

TEACHER CHARACTERISTICS AND ATTITUDES IN LEARNING MATHEMATICS AS PERCEIVED BY MATHEMATICS TEACHER EDUCATION STUDENTS: A MIXED METHOD STUDY

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ABSTRACT

This study employed a mixed methods design, utilizing a parallel convergent approach to explore the quantitative status and lived experiences of Mathematics major students regarding their perceived teacher's characteristics and attitudes. The participants were Mathematics education students, with 80 respondents for the quantitative phase and 14 for the qualitative phase, selected through total enumeration and purposive sampling, respectively. The quantitative results indicated a very high status of perceived teacher characteristics and students' attitudes. A positive low correlation ($r = .27$, $p = .0064$) was found between the two variables. In the qualitative phase, students revealed positive experiences with instructors, emphasizing their good qualities and influence on learning, while also highlighting teacher-related difficulties. Student insights emphasized the crucial role of fair treatment and interaction in learning, predictors of learning attitudes, and the significance of positive attitudes. Notably, the quantitative data largely aligned with the qualitative findings.

Keywords: attitude in learning mathematics, mathematics, mixed methods, teacher's characteristics, Philippines

INTRODUCTION

Attitude is a psychological construct that refers to any experience of feeling or emotion, including mood and emotional reaction. It is commonly studied on a continuum that ranges from positive to negative. One affective state that has sparked a lot of interest in mathematics education research is the attitude toward mathematics. Students' attitudes toward mathematics encompass a wide range of feelings and emotions, such as liking or disliking math, preferring to engage in or avoid math tasks, believing or not believing in one's math abilities,

and believing in the value and utility of mathematics (Haciomeroglu, 2017). Students' feelings and emotions reflect the value, self-confidence, enjoyment, motivation, and anxiety about learning math. Students may have varying degrees of positive or negative attitudes toward math (Kennedy, 2019).

Moreover, Mathematics is essential in the education system, providing students with critical skills and knowledge necessary for various fields. However, in Turkey, math success is often hindered by the negative attitude of many students

towards the subject. The fear of failure, lack of relevance, inadequate resources and support, and societal attitudes towards math can contribute to this negative attitude, leading to anxiety and worry, which further impairs their ability to perform well in the subject. It is essential to address these challenges, create a supportive learning environment, promote a growth mindset toward math, and provide students with adequate resources and support to develop their skills and confidence. By doing so, students can overcome their negative attitudes toward math and achieve academic success, ultimately improving their future opportunities (Erdik, 2018).

Similarly, most students hold negative attitudes toward mathematics in the Philippines, particularly in Cebu City. Even though today's teachers are easy to approach, most students tend to hate numbers. Thus, there is a demand for quality mathematics teacher education to arouse curiosity, self-confidence, interest, and attitudes toward the subject matter. This way, learners will be guided in learning the subject matter (Peteros et al., 2019).

Numerous studies have been done to identify reasons, establish conclusions, and make solutions due to the seriousness of the situation. This study is needed to establish the relationship between teacher characteristics and students' attitudes in learning mathematics as an increasing number of students have negative attitudes towards learning mathematics and the negative effect of the COVID-19 pandemic. So, this should be addressed immediately to mitigate possible problems in the future. The study is also deemed important because it will benefit the Commission on Higher Education (CHED), teachers, students, and future researchers.

In connection to this, several research related to teachers' characteristics and attitudes in mathematics education. I found studies regarding it, like the study of Karatas and Coskun (2019) entitled "Examining the Relationship Between Mathematics Teachers' Characteristics and Their Attitudes Toward Teaching Using Structural Equation Modeling" and "Mathematics Teachers' Pedagogical Content Knowledge, Attitudes, and Practices: Implications for Mathematics Teaching

and Learning" of Odeh and Amoo (2018). However, there were none that focused specifically on mathematics teacher education students' perceptions of their teachers' characteristics and attitudes towards learning mathematics, which this study focuses on. In addition, all the studies that have been conducted have used only quantitative and qualitative approaches, so my study will use a mixed methods approach. Lastly, this study aims to analyze the significant relationship between perceived teacher characteristics and students' attitudes and learning mathematics.

