Gauging the influence of students' social attributes on their mathematics performance

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Abstract: This study explores the influence of students' social attributes on their mathematics performance at Arcelo Memorial National High School to identify interventions for improving academic outcomes. Employing a descriptive correlational research design, 243 students were selected through systematic random sampling, guided by Slovin's formula. Data were gathered using a social attributes checklist and students' second-quarter mathematics grades. Analytical tools included percentage, frequency count, weighted mean, and Pearson's r. Results showed that most students were 13 years old, with an almost equal number of males and females. The majority of their parents were high school graduates, and most families earned a monthly income of Php10, 000 or below. Students' grades predominantly indicated an approaching proficiency level. Social attributes findings revealed neutral perceptions of individual attributes and positive perceptions of social skills and peer relationships. The study concluded that mathematics performance was significantly influenced by social skills and peer relationships, while individual attributes had no direct effect. However, developing individual attributes could enhance social skills and peer relationships. Teachers are encouraged to implement the proposed action plan to improve student performance in mathematics. Further research on this topic is recommended to deepen understanding and support evidence-based strategies.

Keywords: teaching mathematics, social attributes, mathematics performance, descriptive-correlational design, Philippines

1. Introduction

Mathematics is vital for understanding the world around us and advancing several fields such as science, engineering, skills, economics, and even art. It cultivates critical thinking, including problem-solving skills, pattern recognition, analytical thinking skills, and logical reasoning [1], which are vital

in today's modern society. Math learning facilitates human higher-thinking development [2]. Moreover, mathematics provides a universal language that transcends cultural and linguistic barriers [2], enabling collaboration and innovation on a global scale. It is prevalent in real life and fundamental in various fields. Hence, it is important to improve mathematical concepts and skills in students.

Mathematical perceptions and skills are crucial to students in various aspects of their everyday lives, enabling them to identify relationships, grasp patterns, and make future predictions [3]. However, most students across the world dislike mathematics [4]. This claim is a challenge for all mathematics educators to convey the value of mathematics to students. As per the study, math is beautiful, but sometimes it can be hard to see and even harder to convey to students who do not yet share their passion [3]. Despite mathematics being usually applied in real-life situations, many students still consider it a difficult subject [4], [5]. It is important to note that negative viewpoint of students could affect their attitudes toward mathematics, which could also impact their performance unfavorably. According to a study, three factors that make mathematics difficult for students are the students themselves, teachers, and the environment that limits their interaction [6]. It can be observed that unpleasant experiences or perceptions from peers, parents, or teachers can create anxiety and fearfulness towards math, leading to the belief that it is essentially difficult [6]. For this reason, it is necessary to carefully examine those possible reasons that might affect the students' mathematics performance at school [8], [11].

One of the main issues in education continues to be students' performance in mathematics [9]. According to PISA 2022, the Philippines still lags the world in math, reading, and science, and students in the country remain among the weakest in mathematics of entire world [7]. Compared to 81 countries, the Philippines now ranks sixth lowest in mathematics. This is higher than its placement in the 2018 cycle, when Filipino students ranked second lowest in mathematics. Based on the PISA test results, only 16% of Filipino students attained at least the basic or baseline level of proficiency in mathematics (labeled in the report as "level 2 proficiency") [11]. This result implies a terrifying mathematics performance by students in the Philippines. The Philippines' performance in the Program for International Student Assessment (PISA) might be influenced by various trials students encounter in understanding mathematics [10], [12]. These results often reflect the effectiveness of a country's education in equipping students to succeed in a global context. There are resource shortages in many Philippines schools, such as a dearth textbooks, inadequate instructional resources, and packed classrooms. These resource limitations can hinder the effective teaching and learning process [13].

Students in the Philippines need to find ways to improve their arithmetic proficiency to tackle these issues [20]. Asking for help form peers or teachers can be a useful tactic in overcoming these obstacles and help them do better in mathematics classes [14]. In fact, the best sources of encouragement for school participation were found to be teachers and peers [15]. Students can exchange ideas, solve issues together, and share information when they collaborate with peers and teachers [16]. Thus, in addition to resources, students' social attributes should also be considered.

