach's alpha of 0.93. Thus, the researcher saw no need to revise or delete a specific item.

Parental Involvement Questionnaire (PIQ). The PIQ, which was developed by Cai, Moyer, and Wang (1999), was used to measure variable parental support. The questionnaire is composed of 26 items that are categorized into five different scales that assess parents' roles toward their children as: motivators (extent to which they give emotional support, especially when the child feels discouraged), resource providers (whether they provide references and other learning materials that the child can use), monitors (degree to which they track their child's progress), math content advisors (extent to which they provide advice on mathematical content), and learning counselors (how much they understand their child's learning needs and difficulties). Alternatively, some items can be added to measure parents' perceptions of the nature of mathematics in order to determine the validity and accuracy of the support provided, if present. The items, however, were randomly mixed up to avoid redundancy on the part of the test-taker, and the alternative scale was not included as it was not particularly needed in this research.

The test used a 4-point Likert scale of agreement (1=strongly disagree, 2=strongly disagree, 3=agree, 4=strongly agree) and can be completed within 10 to 15 minutes. Positive statements were scored with 4 points, 3 points, 2 points, and 1 point for Strongly Agree, Agree, Disagree, and Strongly Disagree, respectively. Negative statements were scored 1 point, 2 points, 3 points, and 4 points for Strongly Agree, Agree, Disagree, and Strongly Disagree, respectively. The mean scores were utilized to interpret the level of parental support.

The scale below shows the verbal interpretation for every mean score obtained:

Scale	**Interpretation**
3.00 – 4.00	High Support
2.00 – 2.99	Moderate Support
1.00 – 1.99	Low Support

The PIQ satisfied the acceptable values for reliability and validity coefficients, thus attesting to its good psychometric property. It was found to have a Cronbach's alpha of 0.86, and item analysis shows that all the items have an acceptable correlation with the total score. Convergent validity was also established, as it was found to be fairly correlated with other instruments that measure parental support in children's learning (Cai, Moyer & Wang, 1999).

To match the demands of this study, the researcher modified the items in a way that they would ask answers from the point of view of the learner (the test-taker), not the parent. Thus, the items were revised by changing "I" to "My parent/s." For instance, the item "I check my child's homework regularly" was changed into "My parent/s check my homework regularly." Other sample items include "My parent/s motivate me to learn math well" and "My parent/s help me in doing my math homework."

Pilot testing on Filipino learners yielded a Cronbach's alpha of 0.85. To increase the test's reliability, the researcher removed two items that were found to be problematic: Item 1 (When I am having trouble learning mathematics, my parents tell me not to worry about it because everybody has problems with math.) and Item 12 (My parents seldom spend time talking to me about my progress in math). After which, Cronbach's alpha was recalculated and found to be 0.89. The final instrument only contained 24 items.

Classroom Learning Environment Questionnaire (CLEQ). The CLEQ, as developed by McGhee, Lowell, and Lemire (2007), was used to assess how learners perceive their classroom environment. The test is composed of 32 items that measure four specific scales: classroom positive, diversity values, personal negative, and persistence in major.

Classroom Positive consists of 14 items that gauge how favorable the learner's experiences are inside the classroom, how much he likes the teacher's treatment of each individual, and how conducive he thinks the physical location is. Diversity Values has six (6) items that determine the learner's perception of how individual differences and diversity within the classroom are managed, while Personal Negative consists of six (6) items that determine the level of alienation the learner feels. Persistence in Major consists of six items that refer to the learner's self-assessment of his competence with the subject because of his classroom experience.

In addition to these, there are two other questions that were included in the test. These are for additional information as they do not belong to any of the mentioned scales but which the researcher decided to remove as they are deemed uninterpretable and unnecessary for this study.

The test used a 4-point Likert scale of agreement, thus eliminating neutral answers (1=strongly disagree; 2=somewhat disagree; 3=somewhat agree; 4=strongly agree). It can be completed within 10 to 20 minutes. Positive statements were scored with 4 points, 3 points, 2 points, and 1 point for strongly agree, somewhat agree, somewhat disagree, and strongly disagree, respectively. Negative statements were scored at 1 point, 2 points, 3 points, and 4 points for strongly agree, somewhat agree, somewhat disagree, and strongly disagree, respectively. The mean scores were utilized to interpret the level of the classroom environment. Sample items include statements such as "This class provides an environment for the free and open expression of ideas, opinions, and beliefs" and "When we work in small groups in this class, I am often ignored by my classmates or given trivial jobs."

The scale below shows the verbal interpretation for every mean score obtained:

Scale	Interpretation
3.25 – 4.00	Positive
2.50 – 3.24	Slightly Positive
1.75 – 2.49	Slightly Negative
1.00 – 1.74	Negative

Investigation of the test's psychometric property reveals a fairly high Cronbach's alpha ranging from 0.75 to 0.91 for each of the four scales. Inter-rater reliability was also measured, and the highest was for Classroom Positive (0.92) while the lowest was for Diversity Values (0.72) (McGhee, Lowell, & Lemire, 2007). These data attest to the instrument's good internal consistency. This low inter-rater coefficient for diversity values was attributed to the possibility that these are partly rooted in personal values. However, the test creators argued that since discrimination can happen inside the classroom, they are still subject to the influence of the class environment.

Furthermore, a low correlation was found between classroom positive and personal negative, which confirms that these two scales are distinct from each other and measure entirely different aspects of the classroom environment (McGhee, Lowell, & Lemire, 2007). CLEQ test scores were also found to be correlated with the standard student evaluation of the course, which is evidence of its construct validity.

Since this study pertains only to learners' learning of math, the researcher modified the instrument by making the learners keep only their classroom experiences in their math class in mind. This will be done by changing the word "class" into "math class" and "instructor" to "math teacher."

Pilot testing on Filipino learners yielded a Cronbach's alpha of 0.84. To increase the test's reliability, the researcher removed two items that were found to be problematic: Item 7 (Sometimes, the teacher makes inappropriate comments about people who are different.) and Item 14 (Sometimes, I am singled out in this class because I am different from most of the other learners.). After which, Cronbach's alpha was recalculated and found to be 0.86. The final instrument contained only 30 items.

Abbreviated Math Anxiety Rating Scale (A-MARS). To assess the level of learners' anxiety in learning mathematics, A-MARS was used. This scale was developed by Alexander and Martray (1989) and was based originally on the 98-item Math Anxiety Rating Scale (MARS) constructed by Richardson and Suinn (1972). Due to the existence of a standardized and valid

shortened version of the longer anxiety scale, the researcher decided to use the abbreviated test for pragmatic reasons.

The longer version by Richardson and Suinn (1972) established construct validity from evidence coming from three studies that show that MARS scores dropped significantly after administration of behavior therapy specifically applied to treat math anxiety. Scores from MARS were also found to be negatively correlated with math test scores, which confirms its discriminant validity. The brief form, on the other hand, also has good psychometric properties comparable to its original version.

A-MARS was normalized on 500 college learners, thus having a larger and more representative normative sample than its predecessor and overcoming its previous criticisms. It was found to have a Cronbach's alpha that ranges from 0.85 to 0.88 (Alexander & Martray, 1989). Test-retest reliability was also determined via a two-week interval, and the reliability coefficient resulted in 0.78. Convergent validity was measured by correlating the test with other scales that measure math anxiety, and the validity coefficients obtained ranged from 0.88 to 0.92 (Alexander & Martray, 1989). Divergent validity was also determined, and low correlation coefficients were found when it was measured with other instruments that assess a different construct. Considering these data, it can be said that A-MARS is a psychometrically valid instrument.

A-MARS can be self-administered and is composed of 25 items only. It used a 4-point Likert scale of intensity (1=no anxiety at all; 2=a little anxiety; 3=much anxiety; 4=very much anxiety) and can be completed within a time span of 10 minutes. Statements were scored 4 points, 3 points, 2 points, and 1 point for Very Much Anxious, Much Anxious, A Little Anxiety, and No Anxiety at All, respectively. The mean scores were utilized to interpret the level of mathematics anxiety. The items pertain to math-related situations that can elicit anxiety, such as "being given homework assignments of many difficult problems that are due at the next class meeting" and "being given a set of numerical problems involving addition to solve on paper." The test enumerates all these situations and asks the test-taker to indicate the level of anxiety he/she will feel when exposed to those circumstances. The situations commonly experienced by high school learners are familiar to most, thus eliminating the problem of unfamiliarity.