This study employed a convergent parallel mixed method research to broadly analyze the teacher characteristics and attitudes in learning mathematics as perceived by mathematics education students. The study is anchored to the following: the productivity theory of Wahlberg (1982); ABC attitude model of Ostrom (1969); the affective-cognitive consistency theory of Rosenberg (1968); and the self-perception theory of Bem (1972). These theoretical supports claimed that the students' perceptions of the teachers' characteristics have an impact on their attitude toward mathematics.

OBJECTIVES OF THE STUDY

This mixed-method study had the following objectives: firstly, to portray the perceived status of teacher characteristics and student attitudes toward learning mathematics among mathematics major education students; secondly, to ascertain the significant relationship between perceived teacher characteristics and student attitudes in learning mathematics; thirdly, to articulate the lived experiences of mathematics major students concerning their perceived teacher characteristics and attitudes in learning mathematics; and finally, to gauge the extent of alignment between the quantitative and qualitative data.

METHODOLOGY

The study utilized mixed methods research, particularly the convergent design.

Mixed methods research has the defining characteristic of mixing quantitative results with qualitative data within a single study (Creswell & Plano, 2011). One of its designs is the convergent design, which entails the concurrent collection of qualitative and quantitative data, emphasizing both data being gleaned in a study. In terms of the precedence of the data collection procedures, surveys are conducted first for the quantitative phase, and this is followed immediately by the conduct of in-depth interviews and focus group discussions for the qualitative phase of the study. Afterwards, the two data sets are separately analyzed. Then, the results are corroborated and the combined findings are interpreted based on the convergence, contradictions, divergence, or relationships identified between the two data sources (Hanson et al., 2005).

Upon the conduct of the study, 80 key respondents from a local college were purposely chosen as the respondents of the study for the quantitative phase. These individuals were the mathematics major teacher education students. Moreover, the respondents were identified by stratified random sampling (proportional allocation), as Milroy and Gordon (2008) introduced in their seminal work. These students responded to the items provided centering on the perceived teachers' characteristics and attitudes in learning mathematics.

In the qualitative phase, participant recruitment was described to be purposeful. Hence, purposive sampling was employed based on the researcher's judgment on who could better provide useful data to elaborate clearly on the research topic (Kuper et al., 2008). In this phase, 14 participants were selected, with 7 of them participating in the in-depth interviews while the other 7 students gathered for a focus group discussion. Similar criteria were employed, which provided that the participants must be mathematics major teacher education students in the local college where this study was conducted.

Foremost, the researchers asked permission from the local college to conduct the study. Afterward, the participants were identified and allocated for the study's qualitative and quantitative phases. Voluntary participation was ensured and

acquired among these participants through the use of informed consent forms.

Once all the preparations for data collection were done, the distribution of survey questionnaires among the 80 respondents of the study happened first to gather the quantitative data for this mixed methods study. Immediately after this one, the interviews with 7 other participants and a focus group discussion with another 7 respondents were done to collect the qualitative research data for this study. The qualitative phase was voice recorded with the consent of the participants. It was worth noting that all data collection procedures were done online as protection against COVID-19. Ethical considerations were also adhered to at all times to protect the well-being of all involved participants.

After the conclusion of the data-gathering procedures, survey results were tabulated accordingly. Meanwhile, voice records of the interviews were manually transcribed in preparation for data analysis.

Since this was a mixed methods research, two sets of data analysis efforts were done. For the quantitative phase, the assistance of a competent statistician was sought. The software that was also utilized in the statistical analysis of data was JASP, which stands for Jeffrey's Amazing Statistics Program. Through this software, the level of teacher characteristics and attitudes toward learning mathematics among the respondents were expressed through the statistical tool, mean. Also, the significant relationship between the two variables was determined through the statistical tool Pearson. For the qualitative phase, thematic analysis was done to give clarity on the experiences and insights of the participants regarding their attitudes towards learning mathematics.