While there are many ways for students to do better in the classroom, social attributes can play a big role in supporting their math performance [17]. As this study aims to explore the significance of the students' social attributes for their performance in mathematics, Grade 7 students can be suitable respondents to help discover the underlying relationship between these two variables. In addition to this, it has been revealed in the previous studies conducted by some of the research scholars who opined that students deal with a critical turning point in their academic careers, with many experiencing declines in their performance as they transition to secondary school [18], [19]. Thus, focusing on Grade

7 learners is predominantly appropriate due to their stage of early adolescence. Understanding how social attributes influence their learning activities, especially in mathematics, during this pivotal period can provide valuable insights for educators and school policymakers in order to craft an appropriate action plan [20].

The researchers also try to find out the correlation between social attributes and the math performance of 7th grade students. In so doing, it looked into the emphasis the significance of considering multifaceted factors that potentially influence and assesse the social attributes and math performance among Grade 7 high school students. Specifically, this paper seeks to answer the following queries:

a. To determine the level of social attributes of the respondents

b. To determine the level of academic performance of the respondents in Mathematics

c. To test the significant relationship between the respondents' social attributes and their mathematics performance

d. To determine what action plan may be proposed

2. Literature review

This section provides a basis for understanding the concepts, related studies, and frameworks that support the study. It situates the study within the existing body of knowledge and highlights the literature stances that inform the research questions, methodology, and interpretation of results. This study is supported by several foundational literature reviews and legal frameworks that influence educational practices. It draws on Vygotsky's Social Interaction Theory [30], which emphasizes the importance of social interactions in cognitive development, and Bronfenbrenner's Ecological Systems Theory [31], which highlights the influence of various environmental systems on a learner's development. Additionally, Bandura's Self-Efficacy and Social Learning Theories [32], provide insights into how students' beliefs in their abilities and their observational learning from social interactions impact their academic performance. The legal framework, Republic Act No. 10533, or the "Enhanced Basic Education Act of 2013," supports the study by emphasizing the need for a holistic and globally competitive curriculum. Figure 1 illustrates the conceptual framework, demonstrating the relationship between these theories, legal bases, the study's dependent and independent variables, and an action plan for resolution.

Bandura [32], defines self-efficacy as an innate potential of an individual to demonstrate behaviors essential to thrive in a particular situation. This theory elaborates that one has an own natural ability to execute things and recognize the consequences along with it. This ability is influenced by those with whom they interact socially and can be explained by Bandura's Social Learning Theory [33], Social Learning theory is the idea that individuals learn through observation, imitation, and modeling. Bandura referred to this phenomenon as observational learning, which asserts that an individual is not always required to have a direct experience in order to learn something. However, this theory doesn't disprove the importance of social interactions in the learning process. Thus, Bandura's self-efficacy and self-learning theories offer broader explanations of how the students learn.

Social interactions are essential for the development of socio-cognitive abilities, information comprehension, and skill acquisition. Social interactionist theory is a social cognitive theory. Engaging in social interactions has been shown to be highly beneficial in helping students structure their ideas,

evaluate their comprehension, and identify any holes in their logic. Vygotsky believed that culture, history, and social interactions play a critical role in the cognitive development of children. He also suggested that the more knowledgeable other is important in guiding the learnings of the learners. The more knowledgeable other could be anyone with a greater understanding of the concept. It could be parents, teachers, or peers. In other words, social interactions have a big impact on mathematics performance because the students are given a chance to share their thoughts with others.

Ecological systems theory, which was developed by Urie Bronfenbrenner, is one of the theories why the researchers conducted this study. This theory states that a person's environment is divided into five different ways: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem. The level of ecological systems theory that has the most influence on a learner is the microsystem. The level of ecological systems theory that has the most influence on a learner is the microsystem. These are the people who have direct contact with the learner, such as family members and friends. The mesosystem involves the relationships between the microsystems in one's life. This means that the experiences of the learner in their family or their environment may be related to their experiences in the school. This theory supported that to mathematics performance, the people around them must get involved.

In the Philippines, an act has been passed to have a better-quality education. Republic Act No. 10533, known as the “Enhance Basic Education Act of 2013,” stated that every graduate of basic education should be an empowered individual who has learned, through a program that is rooted in sound educational principles and geared towards excellence, the foundations for learning throughout life, the competence to engage in work and be productive, the ability to coexist in fruitful harmony with local and global communities, the capability to engage in autonomous, creative, and critical thinking, and the capacity and willingness to transform others and one’s self. This act strengthens the curriculum to become competent globally. It stated that the Department of Education (DepEd) should adhere to the standards and principles in developing the enhanced basic education curriculum. Some of the standards and principles that the DepEd must adhere to are the curriculum shall be learner-centered, inclusive, and developmentally appropriate, and the curriculum shall use pedagogical approaches that are constructivist, inquiry-based, reflective, collaborative, and integrative. To meet the standards and principles, the researchers conduct this study to determine the impact of social attributes on mathematics performance.