The result of pilot testing on Filipino learners yielded a Cronbach's alpha of 0.94. Thus, the researcher saw no need to revise or delete a specific item.

The scale below shows the verbal interpretation for every mean score obtained:

Scale	**Interpretation**
3.00 – 4.00	High Anxiety
2.00 – 2.99	Moderate Anxiety
1.00 – 1.99	Low Anxiety

Fennema-Sherman's Usefulness of Mathematics Scale (UMS). To measure the extent to which learners' value math, the researcher used the Usefulness of Mathematics Scale, which was developed by Fennema and Sherman (1976). The scale was enveloped within Fennema-Sherman's Attitude Towards Mathematics Questionnaire, a test that measures the general attitude of learners and was constructed by the same authors. The test, as with the ATMI, is also extensively used in educational research across all grade levels. It was even deemed the most popular test for math attitude for the last three decades (Tapia & Marsh, 2004). As such, it was translated into several languages and has been revised or modified several times. The authors of the test believe that attitude towards math encompasses a lot of different aspects related to the learners' learning; thus, the decision to include several scales. The entire questionnaire has a total of nine scales, including teacher, confidence, parents, and anxiety, and the usefulness scale is just one of those.

The scale is composed of 12 items that are given on a Likert scale of agreement (1=strongly disagree; 2=somewhat disagree; 3=somewhat agree; 4=strongly agree). Positive statements were scored with 4 points, 3 points, 2 points, and 1 point for strongly agree, somewhat agree, somewhat disagree, and strongly disagree, respectively. Negative statements were scored at 1 point, 2 points, 3 points, and 4 points for strongly agree, somewhat agree,

somewhat disagree, and strongly disagree, respectively. The mean scores were utilized to interpret the level of value of mathematics. Since it is very short, it can be completed within five minutes. The items pertain to the degree to which the learner agrees that math is relevant in daily life and useful in his/her adult life. Sample items include "I see mathematics as a subject I will rarely use in my daily life as an adult" and "In terms of my adult life, it is not important for me to do well in mathematics in high school."

Items on the scales were based on the model conceptualized by Fennema (1989), which states that learner performance in mathematics is a mere result of the interaction between the learner's attitudes towards the subject matter, the level of his anxiety, and how he behaves in class while learning math. However, there was research that questioned its validity and argued that some scales may measure a different aspect of attitude as opposed to what they purport to measure (Suinn & Edwards, 1982; O'Neal, Ernest, McLean, & Templeton, 1988). A study conducted by Melancon, Thompson, and Becnel (1994) also found it difficult to find a factor model that would perfectly fit Fennema's. Still, some studies found evidence of its validity and reliability. A thorough analysis conducted by Wikoff and Buchalter (2006) reveals that four of Fennema-Sherman's scales, including usefulness, are reliable and internally consistent, although confirmatory factor analysis resulted in only three factors instead of four.

Pilot testing on Filipino learners yielded a Cronbach's alpha of 0.77. To increase the test's reliability, the researcher removed one item that was found to be problematic: Item 12 (I expect to have little use for mathematics when I get out of school.). After which, Cronbach's alpha was recalculated and found to be 0.80. The final instrument contained only 11 items.

The scale below shows the verbal interpretation for every mean score obtained:

Scale	**Interpretation**
3.00 – 4.00	Very Useful
2.00 – 2.99	Useful
1.00 – 1.99	Slightly Useful

Perception Towards Teaching Mathematics as a Profession Scale (PTTMPS). No ready-made test can be found that strictly measures learners' perceptions of teaching mathematics as a profession. For this reason, the researcher developed his own questionnaire to assess the construct. Since the test is anticipated to be around 20 to 25 items, the researcher prepared a total of 40 items that underwent content validation and reliability testing.

The test underwent content validation done by a panel consisting of one licensed psychometrician and four experts in the field of mathematics. The panelists determined the item that needed to be revised, deleted, or accepted. Their general comments about the items and other suggestions to improve the scale were gathered. The experts' suggestions and comments were incorporated into the revisions. Thus, some items were revised, and six (6) items were deleted.

The result of pilot testing on Filipino learners yielded a Cronbach's alpha of 0.89. Thus, the researcher saw no need to revise or delete a specific item. The final instrument contained only 34 items.

Positive statements were scored with 4 points, 3 points, 2 points, and 1 point for strongly agree, somewhat agree, somewhat disagree, and strongly disagree, respectively. Negative statements were scored at 1 point, 2 points, 3 points, and 4 points for strongly agree, somewhat agree, somewhat disagree, and strongly disagree, respectively. The mean scores were utilized to interpret the level of perception towards teaching mathematics as a profession. The item pool was created from a review of related literature and recognition of logical content. Positively and negatively scored items were included to avoid faking responses, and care was taken to ensure that items focused only on teaching math as a profession, not just on teaching. Thus, items specifically stated, "teaching math" and not just "teaching."

The scale below shows the verbal interpretation for every mean score obtained:

Scale	Interpretation
3.25 – 4.00	High
2.50 – 3.24	Moderately High
1.75 – 2.49	Moderately Low
1.00 – 1.74	Low

Data Analysis

The data gathered in this research was subjected to appropriate descriptive and inferential statistics using the Statistical Package for the Social Sciences (SPSS) software.

Descriptive Data Analysis. The Means of the scores in the rating scales were computed to determine the extent of parental support, classroom environment, level of learners' mathematics value, mathematics attitude, mathematics anxiety, and perception towards teaching Mathematics as a profession.

Standard deviation was employed to determine the participants' homogeneity and heterogeneity in the various areas of the investigation.

Frequency was utilized to show the distribution of the participants according to different classifications.

Inferential Data Analysis. Pearson's Product-moment Correlation was computed to determine the relationship between each pair of variables included in the study.

Multiple Linear Regression was performed to examine the possibility of parental support, classroom environment, value, attitude, and anxiety to predict perception towards teaching Mathematics as a profession and to tell which among the independent variables would be the best predictor of an outcome and to ascertain whether a particular predictor variable would still be able to predict an outcome when the effects of another variable are controlled.

Path Analysis (PA) was used to test whether parental support, classroom environment, value, attitude, and anxiety predict and have mediational role in the perception towards teaching Mathematics as a profession of mathematically talented male learners.

All inferential tests were set at .05 level of significance.

Results and Discussions

Level of Mathematically Talented Male Learners' Parental Support, Classroom Environment, Value, Attitude, Anxiety and Perception towards Teaching Mathematics as a Profession

Table 2 presents the mean scores and standard deviations of the mathematically talented male learners in terms of parental support, classroom environment, value of mathematics, attitude towards mathematics, mathematical anxiety, and perceptions towards teaching mathematics as a profession.

Results showed that the level of parental support of mathematically talented male learners was found to be within the "moderate" level (M = 2.56, SD = 0.50). This implies that the learners' parents were neither overly involved nor neglectful when it came to aiding with foster a child's learning of math and promoting the pursuit of the teaching profession. Specifically, the parental support that these learners receive may come in the form of helping in doing math-related assignments, persuading the child to take up a math-related course in college, and matching goals and expectations to the child's ability.

This supports the study of Juguilon (2023) that early learning practices at home, learning practices at school, and parents' involvement in school activities impact the level of parental involvement among the respondents. The academic performance of students is influenced by the level of family support they receive. Students who benefit from quality family support tend to achieve higher academic performance compared to those who receive less support.

Results also showed that the learners perceived their classroom environment as "positive" (M = 3.31, SD = 0.27). This entails that the learners have good experiences inside the classroom and are very satisfied with the teaching strategies used by their mathematics teachers.

On a similar note, Okon and Archibong (2015) stated that the primary function of teachers is to motivate the learners, and that where attitude toward mathematics is related to mathematics success in the classroom (McCleod, 1992; in Schenkel, 2009), the teacher should be able to create a positive learning environment, free from tension and possible causes of embarrassment or humiliation, in order to reduce mathematics anxiety and

increase achievement (Miller and Mitchell, 1994; in Belbase, 2010).