Once the data analysis process was done for the two sets of research data gathered in this study, corroboration of the data was done and expressed in the joint display; this step contributed significantly to highlighting the quantitative and qualitative findings that corroborate with each other.



RESULTS AND DISCUSSION

1. Summary of the Status Level of Perceived Teacher Characteristics as Perceived by the Math Major Teacher Education Students

Table 1
Summary of the Teacher Characteristics

Indicators	Mean	Description
Teacher-student Interaction	4.27	Very High
Teaching Profession	4.27	Very High
Humanistic and Justice	4.18	High
Overall	4.24	High

There are three indicators to measure the status of teacher characteristics as perceived by the math major teacher education students in a local college. These are teacher-student interaction, the teaching profession, and humanistic and justice. As shown in Table 1, the participants' overall status of perceived teacher characteristics was rated high, with an overall mean of 4.24.

Teacher-student Interaction. The teacher-student interaction got the highest category mean of 4.27, described as very high. Among the items under this indicator, observing my teacher call the students by their names got the highest mean of 4.35, which is described as very high. On the other hand, the lowest item rated by the students was observing my teacher avoid critical and judgmental responses while listening to the students, with a mean of 4.19. This rating is described as high.

Teaching Profession. The teaching profession has also gotten the highest category mean of 4.27, rated by the students as very high. Observe that my teacher is knowledgeable in his/her professional area and garnered the highest rating with a mean of 4.46, which is described as very high. Conversely, observing my teacher does his/her work properly and on time got the lowest mean of 4.08 and described as high.

Humanistic and Justice. The humanistic and justice, as experienced by the students, got the lowest category mean of 4.18 but still described as high. In this category, my teacher provides an equal learning opportunity to all students in the class, rated with a mean of 4.44 and described as very high. On the other hand, observing my teacher as a tolerant teacher got the lowest mean of 3.9 and was described as high.

The indicators of teacher characteristics with an overall mean score of 4.24 with a descriptive equivalent of high. Moreover, the respondents always manifest the items in the indicator's teacher-student interaction and teaching profession, with a mean score of 4.27 or very high. Furthermore, the overall mean score of 4.24 or high is indicative that the teacher characteristics are regarded by the respondents as favorable in terms of teacher-student interaction, teaching profession, and humanitarianism and justice.

2. Summary of the Status Level of Student's Attitude Towards Learning Mathematics as Perceived by the Math Major Teacher Education Students

Table 2
Summary of the Teacher Characteristics

Indicators	Mean	Description
Confidence in Mathematics	3.67	High
Importance of Mathematics	4.41	Very High
Engagement in Mathematics	3.49	High
Overall	3.86	High

The data presented in Table 2 is the status of students' attitudes towards learning mathematics. The overall mean is 3.86, which is described as high. The student's attitude toward learning mathematics was measured through the indicators that include confidence in mathematics, importance of mathematics, and engagement in mathematics.



Confidence in Mathematics. This aspect of confidence in mathematics yielded a high category mean of 3.67, which is described as high. The item observes that mathematics helps develop the mind and teaches a person to think critically; got the highest rating with a mean of 4.32, which is described as very high. On the other hand, learning mathematics easily is rated with the lowest mean of 3.28 and is described as high.

Importance of Mathematics. This aspect of the importance of mathematics yielded the highest category mean of 4.41, which is described as very high. The mean of 4.56 is the highest among all the items described as very high, which refers to thinking mathematics is important in everyday life. The lowest mean of 4.32, still described as very high, refers to thinking of many ways I use math outside of school.

Engagement in Mathematics. The students' mathematics engagement was rated lowest, with a category mean of 3.49. Among all the items, have usually enjoyed studying mathematics in school was rated highest with a mean of 4.04. This can be described as high. On the other hand, the lowest item rated as moderate is thinking mathematics is dull with a mean of 2.65.