There are many factors in the academic performance of the students. One of these factors is the social attributes. According to many studies, personality traits are among the significant factors that influence a student’s academic achievement. Personality influences a student’s academic ability, their achievement, and student’s approaches to learning. This indicates that a student’s personality is an essential component in determining their academic success. Social skills may be defined as socially acceptable learned behaviors that enable a person to interact with others in ways that elicit positive responses and assist in avoiding negative responses [33]; [34].

According to Vygotsky [30], social interactions are not only beneficial but are necessary to acquire new skills and ideas as well. A study identified that there is a significant correlation between the students' mindsets toward mathematics and their learning environment [35].

Positive attitudes toward mathematics are most commonly observed among those students with favorable perceptions of both their teachers and the learning environment. Thus, the development of social skills is one of the most crucial goals of the educational process. Social attributes significantly impact how individuals perform in an educational setting.

Dincă et al. [37] claimed in their study that the social attributes of the students enhance learning interactions, wherein they are actively involved, and this leads them to obtain better academic outcomes. Those students who possess positive social attributes frequently find it comfortable to get along with peers and form meaningful connections within both their social and academic environments. It is therefore essential in the teaching-learning process to have a thorough understanding of each student's social attributes, including their individual, social skills, and peer-relationship attributes.

According to Boninger et al. [38], although attitude is a little thing, it has a significant impact. An individual's character may appear as a minor factor, but it has a profound influence that can be wielded in various aspects of life which include connections, opportunities, and experiences. Boninger et al. [38] did, however, also highlight in their study that having poor attitudes does not determine how a person succeeds. Hence, an individual's success is not defined by their attitudes towards life.

On the contrary, those individuals with pessimistic attitudes may often approach challenges with less motivation and resilience, and this will result in lower levels of effort and persistence. As revealed by Bendanillo et al. [39], students who perform better academically are the ones demonstrating high levels of behavioral, emotional, and cognitive engagement. This positive correlation implies that students who actively participate in learning activities and display positive attitudes toward their studies are more likely to achieve higher academic success. This finding suggests that cultivating a positive attitude could potentially enhance the learning outcomes of students. Apart from this, these beneficial attitudes are usually associated with favorable social skills.

Beauchamp et al. [40], defined social skills as a collection of capabilities acquired by individuals that empower them to interact effectively and appropriately within specific social environments. To greatly improve communication, collaboration, empathy, understanding, and mutual respect for smoother interactions, stronger relationships, increased cooperation, and improved well-being across diverse social settings, it is important to develop one's social skills. Working with individuals possessing diverse mindsets requires social skills that are essential for achieving positive outcomes [41].

Thus, it is important to cultivate these skills in students to encourage diversity and create a positive learning environment.

According to Haneef [42], the social skills of the students have a positive and significant impact on their academics. Also, nurturing these social skills improves student performance in academics while equipping them with tools necessary for success in pursuing their personal or professional career in life. Nevertheless, the research by Sarwer et al. [43] emphasized the complex relations between the interpersonal competencies of the students and their achievement in school. The study implied that an investigation of this context would be necessary in order to better comprehend the underlying mechanisms and potential interventions.

In the study by Adetayo et al. [44], peer groups considerably affect the social, emotional, and academic development of the students. Another research that supports this argument is that peer relationships and academic performance are positively related to each other [29]. These results from different studies also highlighted how influential peer interaction can be in various aspects of students' growth, along with the vitality of recognizing the dynamics within peer groups to promote holistic development and academic achievement.

Students with disabilities placed in an inclusive setting experience difficulties in being accepted by peers, making friends and engaging with peers [45]. Peer problems were associated with lower achievement scores than prosocial behavior [46]. These findings may indicate that students who are

difficult to get along with peers may attain low performance in school.

In Ghana, Dijkstra et al. [46] studied the factors that affect students' mathematics performance in three colleges. Each of the colleges had 50 students. The methodology employed in this research was a survey research design, and it revealed that some of the factors known to be affecting students' performance include a lack of materials as well as teaching strategies. The study also showed that there is an impact on the motivation towards mathematics by teachers and students themselves.