The result of the mean scores (*M = 3.56*, *SD = 0.39*) in the value of mathematics in Table 2 revealed that learners find mathematics "very useful." This indicates that learners have a high appreciation for the subject of mathematics and give utmost value to the importance of the subject in their everyday lives. Specifically, they foresee the need to master the subject for their future work and view mathematics as worthwhile and necessary.

Likewise, this study supports the results of Norris (2012), who also agreed that mathematics is also important as a school subject because not only is it needed for the sciences, but it also provides access to undergraduate courses.

Table 2 also shows that the learners' attitude towards mathematics was "strongly positive" (*M = 3.36*, *SD = 0.33).* This implies that the learners have very favorable feelings towards mathematics, in a way that they have a lot of self-confidence when it comes to mathematics and can solve problems without too much difficulty.

The study conducted by Naungayan (2022) showed that the attitude of students towards the subject is related to the student's mathematics achievement. The positive probability value implies a positive relationship between the two factors. If one has a positive perception of the subject, then he/she can perform better in it. On the other hand, if a student has a negative attitude towards the subject, then he/she is bound to perform lower.

The data in Table 2 show that the mathematics anxiety of learners was "low" (*M = 1.58*, *SD = 0.37).* This indicates that the learners have a very minimal fear or nervousness towards mathematics as a subject. They rarely feel distressed or anxious during their math classes and are self-assured that they can do numerical tasks.

Various authors agree that mathematics anxiety is commonly associated with loss of self-esteem in confronting a mathematical situation (Acelajado, 2004; in Klinger, n.d.), negative reactions to mathematical concepts and evaluation procedures, and many constructs including working memory, age, gender, self-efficacy, and mathematics attitude (Cates & Rhymer, 2003; in Klinger, n.d.). However, given the right disposition, such as a positive attitude towards mathematics, it becomes desirable since it may influence one's willingness to learn and the benefits one can derive from mathematics instruction (Zan & Martino, 2008).

The data also show that the level of perception towards teaching mathematics of learners was "moderately high" (*M = 2.81*, *SD = 0.38).* This entails that learner, despite uncertainty, are still considering the possibility of teaching mathematics as their future profession. They acknowledge teaching mathematics as the best way to utilize their mathematical ability, see it as a job that they will enjoy, and recognize it as a respectable profession.

In research conducted by Hayon (2009; Okon and Archibong, 2015), it was emphasized that teachers who possess professional and interpersonal skills are more effective in their classrooms in terms of learners' behavior, attitude, and achievement. Thus, having someone who possesses the mathematical ability to teach mathematics is effective, as claimed by Dee (2010) in Okon and Archibong (2015), because learning from a male teacher of positive influence influences learners' relationships, progress, and engagements in school. Male teachers are also more focused on maintaining classroom authority by enforcing strict discipline, according to Chudgar and Sankar (2008).

Lastly, Table 2 shows the standard deviations of the mean scores, indicating that mathematically talented male learners' parental support has the highest variation as compared to the other variables. On the other hand, the classroom environment was found to have the narrowest variation.

Table 2. Level of Mathematically Talented Male Learners' Parental Support, Classroom Environment, Value, Attitude, Anxiety and Perception towards Teaching Mathematics as a Profession

	N	*SD*	*M*	Interpretation
Parental Support	118	0.50	2.56	Moderate Support
Classroom Environment	118	0.27	3.31	Positive

	N	*SD*	*M*	Interpretation
Value of Mathematics	118	0.39	3.56	Very Useful
Attitude towards Mathematics	118	0.33	3.36	Strongly Positive
Mathematics Anxiety	118	0.37	1.58	Low Anxiety
Perception towards Teaching Mathematics	118	0.38	2.81	Moderately High

Note: Interpretation is based on the following scale. Parental Support – high support (3.00 – 4.00); moderate support (2.00 – 2.99); and low support (1.00 – 1.99). Classroom Environment – positive (3.25 – 4.00); slightly positive (2.50 – 3.24); slightly negative (1.75 – 2.49) ; and negative (1.00 – 1.74). Value of Mathematics – very useful (3.00 – 4.00); useful (2.00 – 2.99); and slightly useful (1.00 – 1.99). Attitude towards Mathematics – strongly positive (3.25 – 4.00); positive (2.50 – 3.24); negative (1.75 – 2.49); and strongly negative (1.00 – 1.74). Mathematics Anxiety – high anxiety (3.00 – 4.00); moderate anxiety (2.00 – 2.99); and low anxiety (1.00 – 1.99). Perception towards Teaching Mathematics – high (3.25 – 4.00); moderately high (2.50 – 3.24); moderately low (1.75 – 2.49) ; and low (1.00 – 1.74).

Level of Mathematically Talented Male Learners' Value, Attitude, Anxiety and Perception towards Teaching Mathematics as a Profession when classified as to Parental Support

Table 3 presents the mean scores and standard deviations of the mathematically talented male learners in value of mathematics, attitude towards mathematics, mathematics anxiety, and perception towards teaching mathematics as a profession when classified as to parental support. Of the 118 learners, 16 or 13.56% experienced low parental support; 78 or 66.10% experienced moderate parental support; and 24 or 20.34% experienced high parental support.

Results revealed that learners find the value of mathematics for all classifications (*M = 3.36*, *SD = 0.53* for the low support group, *M = 3.55*, *SD = 0.38* for the moderate support group, and *M = 3.73*, *SD = 0.25* for the high support group) to be "very useful". This indicates that regardless of the level of parental support that mathematically talented male learners received, they are still likely to recognize the value and appreciate the importance of math.

Table 3 also shows the learners' attitude towards mathematics was "positive" (*M = 3.24*, *SD = 0.38*) for the low support group and "strongly positive" for both moderate support (*M = 3.43*, *SD = 0.30*) and high support (*M = 3.53*, *SD = 0.34*) groups. This dictates that mathematically talented male learners who receive greater parental support also develop a more positive attitude towards math. Those who get low parental support were still able to develop a positive attitude, although theirs was not as strong as that of those who received more support from their parents.

The data in Table 3 show that the mathematics anxiety of learners for all classifications (*M = 1.54*, *SD = 0.46* for the low support group, *M = 1.63*, *SD = 0.36* for the moderate support group, and *M = 1.43*, *SD = 0.28* for the high support group) was "low". This indicates that regardless of the level of parental support that mathematically talented male learners received, they are not likely to elicit strong feelings of anxiety towards the subject.

The data in Table 3 also show that the level of perception of the learners toward teaching mathematics was "moderately low" (*M = 2.44*, *SD = 0.35*) for the low support group and "moderately high" for both the moderate support group (*M = 2.78*, *SD = 0.32),* and the high support group (*M = 3.14*, *SD = 0.32).* This dictates that mathematically talented male learners who receive greater parental support consider teaching mathematics as their profession.

The level of parental support significantly influences the educational outcome of secondary school children, as revealed by the findings of Jeynes (2007). Parental involvement is strongly positively influenced by the child's level of attainment; the higher the level of attainment, the more parents get involved (Abouchaar & Deaforges, 2003).

The study by Epstein and Sheldon (2005) claimed that effective implementation of practices that encouraged families to support their children's mathematics learning at home was associated with higher percentages of learners

who scored at or above proficiency on standardized mathematics achievement tests. Findings suggest that subject-specific practices of school, family, and community partnerships may help educators improve learners' mathematics skills and achievement.

Lastly, Table 3 shows the standard deviations of the mean scores, indicating that mathematically talented male learners' value of mathematics for the low parental support group has the highest variation as compared to the other variables. On the other hand, the value of mathematics for the high parental support group was found to have the narrowest variation.