The indicators of students' attitude towards learning mathematics with an overall mean score of 3.86 with a descriptive equivalent of high. Moreover, the respondents always manifest the items in the indicator's importance of mathematics with a mean score of 4.41 or very high. Furthermore, the overall mean score of 3.86 or higher, is indicative that the student's attitude toward learning mathematics is regarded by the respondents as favorable in terms of Confidence in Mathematics, the Importance of Mathematics, and Engagement in Mathematics.

3. Correlation between Teachers' Characteristics and Students' Attitudes

Table 3
Correlation between Teachers' Characteristics and Students' Attitudes

Variable	Mean	R-Value	P-Value	Decision
Teachers' Characteristics	4.24			@=0.05
Students' Attitude	3.86	.27**	.0064	H_0 Rejected

Table 3 presents the results of the specific correlation analysis between perceived teacher characteristics and student's attitudes. A thorough examination of the data reveals that the perceived teacher's characteristics (M = 4.24) and students' attitude (M = 3.86) have a low positive correlation, as per the descriptions of Cohen and Holliday (1983) on the range of different levels of correlation. The relationship between perceived teacher's characteristics and student's attitude has a positive weak significant relationship, $r(79)=.27$, $p=.0064$. Therefore, it can be inferred that the statement claiming no significant relationship between teacher's characteristics and students' attitude of the students in KCAST's major in mathematics education program is denied.

The obtained results show that ($p = .0064$) is less than the significant level of 0.05, suggesting a significant relationship between the two variables—perceived teacher's characteristics and students' attitudes. The data demonstrates in the relationship between the perceived teacher's characteristics and students' attitudes were weakly positively correlated, $r(79) = .27$, $p=.0064$.

4. The Lived Experiences of Mathematics Major Students with Regard to their Perceived Teacher's Characteristics and Attitudes in Learning Mathematics

Three major themes emerged related to the lived experiences of mathematics major students with regards to their perceived teacher's characteristics and attitudes in learning mathematics: good qualities of mathematics instructors, positive influence of mathematics

instructors in mathematics learning, and teacher-related mathematics learning difficulties.

The first theme revealed that the mathematics major students perceived that there are good qualities of mathematics instructors. This can be seen in their act of being responsive, approachable, applying fairness in treatment, being professional, and their teaching is effective. This result supports the Theory of Distance Learning of Holmberg (1989) as it states that effective communication is essential for successful distance learning, but it is equally important in traditional classroom settings. When teachers prioritize communication and create a supportive and inclusive learning environment, students are more likely to engage in the learning process, be motivated to learn and achieve better learning outcomes.

The second theme that emerged in the findings is students experiencing the positive influence of mathematics instructors in mathematics learning. This result supports Holmberg's Theory of Distance Learning (1989) as it explains the importance of interactive communication and feedback in creating an effective learning environment. When teachers inspire and motivate students, it can increase their interest and engagement in learning mathematics.

Lastly, mathematics major students experienced teacher-related mathematics learning difficulties, which appeared to be the third theme in the findings. This finding supports the Learning Theory of Education of Bruner (1960) as it states that with the appropriate presentation and explanation, students can understand complex concepts that are typically reserved for adults. This underscores the importance of using various teaching methods and strategies to facilitate student learning and ensure that instructional materials are accessible and comprehensible to all learners.

5. Insights Shared of Mathematics Major Students with Regards to Their Perceived Teacher's Characteristics and Attitudes in Learning Mathematics

Three major themes emerged related to the insights shared by mathematics major students with regard to their perceived teacher's characteristics and attitudes in learning mathematics: the vital role of fair treatment and interaction in mathematics learning, predictors of mathematics learning attitude, and the importance of positive attitudes in mathematics learning.

The first theme revealed that the mathematics major students perceived that they believed in the vital role of fair treatment and interaction in mathematics learning. The participants of this study stated that humanistic justice and interaction are important in learning mathematics. This supports the Socio-Cultural Theory of Vygotsky (1978) as it cited that communication plays a vital role in the development of mathematical understanding. Students who articulate their ideas to others and listen to their peers' perspectives gain insight into culturally established mathematical concepts and procedures.