Alordiah [48] studied the impact of students' gender, location of school, and socio-economic status on their academic achievement in mathematics. There were 1900 students from Delta and Edo, Nigeria, who participated in the study. For this study, the Mathematics Objective Test and the Socio-Economic Status Questionnaire (SESQ) were the instruments utilized. The result showed that male students performed better than female students, urban students performed better than rural students, and students of parents with high socio- economic status performed better than students of parents with low socio- economic status.

As per Peters [49], there were distinctions in students' characteristics in mathematics such as attitude, self-efficacy, learning environment, and performance based on learning sessions. The method used in the study was descriptive comparative research design, which involved the use of a three-set survey questionnaire to measure attitudes, self-efficacy, and learning environment. Their average in the first and second quarters in math were utilized to evaluate their academic performance. A stratified random sampling technique was employed to select 204 students who would take part in the study using their learning session as the stratum. Descriptive and inferential statistics were used in analyzing data collected for this study. The results of this study showed that there was a significant difference in mathematics performance when students were grouped according to learning sessions.

In addition, Asante [50] studied the Attitudes towards mathematics and associated anxiety that have been known to plague students with diverse socio- economic backgrounds. The purpose of this study was to investigate senior high students' attitudes towards mathematics and to explore sex differences in attitudes towards mathematics among students, which was composed of 109 boys and 72 girls in Accra. The data was analyzed using SPSS version 16 to calculate the mean, and the results revealed a significant difference in attitudes toward mathematics between boys and girls. This study is anticipated to significantly add to the corpus of knowledge already available on teaching mathematics to young students. Given this, the researchers firmly believe that doing this study will add significant knowledge to the social attributes affecting mathematics performance. Thus, teachers and other stakeholders should promote positive attitudes towards Mathematics.

The study conducted by Andamon et al. [51] centered on the observation of conceptual understanding, attitude, and performance in mathematics among grade seven students at six participating Catholic schools in Valencia City, which are members of the Bukidnon Association on Catholic Schools (BUACS). Data were gathered from 225 students using different tools including teacher-researcher-made test, standardized mathematics test, Likert attitude scales, and demographic profile sheet. The results showed that students' attitudes toward mathematics and conceptual understanding were found to be the best predictors of performance in this subject.

Milloria et al. [52] explored the link between the attitudes and study habits of 177 high school students in Mandaue City, Cebu, Philippines, and their performance in mathematics. The research was conducted through a standardized survey questionnaire that covered socio-demographic profiles, attitudes towards mathematics, study habits, and academic performance as retrieved from the Registrar's Office. As per the result, it was evident that despite students appreciating the value of

mathematics, their confidence, enjoyment, and motivation levels were neutral. Though there existed only minimal correlation between attitudes and academic performance, the perceived value of mathematics showed a weak positive correlation with academic achievement. Also, this research showed how improved students' attitudes toward studying math could potentially increase their educational outcomes in math. This finding indicated that students with positive attitudes toward mathematics are more likely to approach challenges with determination and resiliency. Additionally, students who have established effective study habits like regular practice and organization help them understand and retain mathematical concepts, which eventually improves their overall academic performance on the subject.

The study by Mazana et al. [53] focused on students at 17 schools and six colleges in Mainland Tanzania. They investigated the attitudes of these students toward mathematics and factors that affect their performance as well. They employed the ABC Model and Walberg's Theory of Productivity to study students' attitudes and performances through quantitative and qualitative analysis. 419 were selected from primary school, 318 from secondary school and 132 were from college. Data collection was done through the administration of questionnaires where data analysis included percentages, means, ANOVA, correlation, regression, and thematic analysis. Results showed that there is an initial positive attitude toward mathematics which declines when students advance further with a weak but significant positive correlation between attitude and performance. Thus, enjoyment of mathematics and attitude are also important for better results in math tests.

Apriliyanto et al. [54] examined the effects of social interaction on the mathematics learning achievement of high school students. In order to collect the data, 36 students from grades 10 to 12 at SMA Negeria 1 Wuryantoro were employed as research participants. This investigative study was carried out using a correlational-descriptive approach. The researchers used questionnaires to determine social interaction, while they considered mathematics results documentation for their analysis. The finding of this study implied that social interaction has an effect on mathematics achievement among students.