Table 3. Level of Mathematically Talented Male Learners' Value, Attitude, Anxiety and Perception towards Teaching Mathematics as a Profession when classified as to Parental Support

Level of Parental Support	*N*	*SD*	*M*	Interpretation
A. Value of Mathematics				
As a Whole	118	0.39	3.56	Very Useful
Low Parental Support	16	0.53	3.36	Very Useful
Moderate Parental Support	78	0.38	3.55	Very Useful
High Parental Support	24	0.25	3.73	Very Useful
B. Attitude towards Mathematics				
As a Whole	118	0.33	3.56	Strongly Positive
Low Parental Support	16	0.38	3.24	Positive
Moderate Parental Support	78	0.30	3.33	Strongly Positive
High Parental Support	24	0.34	3.53	Strongly Positive
C. Mathematics Anxiety				
As a Whole	118	0.37	1.58	Low Anxiety
Low Parental Support	16	0.46	1.54	Low Anxiety
Moderate Parental Support	78	0.36	1.63	Low Anxiety
High Parental Support	24	0.28	1.43	Low Anxiety
D. Perception towards Teaching Mathematics				
As a Whole	118	0.38	2.81	Moderately High
Low Parental Support	16	0.35	2.44	Moderately Low
Moderate Parental Support	78	0.32	2.78	Moderately High
High Parental Support	24	0.32	3.14	Moderately High

Note: Interpretation is based on the following scale. Value of Mathematics – very useful (3.00 – 4.00); useful (2.00 – 2.99); and slightly useful (1.00 – 1.99). Attitude towards Mathematics – strongly positive (3.25 – 4.00); positive (2.50 – 3.24); negative (1.75 – 2.49); and strongly negative (1.00 – 1.74). Mathematics Anxiety – high anxiety (3.00 – 4.00); moderate anxiety (2.00 – 2.99); and low anxiety (1.00 – 1.99). Perception towards Teaching Mathematics – high (3.25 – 4.00); moderately high (2.50 – 3.24); moderately low (1.75 – 2.49) ; and low (1.00 – 1.74).

Level of Mathematically Talented Male Learners' Value, Attitude, Anxiety and Perception towards Teaching Mathematics as a Profession when classified as to Classroom Environment

Table 4 presents the mean scores and standard deviations of the mathematically talented male learners in value of mathematics, attitude towards mathematics, mathematics anxiety, and perception towards teaching mathematics as a profession when classified as to classroom environment. Of the 118 learners, not one perceived a negative or slightly negative classroom environment; 49, or 41.53%, perceived a slightly positive classroom environment; and 69, or 58.47%, perceived a positive classroom environment.

Table 4 shows that learners find the value of mathematics for both classifications (*M = 3.35*, *SD = 0.45* for the slightly positive group, and *M = 3.70*, *SD = 0.27* for the positive group) to be "very useful". This indicates that

mathematically talented male learners who have a positive classroom environment recognize the value of and give importance to math.

Table 4 also shows that the learners' attitude towards mathematics was "positive" (*M = 3.23*, *SD = 0.29),* for the slightly positive group, and "strongly positive" (*M = 3.46*, *SD = 0.32),* for the positive group. This indicates that mathematically talented male learners who have a positive classroom environment develop a more positive attitude towards math.

The data in Table 4 also show that the mathematics anxiety of learners for both classifications (*M = 1.64*, *SD = 0.39* for the slightly positive group, and *M = 1.53*, *SD = 0.34* for the positive group) was "low". This indicates that mathematically talented male learners who have a positive classroom environment are not likely to elicit strong feelings of anxiety towards the subject.

The data in Table 4 as well show that the level of perception towards teaching mathematics of learners for both classifications (*M = 2.66*, *SD = 0.38* for the slightly positive group, and *M = 2.91*, *SD = 0.35* for the positive group) was "moderately high". This dictates that mathematically talented male learners who have a positive classroom environment consider teaching mathematics as their profession.

The result is parallel to the study of Hafızoglu and Yerdelen (2019), which showed that students who perceive their learning environment positively also have a generally high level of science motivation.

Lastly, the standard deviations of the mean scores indicated in Table 4 show that mathematically talented male learners' value of mathematics for the slightly positive group has the highest variation as compared to the other variables. On the other hand, the value of mathematics for the positive group was found to have the narrowest variation.

Table 4. Level of Mathematically Talented Male Learners' Value, Attitude, Anxiety and Perception towards Teaching Mathematics as a Profession when classified as to Classroom Environment

Classroom Environment	*N*	*SD*	*M*	Interpretation
A. Value of Mathematics				
As a Whole	118	0.39	3.56	Very Useful
Slightly Positive	49	0.45	3.35	Very Useful
Positive	69	0.27	3.70	Very Useful
B. Attitude towards Mathematics				
As a Whole	118	0.33	3.56	Strongly Positive
Slightly Positive	49	0.29	3.23	Positive
Positive	69	0.32	3.46	Strongly Positive
C. Mathematics Anxiety				
As a Whole	118	0.37	1.58	Low Anxiety
Slightly Positive	49	0.39	1.64	Low Anxiety
Positive	69	0.34	1.53	Low Anxiety
D. Perception towards Teaching Mathematics				
As a Whole	118	0.38	2.81	Moderately High
Slightly Positive	49	0.38	2.66	Moderately High
Positive	69	0.35	2.91	Moderately High

Note: Interpretation is based on the following scale. Value of Mathematics – very useful (3.00 – 4.00); useful (2.00 – 2.99); and slightly useful (1.00 – 1.99). Attitude towards Mathematics – strongly positive (3.25 – 4.00); positive (2.50 – 3.24); negative (1.75 – 2.49); and strongly negative (1.00 – 1.74). Mathematics Anxiety – high anxiety (3.00 – 4.00); moderate anxiety (2.00 – 2.99); and low anxiety (1.00 – 1.99). Perception towards Teaching Mathematics – high (3.25 – 4.00); moderately high (2.50 – 3.24); moderately low (1.75 – 2.49) ; and low (1.00 – 1.74).

Correlation Coefficient Matrix for Each Pair of Variables Namely Parental Support, Classroom Environment, Value, Attitude, Anxiety and Perception towards Teaching Mathematics as a Profession taken as a Whole

Table 5 shows the result from Pearson's product-moment correlations when taken as a whole group. Results showed that statistical significance was reported in the correlations between parental support and each classroom environment (r =.291, p =.001), value of mathematics (r =.273, p =.003), attitude towards mathematics (r =.289, p =.002), and perception towards teaching mathematics (r =.584, p =.000). The classroom environment and each of the values of mathematics (r =.536, p =.000), attitude towards mathematics (r =.470, p =.000), mathematics anxiety (r = -.260, p =.004), and perception towards teaching mathematics (r =.413, p =.000) The value of mathematics and each of attitude towards mathematics (r =.558, p =.000) and perception towards teaching mathematics (r =.494, p =.000) The attitude towards mathematics and each of mathematics anxiety (r = -.476, p =.000), perception towards teaching mathematics (r =.561, p =.000), and mathematics anxiety and perception towards teaching mathematics (r =.241, p =.009).

Based on the correlation coefficient interpretations of Rumsey (2016), the following scales are used for the interpretation:

Scale	**Interpretation**
Exactly ±1	Perfect linear relationship
±0.70	A strong linear relationship
±0.50	A moderate linear relationship
±0.30	A weak linear relationship
0.00	No linear relationship

The result of Pearson's Product-moment Correlations revealed that each pair of variables is not highly correlated. The data of the present investigation showed no violation regarding multicollinearity.

Table 5. Correlation Coefficient Matrix for Each Pair of Variables Namely Parental Support, Classroom Environment, Value, Attitude, Anxiety and Perception towards Teaching Mathematics as a Profession taken as a Whole

	1	2	3	4	5	6
1. Parental Support	_					
2. Classroom Environment	r=.291** p=(.001)	_				
3. Value of Mathematics	r=.273** p=(.003)	r=.536** p=(.000)	_			
4. Attitude towards Mathematics	r=.289** p=(.002)	r=.470** p=(.000)	r=.558** p=(.000)	_		
5. Mathematics Anxiety	r=-.070 p=(.452)	r=-.260** p=(.004)	r=-.101 p=(.275)	r=-.476** p=(.000)	_	
6. Perception towards Teaching Mathematics	r=.584** p=(.000)	r=.413** p=(.000)	r=.494** p=(.000)	r=.561** p=(.000)	r=-.241** p=(.009)	_

Note: **p < .01

According to Osborne and Waters (2002), four assumptions of multiple regression that researchers should always test are the following: (1) data should come from a normally distributed population; (2) there is a linear relationship between the independent and dependent variable(s); (3) the variables are measured without error (reliability); and (4) homoscedasticity of variance.

For checking the normality, the researcher constructed a histogram of each variable to give an indication of the shape of the distribution. The data was approximately normally distributed, with a peak in the middle and being symmetrical. An article written by Williams, Grajales and Kurkiewicz (2013) corrects the misconception of Osborne and Waters in the assumption about normality and clarifies that multiple regression models estimated using ordinary least squares require the assumption of normally distributed errors to make trustworthy inferences, at least in small samples, but not

the assumption of normally distributed response or predictor variables. Thus, the assumption of normality has been met.