The second theme that emerged in the findings is predictors of mathematics learning attitude. This supports the Theory of Planned Behavior of Ajzen (1991) as it suggests that to predict an individual's behavior, we need to consider the person's intentions to engage in that behavior. Specifically, the theory posits that behavioral intentions are shaped by three main factors: the person's attitudes toward the behavior, their subjective norms, and their perceived behavioral control.

The third theme revealed the importance of positive attitudes in mathematics learning. They believed that recognizing the importance of confidence, a positive mindset, engagement in learning, and fairness in treatment have an effect



on a positive learning attitude. This result supports the ABC Model of Attitude of Ostrom (1969) which proposes that personal actions, cognition, thinking, and responses to any issue or person are all governed by attitudes, which can significantly influence a person’s judgments and conclusions. As such, a student’s attitude toward a particular topic can profoundly impact their learning experience, as negative attitudes can impede the individual’s learning process.

6. Data Integration of Salient Quantitative and Qualitative Findings

Table 6
Data Integration of the Salient Quantitative and Qualitative Findings

Aspect or Focal Point	Quantitative Findings	Qualitative Findings	Nature of Data Integration
Teacher-student Interaction	<i>teacher set up a warm and friendly relationship with students</i>	the vital role of fair treatment and interaction in mathematics learning	Merging-converging
Professionalism of Instructors	<i>the teacher is knowledgeable in his/her professional area</i>	good qualities of mathematics instructors	Merging-converging
Effectiveness of Teaching Strategies	<i>teacher asks questions in class to produce an effective environment</i>	good qualities of mathematics instructors	Merging-converging
Positive Mindset in Learning Mathematics	<i>mathematics is important in everyday life</i>	importance of positive attitudes in mathematics learning	Merging-converging
Fairness in Treatment	<i>teacher provides an equal learning opportunity to all students</i>	good qualities of mathematics instructors	Merging-converging

Teacher-student Interaction. The quantitative and qualitative findings revealed that the students feel a high sense of teacher-student interaction, and they experienced a warm and friendly relationship set-up in learning mathematics. This result is affirmed by Ansari et al. (2020) claim that teachers who create relationships with their students can drive them to learn. Meeting students’ academic and emotional needs is crucial to building strong classroom cultures with healthy relationships that help drive students towards achieving their goals.

Professionalism of Instructors. Both the quantitative and quantitative findings revealed that

students witness their instructors show professionalism by contributing as much as they can for the fulfillment of good qualities of mathematics instructors. This finding conforms to the article of Tufail and Farooq (2021) states that teacher professionalism is one of the most critical issues in the world of education, as it plays a crucial role in the pursuit of quality education. In summary, professional teachers bring a wealth of knowledge, skills, and personal attributes to their work, which enables them to create a supportive and engaging learning environment for their students.

Effectiveness of Teaching Strategies. Also, the results of both phases show that the effectiveness of instructors’ teaching strategies gives satisfaction to students who witness their teaching methods and principles. This finding conforms to the article of Jalbani (2017) argues that instructors should integrate their professional experiences with their teaching techniques and pedagogies to assist their students. By doing so, teachers can effectively engage and support students in their learning, ultimately facilitating better student outcomes.

Positive Mindset in Learning Mathematics. In this aspect, the quantitative finding converges with the qualitative finding that the students held a positive mindset in high regard as it helps develop a person’s mind and critical thinking skills and turns students’ attitude in learning mathematics a positive one. This finding conforms to the claim of Hwang and Son (2021), which states that recent research has highlighted the importance of students’ attitudes towards mathematics in their academic achievement. Students with a positive attitude towards mathematics are more likely to appreciate the worth of the subject, enjoy learning about it, and feel confident in their mathematical abilities.