The relationship between academic performance, particularly in writing and mathematics, and the social abilities of learners was investigated by Bartholomeu et al. [55]. The study concentrated on girls' conversational skills and connection to academic performance in writing and mathematics, while boys' assertiveness was associated with academic performance in these two areas. A total of 196 children aged 8–10 from two elementary schools in São Paulo, Brazil, 52% of whom were girls, participated in the study. The Test of Social Skills in Children and Adolescents in a School Situation (THAS-C), as well as assessments using academic performance tests, which were tests on writing and mathematics, were used to measure these variables. It emerged that enhanced social skills have positive effects on various domains of academic performance.

Li et al. [56] conducted a study on China's largest ethnic minority, the Zhuang adolescents. The study aimed to investigate the mediating and moderating effects of self-efficacy and motivation on peer relationships and mathematical achievement among this group of 596 students, with 293 female respondents aged 13 to 17 years old. With the use of surveys covering peer relationships, self-efficacy, motivation, and the PISA Mathematics (2008) test, the research examined how these factors interrelate. According to the study results, females have higher levels of peer relationships as well as motivation, with a positive influence of peer relationships on mathematics achievement.

The review of literature and findings from other studies relevant to the investigation of the relationships between the Grade 7 students' social attributes and their math performance provides a

solid basis for this study. As revealed by this related literature and previous research, understanding how social attributes impact academic performance determines the scope and emphasis of the study. The insights into individual, social skills, and peer-relationship attributes gained from these existing literature and research findings emphasized the significance of considering multifaceted factors that potentially influence math performance among Grade 7 students.

3. Methods

This section presents the research method, participants, data collection tools, data collection process, and data analysis. This study employed a Descriptive Correlational Research design to investigate the connection between the social attributes of grade 7 students and their math achievement. Descriptive correlation research seeks to understand and predict phenomena by examining the relationship between two variables [25]. It is a non-experimental method to describe variable characteristics and explore their relationships without inferring causality [26]. This design assessed the association between social attributes and academic performance in mathematics within the student group without implying cause and effect. Through data analysis, the study revealed insights into study habits and academic performance within the sample, determining whether these factors are correlated.

Participants were selected through systematic random sampling from the target population of grade 7 students. Slovin's formula was used to estimate the required sample size [28]. The collected data was meticulously organized, summarized, and subjected to statistical analysis using SPSS software, aligning with the study's objectives. Furthermore, the data gathered from these variables were used to test the following null hypotheses:

a. Ho: There is no significant relationship between the respondents' social attributes and their mathematics performance

The study was conducted at Arcelo Memorial High School, a recognized school in the Department of Education, Division of Cebu Province, District of Liloan. Arcelo Memorial High School is located along the road in San Vicente, Liloan, Cebu. The school has undergone several development stages since its existence. Presently, the school has more than a thousand enrollees. Arcelo Memorial National High School students are used to dominating various academic competitions in and out of school, making it known as one of the excellent schools in the district of Liloan, Cebu. These students were chosen as the respondents because they enrolled in math subjects. The profile of the respondents with regards to their age and gender shown in Table 1.

Table 1. Profile of the Respondents

Age (in years)	Female		Male		Total	
	f	%	f	%	f	%
15 and above	3	1.23	1	0.41	4	1.65
14	9	3.70	13	5.35	22	9.05
13	72	29.63	73	30.04	145	59.67
12	37	15.23	35	14.40	72	29.63

Total	**121**	**49.79**	**122**	**50.21**	**243**	**100.00**

It can be observed from table 1 that there were a total of 243 respondents to the study, of whom 145 or 59.67 percent were 13 years old, 72 or 29.63 percent were 12 years old, 22 or 9.05 percent were 14 years old, and lastly, four or 1.65 percent of the respondents were 15 years old and older. As to gender, 122 or 50.21 percent of them were male, and 121 or 49.79 percent were female students. As shown in the above data, this study was participated in mainly by students aged 13 years old, with an about equal distribution between male and female respondents. This data implies that most students of both genders are enrolled in Grade 7 within the typical age range.

The data collected in this study utilized a checklist of social attributes for the research survey. The social attributes checklist, considered as an adapted study [13], is organized into two sections. The first section collects student profiles, while the second includes a social attributes questionnaire. This questionnaire is further divided into three parts: individual attributes (9 indicators), social skill attributes (9 indicators), and peer relationship attributes (11 indicators), totaling 29 indicators. Respondents rated these indicators using a five-point Likert scale: 1- Strongly Disagree, 2- Disagree, 3- Undecided, 4- Agree, and 5- Strongly Agree.