Linearity and homoscedasticity, or the assumption of equal variance, were checked by plotting the standardized residuals versus the standardized predicted values of dependent variable and independent variables. The residual plots indicated that there was a random distribution of positive and negative values across the entire range of the variable plotted on the horizontal axis; thus, the assumptions of linearity and homoscedasticity have been met.

The nature of our educational and social science research means that many variables we are interested in are also difficult to measure, making measurement error a particular concern. In the case of multiple regression, the effect sizes of other variables can be overestimated if the covariate is not reliably measured, as the full effect of the covariate(s) would not be removed (Osborne & Waters, 2002).

According to Nunnally (1978), acceptable instruments used in basic research should have a reliability of.70 or better. The following instruments, namely: Attitude Towards Math Inventory (ATMI), Parental Involvement Questionnaire (PIQ), Classroom Learning Environment Questionnaire (CLEQ), Abbreviated Math Anxiety Rating Scale (A-MARS), Fennema-Sherman's Usefulness of Mathematics Scale (UMS), and Perception Towards Teaching Mathematics as a Profession Scale (PTTMPS), have Cronbach's alphas of 0.93, 0.89, 0.86, 0.94, 0.80, and 0.89, respectively; thus, the assumption for a reliable measure was met.

Portraying the Full, Reduced and Final Path Models. Path analysis is an extension of multiple regression. It lets us look at more than one dependent variable at a time and allows for variables to be dependent with respect to some variables and independent with respect to others (Garson, 2008). In brief, path analysis is more advantageous than alternative statistical models such as multiple regression analyses as it enables the estimation of independent terms and their direct, indirect, and total effects among a set of variables. It allows researchers to estimate and test various connections among the variables, allowing them to construct complex relationships (Mueller, 1996).

In the path model in Figure 1, parental support and classroom environment are the exogenous variables—those that lack hypothesized causes in the path analysis model. Value, attitude, anxiety, and perception towards teaching mathematics are the endogenous variables—those variables that have at least one hypothesized cause in the path analysis model. Each straight line with an arrowhead indicates a hypothesized causal relationship in the direction of the arrow. The path model tests, therefore, were as follows: (a) parental support and classroom environment were hypothesized to influence all other variables; (b) value would mediate the influence of parental support and classroom environment and influence the remaining variables; (c) attitude would mediate the influence of parental support, classroom environment, and value and influence anxiety and perception towards teaching mathematics; and (d) anxiety would mediate the influence of parental support, classroom environment, value, and attitude and influence perception towards teaching mathematics.

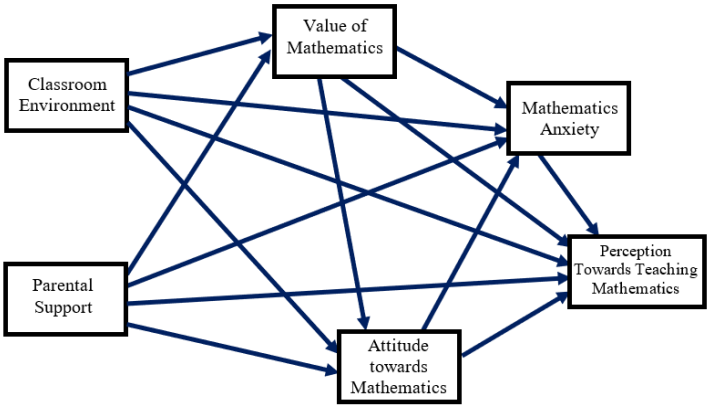

Figure 1. Theoretical path model of the study

Figure 1 shows the hypothetical theoretical path model representing the relationship among variables predicting perceptions towards teaching mathematics as a profession among mathematically talented male learners.

According to Wuensch (2012), a path analysis can be conducted as a sequence of multiple regression analyses. For each endogenous variable (Y), a multiple regression analysis shall be conducted, predicting that variable from all other variables that are hypothesized to have direct effects on that Y. The beta weights (standardized estimates) from these multiple regressions are the path coefficients shown in the typical figures that are used to display the results of a path analysis.

Decomposition of Effects from the Path Analyses for the Full Path Model in the Results of Multiple Regression Analyses

Table 6 presents the results of the Multiple Linear Regression for the full path model.

Table 6. Decomposition of Effects from the Path Analyses for the Full Path Model in the Results of Multiple Regression Analyses

Effect	Parameter estimate	Standard error	*B*	*T*	*p*	r^2
On value of Mathematics						0.302
Of parental support	0.101	0.064	0.128	1.576	0.118	
Of classroom environment	0.728	0.119	0.498	6.119**	0.000	
On Mathematics attitude						0.364
Of parental support	0.074	0.052	0.113	1.436	0.154	
Of classroom environment	0.265	0.109	0.217	2.420*	0.017	
Of value of Mathematics	0.342	0.074	0.411	4.594**	0.000	
On Mathematics anxiety						0.284
Of parental support	0.047	0.062	0.065	0.768	0.444	
Of classroom environment	-0.219	0.133	-0.162	-1.648	0.102	
Of value of Mathematics	0.271	0.096	0.292	2.816**	0.006	
Of Mathematics attitude	-0.647	0.111	-0.581	-5.825**	0.000	
On perception towards teaching Mathematics						0.536
Of parental support	0.330	0.052	0.434	6.305**	0.000	
Of classroom environment	0.054	0.114	0.038	0.472	0.638	
Of value of Mathematics	0.182	0.084	0.188	2.161*	0.033	
Of Mathematics attitude	0.340	0.107	0.293	3.178**	0.002	
Of Mathematics anxiety	-0.044	0.079	-0.042	-0.557	0.579	

Note: *p < .05, **p < .01

Figure 2 shows the full path model representing the relationship among variables predicting perceptions towards teaching mathematics as a profession among mathematically talented male learners. In the full path model (refer to Table 6), the following were the findings: (a) classroom environment (β=.498, p=.000) was a significant predictor of value of Mathematics, while parental support (β=.128, p=.118) was not a significant predictor; (b) classroom environment (β=.217, p=.017) and value of Mathematics (β=.411, p=.000) were significant predictors of Mathematics attitude while parental support (β=.113, p=.154) was not a significant predictor; (c) value of Mathematics (β=.292, p=.006) and Mathematics

attitude (β=-.581, p=.000) were significant predictors of Mathematics anxiety while parental support (β=.065, p=.444) and classroom environment (β=-.162, p=.102) were not significant predictors; (d) and parental support (β=.434, p=.000), value of Mathematics (β=.188, p=.033) and Mathematics attitude (β=.293, p=.002) were significant predictors of perception towards teaching Mathematics while classroom environment (β=.038, p=.638) and Mathematics anxiety (β=-.042, p=.579) were not significant predictors.

Figure 2 also shows the residual error terms, or the influence of extraneous variables indicated by the arrow from outside the model. These are the residual path coefficients (R) that represent factors affecting a specific variable but are not measured or accounted for in the model—the square root of the unexplained variation in the dependent variable. The path coefficient from the residual error term is (Garson, 2008). The following endogenous variables have path coefficients from the residual error term as follows: (a) the value of mathematics was 0.84; (b) the attitude of mathematics was 0.80; (c) the anxiety of mathematics was 0.85; and (d) the perception towards teaching mathematics was 0.68.