Fairness in Treatment. The quantitative and qualitative findings revealed that the students experienced a humanistic and justice approach, enabling them to be more participative and happier in class. This result is affirmed by the claim of Caglar (2018) that effective teaching strategies lead to improved student outcomes is well-supported in the literature. One aspect of effective teaching that has been found to be particularly important is fairness to students. He argues that when teachers treat students fairly, it can have a positive impact on learner motivation, performance, and satisfaction.

CONCLUSIONS

The study revealed a generally high level of teacher characteristics and positive student attitudes toward learning mathematics. However, humanistic and justice aspects of teacher characteristics were identified as areas needing improvement. The research demonstrated a low positive correlation between the two variables, indicating that as teacher characteristics improve, so do student attitudes toward learning mathematics. Thematic analysis of focus group discussions and in-depth interviews unveiled themes such as the positive influence of mathematics instructors, teacher-related difficulties, the vital role of fair treatment and interaction in mathematics learning, predictors of mathematics learning attitude, and the importance of positive attitudes. Integrating both qualitative and quantitative findings affirmed the convergence of results, confirming that, despite challenges, mathematics major students persist in self-directed learning with a positive mindset.

RECOMMENDATIONS

The study recommends prioritizing teacher-student interaction and professionalism to positively influence students' attitudes toward

learning mathematics. Teachers are encouraged to motivate students, be open to feedback, and demonstrate expertise in their professional areas. It emphasizes the need for improvement in the humanistic and justice indicators, prompting teachers to focus on fairness and understanding individual differences to create an inclusive learning environment. Addressing challenges related to teacher characteristics, such as students' understanding of instructions and teacher approachability, is essential. Measures like understanding student attitudes, meeting their needs, and fostering open communication are suggested. The study also highlights the importance of leveraging differentiated insights from mathematics major students to tailor teaching approaches and enhance the overall learning journey. The convergence of quantitative and qualitative data suggests reliability and future studies with different participants or settings are recommended to validate or challenge the conclusions, contributing to ongoing knowledge development in mathematics learning.

REFERENCES

- Ansari, A., Hofkens, T. L., & Pianta, R. C. (2020). Teacher-student relationships across the first seven years of education and adolescent outcomes. *Journal of Applied Developmental Psychology*, 71(4), 1-20. <http://dx.doi.org/10.1016/j.appdev.2020.101200>
- Azjen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Bem, D. J. (1972). Self-perception theory. *Academic Press*, 6(1), 1-62. <http://healthyinfluence.com/wordpress/wp-content/uploads/2011/05/SP-Theory-Bem-Advances.pdf>