Before the data gathering was conducted, the researchers created essential documents like a letter to the school principal explaining the study and asking for approval. After getting approval, another letter was sent to students, asking for their participation. A checklist about social attributes was also prepared to collect the needed data. Next, in the data collection stage, the respondents and teachers were guided on how to proceed with the study. Students answered the social attributes checklist, evaluating themselves based on the given statements. The researchers and teachers helped clarify questions and encouraged honest answers. Afterward, the students' academic performance in mathematics was collected from their teacher. Finally, in the post-collection stage, the researcher reviewed and organized the data from the checklists and academic records to analyze and interpret the results.

For data analysis, different tools were used. Percentages showed how many respondents belonged to certain categories, while a frequency count tallied the number of respondents with similar profiles. A weighted mean was used to evaluate social attributes, ensuring accurate results by giving different weights to responses. Pearson's r measured how social attributes and math performance were related and checked if the relationship was significant.

The study used a 5-point Likert scale to rate students' social attributes in math class. Scores from 4.21 to 5.00 meant (Very Positive), showing strong agreement with the statements. Scores from 3.41 to 4.20 meant (Positive), showing agreement. Scores from 2.61 to 3.40 were (Neutral), indicating indecision. Scores from 1.81 to 2.60 meant (Negative), showing disagreement, and scores from 1.00 to 1.80 meant (Very Negative), showing strong disagreement.

Students' math performance was rated based on their grades. Scores of 90 to 100 were "Advanced," showing excellent achievement. Scores of 85 to 89 were (Proficient), exceeding expectations. Scores of 80 to 84 were (Approaching Proficiency), meeting expectations. Scores of 75 to 79 were (Developing), falling below expectations, and scores below 75 were (Beginning), showing consistent underperformance. This straightforward approach ensured clarity in evaluating students' social attributes and academic performance, helping to achieve reliable and meaningful results for this study.

4. Results and discussion

This section presents the results of the data gathered from the respondents in which the results composed into three parts: part 1 tackled about social attributes with respect to their individual attributes, social skills attributes, peer-relationship attributes and its summary; part 2 discussed about the mathematics performance; and the part 3 dealt with the test of a significant association between the respondents' social attributes and their mathematics performance. Table 2 revealed the level of social attributes of the grade 7 students in terms of individual attributes with an aggregate mean of 3.40 manifesting of being neutral. This result could indicate that most of them had really prevalent neutral stances toward most indicators under individual attributes. Otherwise, they were just ambivalent, maybe due to a lack of understanding, cultural or environmental influences, or response bias. However, being neutral does not imply a lack of ambivalence [21]. Thus, this finding suggests that further exploration within this context could yield more profound insights. It can be gleaned from table 3 level of social attributes of the respondents in terms of social skills attributes that reflects an over all weighted mean of a 3.69 indicating that most students have the necessary skills to help them interact effectively with others and, thus, thrive socially. It is revealed in table 4 that the level of social attributes in terms of peer relationship attributes have an aggregate weighted mean of 3.67 which directly verbally described as positive. This result indicates that the majority of the respondents are more likely to establish strong relationships with peers.

Table 2. Level of social sttributes in terms of individual attributes

S/N	Indicators	WM	Verbal Description
1	Is usually in a positive mood	3.51	Positive
2	Is not excessively dependent on the teacher, assistant, or other adults.	3.15	Neutral
3	Usually comes to the program or setting willingly.	3.29	Neutral
4	Usually copes with rebuffs adequately.	3.16	Neutral
5	Asserts own right and need appropriately.	3.63	Positive
6	Is not easily intimidated by bullies.	3.61	Positive
7	Does not seem to be acutely lonely.	3.40	Neutral
8	Shows self-confidence.	3.63	Positive
9	Does not draw inappropriate attention to self.	3.20	Neutral
	Aggregate Weighted Mean	**3.40**	**Neutral**

Legend: 4.21-5.00-Very Positive; 3.41-4.20-Positive; 2.61-3.40-Neutral; 1.81-2.60-Negative; 1.00-1.80-Very Negative