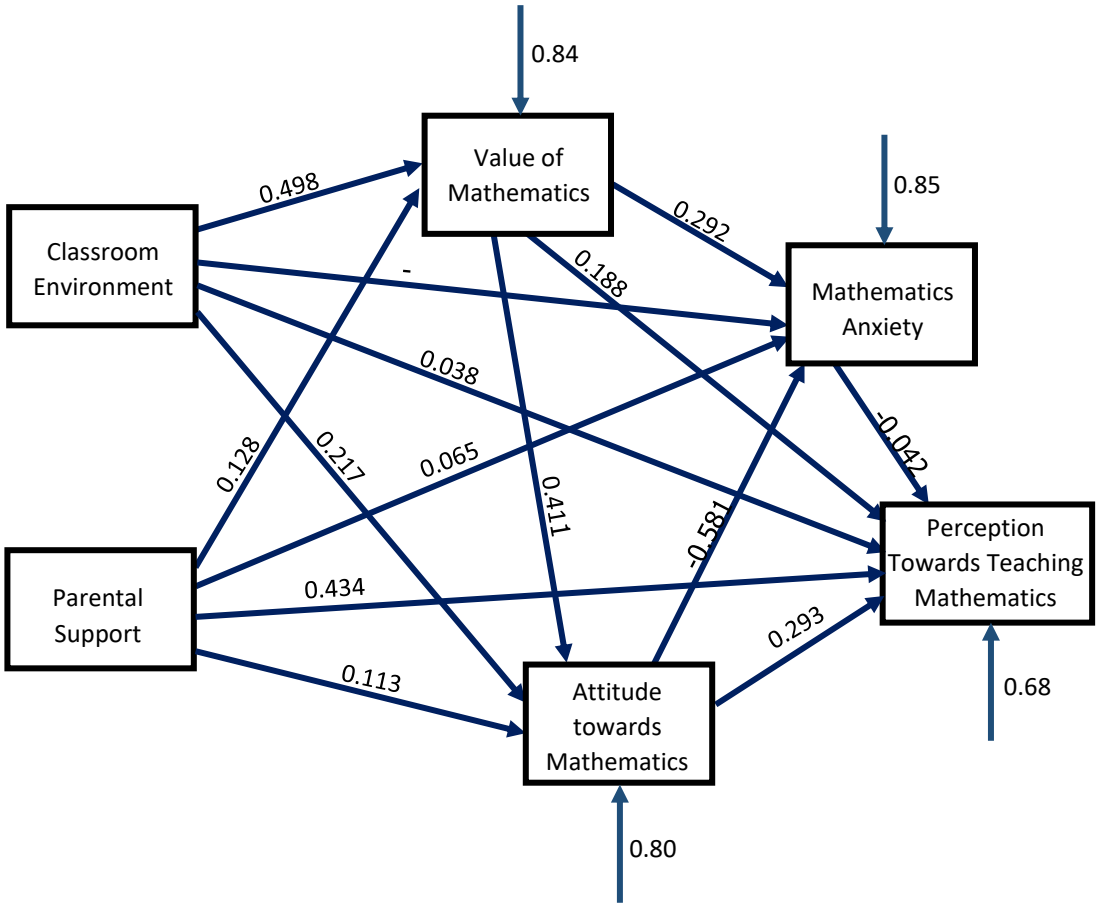

Figure 2. Full path model

Figure 2 shows the full path model representing the relationship among variables predicting perceptions towards teaching mathematics as a profession among mathematically talented male learners.

Wuensch (2012) stated that any path could be deleted, for which the multiple regression analysis indicated the beta weight was not significant. The paths between parental support and value of mathematics (β=.128, p=.118), parental support and mathematics attitude (β=.113, p=.154), parental support and mathematics anxiety (β=.065, p=.444), classroom environment and mathematics anxiety (β=-.162,

p=.102), classroom environment and perception towards teaching mathematics (β=.038, p=.638), and mathematics anxiety and perception towards teaching mathematics (β=-.042, p=.579) were removed. After trimming the full path model receiving beta weights, which are not significant, the reduced path model was made as shown in Figure 3.

Decomposition of Effects from the Path Analyses for the Reduced Path Model in the Results of Multiple Regression Analyses

The Table 7 presents the results of the Multiple Linear Regression for the reduced path model.

Table 7. Decomposition of Effects from the Path Analyses for the Reduced Path Model in the Results of Multiple Regression Analyses

Effect	Parameter estimate	Standard error	*B*	*t*	*p*	r^2
On value of Mathematics						0.287
Of classroom environment	0.782	0.115	0.536	6.831**	0.000	
On Mathematics attitude						0.353
Of classroom environment	0.293	0.108	0.240	2.706**	0.008	
Of value of Mathematics	0.358	0.074	0.429	4.832**	0.000	
On Mathematics anxiety						0.265
Of value of Mathematics	0.221	0.089	0.238	2.475*	0.015	
Of Mathematics attitude	-0.678	0.107	-0.609	-6.320**	0.000	
On perception towards teaching Mathematics						0.533
Of parental support	0.332	0.051	0.437	6.466**	0.000	
Of value of Mathematics	0.186	0.075	0.192	2.465*	0.015	
Of Mathematics attitude	0.381	0.091	0.327	4.182**	0.000	

Note: *p < .05, **p < .01

Figure 3 shows the reduced path model representing the relationship among variables predicting perceptions towards teaching mathematics as a profession among mathematically talented male learners. In the reduced path model (refer to Table 7), the following were the findings: (a) classroom environment (β=.536, p=.000) was a significant predictor of value of mathematics; (b) classroom environment (β=.240, p=.008) and value of mathematics (β=.429, p=.000) were significant predictors of mathematics attitude; (c) value of mathematics (β=.238, p=.015) and mathematics attitude (β=-.609, p=.000) were significant predictors of mathematics anxiety; (d) and parental support (β=.437, p=.000), value of mathematics (β=.192, p=.015) and mathematics attitude (β=.327, p=.000) were significant predictors of perception towards teaching mathematics.

Figure 3 also shows the following endogenous variables having path coefficients from the residual error term as follows: (a) the value of mathematics was 0.84; (b) the attitude of mathematics was 0.80; (c) the anxiety of mathematics was 0.86; and (d) the perception towards teaching mathematics was 0.68.

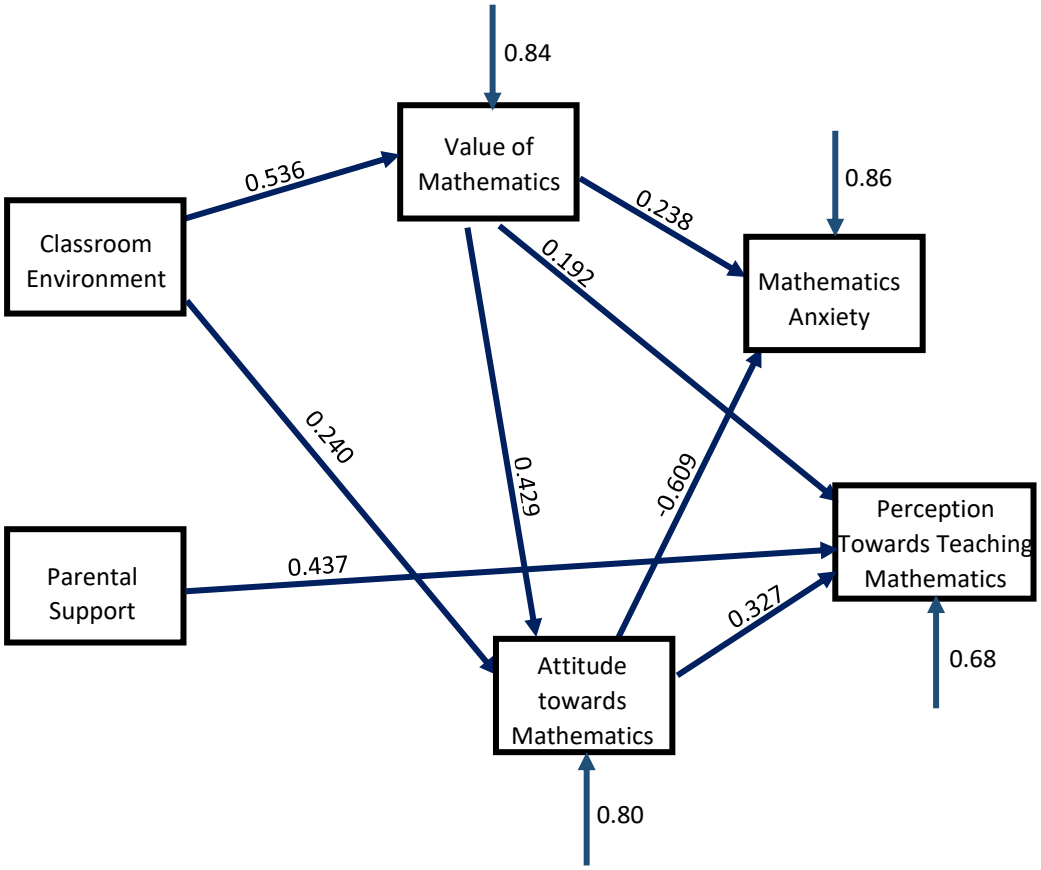

Figure 3. Reduced path model

Figure 3 shows the reduced path model representing the relationship among variables predicting perceptions towards teaching mathematics as a profession among mathematically talented male learners.