- Bruner, J. S. (1960). *The process of education*. Harvard University Press. <https://doi.org/10.1002/bs.3830090108>
- Caglar, C. (2018). The relationship between the perceptions of the fairness of the learning environment and the level of alienation. *Eurasian Journal of Educational Research*, 50(1), 185-206. <https://files.eric.ed.gov/fulltext/EJ1059929.pdf>
- Cohen, J., & Holliday, W. G. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Lawrence Erlbaum Associates. <https://doi.org/10.4324/9780203774441>
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. Los Angeles, Calif: SAGE Publications. <http://dx.doi.org/10.4135/9781483398839.n19>
- Erdik, C. (2018). The relationship between teacher autonomy support and the attitude and anxiety toward mathematics course. *International Education Studies*, 11(6), 109-118. <https://doi.org/10.5539/ies.v11n6p109>
- Haciomeroglu, G. (2017). Reciprocal relationships between mathematics anxiety and attitude towards mathematics in elementary students. *Acta Didactica Napocensia*, 10(3), 59-68. <https://doi.org/10.24193/adn.10.3.6>
- Hanson, W.E., Creswell, J. W, Clark, V. L. P., Petska, K. S., & Creswell, J. D. (2005). Mixed methods research designs in counseling psychology. *Journal of Counseling Psychology*, 52(2), 221-224. <https://doi.org/10.1037/0022-0167.52.2.224>
- Holmberg, B. (1989). *Theory and practice of distance education*. Routledge. <https://files.eric.ed.gov/fulltext/ED386578.pdf>
- Hwang, S., & Son, T. (2021). students' attitude toward mathematics and its relationship with mathematics achievement. *Journal of Education and e-Learning Research*, 8(3), 272-280. <https://dx.doi.org/10.20448/journal.509.2021.83.272>
- Jalbani, L. N. (2017). *The impact of effective teaching strategies on the students' academic performance and learning outcome*. Munich: GRIN Verlag. https://www.academia.edu/download/50348282/v300046_pdf.pdf
- Karatas, N., & Coskun, O. (2019). Examining the relationship between mathematics teachers' characteristics and their attitudes toward teaching using structural equation modeling. *International Journal of Research in Education and Science (IJRES)*, 5(1), 81-97. <https://files.eric.ed.gov/fulltext/EJ1126703.pdf>
- Kennedy, L. (2019). How attitude towards mathematics impact students' achievement. <https://www.prodigygame.com/main-en/blog/attitude-towards-math>.
- Kuper, A., Lingard, L., & Levinson, W. (2008). *Critically appraising qualitative research*. <http://doi.org/doi:10.1136/bmj.a1035>
- Milroy, L., Gordon, M. (2008). *Sociolinguistics: Method and interpretation*. <http://dx.doi.org/10.1002/9780470758359>
- Odeh, D. A., & Amoo, E. O. (2018). Mathematics teachers' pedagogical content knowledge, attitudes, and practices: Implications for mathematics teaching and learning. *International Journal of Education and Practice*, 6(5), 198-208. <https://files.eric.ed.gov/fulltext/EJ1118898.pdf>
- Ostrom, T. M. (1969). The relationship between the affective, behavioural and cognitive components of attitude. *Journal of Experiment Social Psychology*, 5(1), 12-30. [https://psycnet.apa.org/doi/10.1016/0022-1031\(69\)90003-1](https://psycnet.apa.org/doi/10.1016/0022-1031(69)90003-1)
- Peteros, E., Columna, D., Etcuban, J. O., Almerino, Jr., P., & Almerino, J. G. (2019). Attitude and academic achievement of high school students in mathematics under the conditional cash transfer program. *International Electronic Journal of Mathematics Education*, 14(3), 583-597. <https://doi.org/10.29333/iejme/5770>

Rosenberg, M. J. (1968). *Hedonism, inauthenticity, and other gods toward expansion of a consistency theory*.

<https://doi.org/10.1177/001872677602900306>

Sanchal, A., & Sharma, S. (2017). Students' attitudes towards learning mathematics: Impact of teaching in a sporting context. *Teachers and Curriculum*, 17(1), 89-99. <http://dx.doi.org/10.15663/tandc.v17i1.151>

Tufail, S., & Farooq, M. S. (2021). Effect of teachers' professionalism on classroom engagement at primary school level. *Bulletin of Education and Research*, 43(1), 247-254. <https://files.eric.ed.gov/fulltext/EJ1320632.pdf>

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press. <https://www.unilibre.edu.co/bogota/pdfs/2016/mc16.pdf>

Wahlberg, H. J. (1982). Educational productivity: Theory, evidence, and prospects. *Australian Journal of Education*, 26(2), 115-122. <https://eric.ed.gov/?id=EJ271446>

Yaratan, H., & Muezzin, E. (2016). Developing a teacher characteristics scale. *Turkish Online Journal of Educational Technology-TOJET*. 12(1), 623-630. <https://eric.ed.gov/?id=EJ1124401>

AUTHORS' PROFILE



Rico O. Suson is an accomplished graduate with a degree in Bachelor of Secondary Education major in Mathematics from Kapalong College of Agriculture, Sciences, and Technology (KCAST). Notably, his academic life has been shaped by his passion, dedication, and enthusiasm in undertaking research endeavors. As a presenter in various local, national, and international research conventions, his achievements reflect his commitment to scholarly pursuits and his potential to make

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