To test if the reduced path model fits the data well and the null hypothesis that the reduced path model fits the data as well as does the full path model, the researcher computed the goodness of fit statistics (Q) and the test statistics (W) (Specht, 1975; in Wuensch, 2012).

To compute for Q, the measure of the goodness of fit of the reduced path model, relative to the full path model, the researcher used the formula $Q = \frac{1-R_f^2}{1-R_r^2}$. As recalled, the following endogenous variables have path coefficients from residual error term in full path model are as follows: value of mathematics was 0.84, mathematics attitude was 0.80, mathematics anxiety was 0.85 and perception towards teaching mathematics was 0.68 while in reduced path model are as follows: value of mathematics was 0.84, mathematics attitude was 0.80, mathematics anxiety was 0.86 and perception towards teaching mathematics was 0.68.

$Q = \frac{1-(0.84^2)(0.80^2)(0.85^2)(0.68^2)}{1-(0.84^2)(0.80^2)(0.86^2)(0.68^2)} = \frac{1-0.1508}{1-0.1544} = 1$,

indicates a perfect fit.

Finally, test statistic, W = - (N – d) * ln (Q), when N = sample size, d = number of dropped paths (number of paths eliminated from the full model to yield the reduced model, and ln = natural logarithm. W = - (118 – 6) * ln (1) = 0, indicating that the reduced path model fits the data as well as does the full path model. Figure 4 illustrates the final path analysis model fitted to suite the data gathered from various variables in predicting perception towards teaching mathematics.

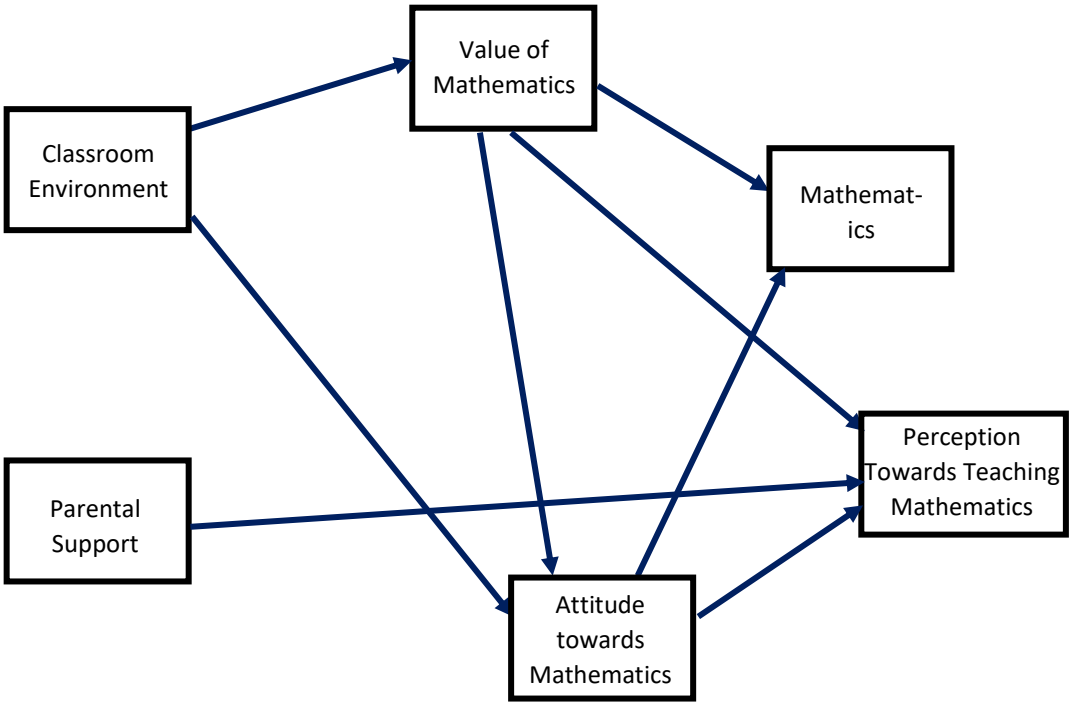

Figure 4. Final path model

Figure 4 shows the final path model representing relationship among variables predicting perception towards teaching mathematics as a profession of the mathematically talented male learners.

Independent Contribution of each of the Variable and Constructs in the Prediction of Perception towards Teaching Mathematics. The purpose of this study was to identify the variables and constructs that would influence perceptions towards teaching mathematics to mathematically talented male learners when all other variables are parts of the path analysis model.

In the final path model, classroom environment is not a significant predictor of perception towards teaching mathematics as well as mathematics anxiety, but a significant predictor of the value of mathematics and mathematics attitude. The non-significant effect of classroom environment on the perception towards teaching mathematics is contrary to the study of Patrick and Ryan (2001), which obtained a different finding; they found out that a higher-order classroom social environment factor accounted for significant changes in all motivation and engagement outcomes. However, the study only measured the social environment within the classroom, not the general classroom environment per se.

It is interesting to note that parental support significantly influences the perception of teaching mathematics but does not significantly influence all other endogenous variables. The results of the analysis in the study of Yilmaz Bodur and Aktan (2021) show that the democratic parent attitude, which is one of the sub-dimensions of the parental attitude scale, is a significant predictor of the students' level of academic motivation and personal responsibility.

Moreover, the value of mathematics is a significant predictor of attitude, anxiety, and perception towards teaching mathematics. The significant direct effect of the value of mathematics on the perception towards teaching mathematics is somewhat supported by the findings of Adnan, Maat and Zakaria (2012) that mathematics beliefs have a significant role in enhancing the quality and effectiveness of the teaching and learning of mathematics.

Another finding is the significant direct effect of mathematics attitude on mathematics anxiety and perceptions towards teaching mathematics. Similarly, according to Sikula

(1996), attitudes and beliefs are important considerations in understanding classroom practices and conducting teacher education designed to help prospective and in-service teachers develop their thinking and practices. Also, the findings of Bayat, Kargar and Tarmizi (2010), which investigated the relationships between mathematics anxiety, attitudes toward mathematics, and mathematical thinking among university students, resulted in a significant correlation between mathematics attitude and anxiety.

Lastly, mathematics anxiety made no significant independent contribution to perceptions towards teaching mathematics, contrary to the findings of Daane, Giesen and Swars (2010).

Mediational Role of Parental Support, Classroom Environment, Value, Attitude, and Anxiety in the Prediction of Perception towards Teaching Mathematics. Path analysis also provided data regarding the mediational role of value, attitude, and anxiety in the perceptions towards teaching mathematics of mathematically talented male learners. Mediation seeks to discover and explicate the underlying mechanism of an observed relationship existing between a dependent and an independent variable by including a third explanatory variable, which is normally known as the mediator variable (Jenatabadi, 2015).

Baron and Kenny (1986) asserted that complete mediation is present when the independent variable no longer influences the dependent variable after the mediator has been controlled, and partial mediation occurs when the independent variable's influence on the dependent variable is reduced after the mediation is controlled. The total effect of X on Y (or the correlation coefficient in Pearson's product-moment correlations shown in Table 5) was compared to the direct effect of X on Y (or the coefficient for the full path model—the beta weight in multiple regression) for evaluating the mediation of three variables.

It can be noticed that the total effect of parental support on the perception towards teaching mathematics is *β=.584,* but its direct effect was reduced to *β*=.434, which is still statistically significant. The researcher thus concludes that the mediator variables (value, attitude, and anxiety) are partial mediators of parental support's influence on the perception towards teaching mathematics.

Complete mediation was present in the case of the classroom environment and perceptions towards teaching mathematics. Value and attitude completely mediated the classroom environment's influence on perceptions towards teaching mathematics. The total effect was found to be significant (*β =.413),* but its direct effect was found to be not significant. Despite this, indirect effects (the effect of X on Y through an intervening variable or variables) were evident in the following: (a) classroom environment to value perception towards teaching mathematics; (b) classroom environment to attitude towards perception towards teaching mathematics; and (c) classroom environment to value attitude towards perception towards teaching mathematics.

The final path model shows that the value of mathematics has both a direct effect (*β =.188*) and an indirect effect (value to attitude to perception towards teaching mathematics) on the perception towards teaching mathematics. The beta weight was lower compared to the total effect (*β =.494);* hence, we conclude that a partial mediation on the value of mathematics' influences the perception towards teaching mathematics.

Partial mediation was also revealed in the full path model between attitude and perception towards teaching mathematics. The direct effect (*β*=.293) is lower compared to the total effect (*β*=.561). Anxiety is deemed a partial mediator of the attitude's influence on the perception towards teaching mathematics. No indirect effect was illustrated.

Prediction of Mathematically Talented Male Learners' Perceptions Toward Teaching Mathematics as a Profession. Path analysis was developed by Sewall Wright in 1930 and is very useful in illustrating the number of issues that are involved in causal analysis (Wuensch, 2012). According to Asher (1983; in Dunham, Niewiarowski & Petraitis, 1996), the path analysis model allows us to examine the causal processes underlying the observed relationships and to estimate the relative im-

portance of alternative paths of influence. Figure 4 (final path model) shows us the predicted paths of mathematically talented male learners' perceptions towards teaching mathematics as a profession. The final path model was made after the removal of paths that were not statistically significant from the theoretical path model.

The final path model shows statistically significant direct effects. Only three variables, namely: (a) parental support with β=.434, (b) value of mathematics with β=.293 and (c) attitude towards mathematics with β=.188, can directly predict the perception towards teaching mathematics as a profession. Among the three variables, parental support has the strongest influence on the perception towards teaching mathematics, having the highest direct effect. Parental involvement in the form of 'at-home good parenting' has a significant positive effect on children's achievement and adjustment even after all other factors shaping attainment have been taken out of the equation (Abouchaar & Deaforges, 2003).

The final path model also shows statistically significant indirect effects. According to Hayes and Preacher (2008), the causal steps approach can be used to determine whether the paths defining a specific indirect effect are statistically significant. If either of the constituent paths for a hypothesized indirect effect through the mediator variable(s) is not different from zero, then the mediator variable is deemed not to be a mediator of the effect of independence on the dependent variable.

Since the researcher already removed paths that are not significant, the indirect effects in the final path model are statistically significant. The classroom environment indirectly influences perceptions of teaching mathematics.

The specific indirect effects are the following: (a) classroom environment to value to perception towards teaching mathematics is 0.094 (the product of the beta weights connecting the two variables through mediators; see MacKinnon & Dwyer, 1993); (b) classroom environment to attitude to perception towards teaching mathematics is 0.064; and (c) classroom environment to value to attitude to perception towards teaching mathematics is 0.060.

Among the identified indirect effects of the classroom environment, it can be concluded that mathematics is likely an important mediator with the highest indirect effect. The indirect effect of classroom environment in the perception towards teaching mathematics was parallel to the findings of Church, Elliot, and Gable (2001), who concluded that the influence of the perceived classroom environment was indirect; the perceived classroom environment influenced achievement goal adoption, and achievement goal adoption, in turn, directly influenced graded performance and intrinsic motivation.

Another interesting finding was also revealed in the final path model: the classroom environment has an indirect effect on mathematics' anxiety. The specific indirect effects are the following: classroom environment to value anxiety, classroom environment to attitude to anxiety, and classroom environment to value attitude to anxiety.

To generalize, parental support has the highest contribution in predicting the perception towards teaching mathematics as a profession of mathematically talented male learners having the highest beta weight. It was also justified in the study of Wentzel (1998), in which the adolescents' supportive relationships with parents, teachers, and peers were examined in relation to motivation at school- and class-related levels, academic goal orientations, and social goal pursuit. It revealed that parent support was a positive predictor of school-related interest and goal orientations.

Conclusion

The study found that parents of mathematically talented male learners provided moderate support, not overbearing or uninvolved. The male learners themselves had a strong intrinsic interest in math, beyond just parental pressure. The positive learning environment likely stemmed from focusing on students who already enjoyed math and had low anxiety. These male learners showed a moderate interest in becoming math teachers, valuing the opportunity to use their skills and find enjoyment in a respected profession.

The study suggests that more parental support leads to a more positive outlook on both

math and teaching math as a career for mathematically talented male learners. Male learners with moderate or high parental support had a better attitude towards math and teaching it compared to those with low support. Interestingly, even within the positive group, a better classroom environment further improved these attitudes. This implies that a combination of strong parental backing, and a positive learning environment can significantly influence these male learners' interest in both math and teaching it.

Based on the results of the full path model, classroom environment was not a significant predictor of perception towards teaching mathematics as well as mathematics anxiety, but a significant predictor of the value of mathematics and mathematics attitude. It can be surmised, then, that having a positive classroom environment does not play an important role in the pursuit of teaching mathematics and their mathematics anxiety but has an important role in developing the learners' appreciation and approach towards mathematics.

Parental support significantly influenced the perception towards teaching mathematics but did not significantly influence all other endogenous variables—value, attitude, and anxiety. This suggests that parents did not influence these mathematically talented learners to have a very useful value for mathematics, a strongly positive attitude towards mathematics, or low mathematics anxiety, but had a significant role in encouraging them to consider teaching mathematics as a career.

The value placed on mathematics significantly predicts attitudes, anxiety, and perceptions towards teaching the subject. When learners give importance to mathematics in their daily lives, it positively influences their attitudes and reduces anxiety, shaping their perceptions of teaching mathematics.

A positive attitude towards mathematics reduces anxiety and increases the likelihood of pursuing a teaching career in the subject. However, mathematics anxiety alone does not independently affect perceptions of teaching mathematics; learners might be less anxious about the subject but still avoid a teaching career in it.

The classroom environment's influence on perceptions of teaching mathematics is mediated by other factors, suggesting that a positive classroom environment alone does not determine career pursuits. Instead, the interplay of various factors is crucial.

Parental support, the value placed on mathematics, and attitudes towards the subject partially mediate their influence on perceptions of teaching mathematics. These factors are crucial for a mathematically talented learner to pursue a teaching career. Direct support from parents, a high appreciation for mathematics, and positive attitudes significantly influence the perception of teaching mathematics as a profession.

While the classroom environment has an indirect effect, it does not solely determine career pursuits. Parental support remains essential for mathematically talented learners to consider teaching mathematics as a profession.

Recommendation

Based on findings and conclusions of this study, the following are recommended:

Parents need to be more engaged about their children's Mathematics performance. It is not enough that parents are informed of their children's Mathematics performance during the release of the report cards. It is more important that parents are involved in every step of their children's Mathematics journey because in knowing that their parents are supportive of their studies, children tend to perform better in Math. One best way to get the parents involvement in the school activities is through the teachers. Given the influence the teachers have over their learners, they can maximize the same by developing activities that would include parent participation.

To develop a more conducive environment for learning, teachers need to use effective teaching methods or approach that would best fit their learners and make the learners appreciate the subject more. In the current setting, it is advisable that different teaching styles be utilized especially for difficult subject such as Mathematics to make it more interesting and easily comprehensible. Teachers must be more sensitive when it comes to their learners' level of comprehension so that in teaching the subject, they would know the topics that need emphasis for maximum retention.

Learners need to understand the importance of each subject. They need to know the value of the subjects that the learnings they have go beyond the four walls of the classroom. With that in mind, learners will strive to do better in school, especially for high school (junior high) learners, because their performance may be taken into consideration when they go to college.

To help achieve the foregoing goals of the parents, teachers, and learners, the head of school also plays an important role. The head of school need to approve the activities necessary to develop a responsive parent-teacher-student relationship. Also, he/she must also encourage the teachers to attend seminars and trainings that will help them develop new teaching styles and strategies. It is important that teachers take continuing education with respect to their subject matter to help them improve their teaching skills.

In addition, Mathematics curriculum leader must also consider the various studies conducted in relation to Mathematics. With this, they can impart the important and useful ideas uncovered by the researchers to the students thru the next edition of the textbooks.

Lastly, the community surrounding the learner and the school needs to be made aware of the importance of Mathematics. Their support, especially financial support to public schools, is needed in activities such as national mathematics quiz competition.

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