Table 3. Level of social attributes in terms of social skills attributes

S/N	Indicators	WM	Verbal Description
1	Approaches others positively	3.66	Positive
2	Expresses wishes and preferences clearly; gives reasons for actions and position.	3.71	Positive
3	Express frustrations without escalating disagreements	3.34	Neutral

	or harming others.		
4	Listens to and respects the ideas of other students.	4.30	Very Positive
5	Displays the capacity for humor.	3.49	Positive
6	Enters ongoing discussion on the subject; relevantly makes contributions to ongoing activities.	3.58	Positive
7	Takes turns fairly easily.	3.52	Positive
8	Can accept feedback from others.	3.77	Positive
9	Participates in academic activities.	3.82	Positive
	Aggregate Weighted Mean	3.69	Positive

Table 4. Level of social attributes in terms of peer relationship attributes

S/N	Indicators	WM	Verbal Description
1	Is usually accepted versus neglected or rejected by other children.	3.20	Neutral
2	Is sometimes invited by other children to join them in play, friendship, and work.	4.00	Positive
3	Is named by other children as someone they are friends with or like to play and work with.	3.95	Positive
4	Can work with others in a cooperative group and let everyone share equally.	3.89	Positive
5	Shows the capacity to empathize.	3.61	Positive
6	Has positive relationships with one or two peers; shows capacity to really care about them, miss them if they are absent.	3.83	Positive
7	Gains access to ongoing groups at play and work.	3.70	Positive
8	Encourages other students.	3.70	Positive
9	Negotiates and compromises with others appropriately.	3.35	Neutral
10	Can ask for help if a problem with another student occurs that they cannot solve.	3.74	Positive
11	Can problem solve when faced with an issue with another student.	3.43	Positive
	Aggregate Weighted Mean	3.67	Positive

Table 5 summarizes the level of social attributes of the Grade 7 student respondents in terms of individual attributes, social skills attributes, and peer relationship attributes with an aggregate mean of 3.59 revealing that they have positive social attributes in terms of social skills and peer relationships but are neutral in terms of individual attributes. Table 6 presents the level of mathematics performance of the respondents with an aggregate mean of 85.38 with a standard division of 5.54 indicating that the majority of them are having a proficiency level in mathematics. This results provides a good indication that most students approach this subject with higher interest to learn.

Table 5. Summary on the level of social attributes of the students

Components	WM	Verbal Description
Individual Attributes	3.40	Neutral
Social Skills Attributes	3.69	Positive
Peer Relationship Attributes	3.67	Positive
Grand Mean	3.59	Positive

Table 6. Level of Mathematics Performance of the Respondents

Level	Numerical	f	%
Advanced	90-100	64	26.34
Proficient	85-89	56	23.05
Approaching Proficiency	80-84	100	41.15
Developing	75-79	23	9.47
Beginning	Below 75	0	0.00
Total		**243**	**100.00**
Mean			85.38
St. Dev.			5.54

Table 7 shows the result of the test of a significant relationship between the respondents' social attributes and their mathematics performance. The results of the statistics show that the respondents' individual attributes with mathematics performance, the correlation coefficient is 0.075, showing a negligible positive correlation. Also, the result shows a p-value of 0.247, which is higher than 0.05. The result suggests that these variables do not significantly relate to one another, thereby not rejecting the null hypothesis. The other two attributes of the respondents, including social skills and peer relationships, when associated with their grades in mathematics, yielded different findings from the individual attributes. When it comes to associating the respondents' social skills with their mathematics performance, the correlation coefficient is 0.189, showing a negligible positive correlation. The finding shows a p-value of 0.003, which is far lower than 0.05. This result suggests a significant relationship between these two variables, thereby rejecting the null hypothesis. In terms of associating the respondents' peer relationships with their mathematics performance, the correlation coefficient is 0.203, revealing a negligible positive correlation. With the computed statistics of a p-value of 0.001, which is very far lower than 0.05, the result suggests that there is also a significant relationship between these two variables, thereby rejecting the null hypothesis as well.

Table 7. Test of the significant relationship between the respondents' social attributes and their mathematics performance

Variables	r-value	Strength of correlation	p - value	Decision	Result
Individual and	0.075	Negligible		Do not reject Ho	Not Significant

Mathematics Performance		Positive	0.247		
Social Skills and Mathematics Performance	0.189*	Negligible Positive	0.003	Reject Ho	Significant
Peer Relationship and Mathematics	0.203*	Negligible Positive	0.001	Reject Ho	Significant

*significant at p<0.05 (two-tailed)

The results of the study revealed various insights into the social attributes and mathematics performance of the Grade 7 student respondents. These findings are discussed in three parts: individual attributes, social skills attributes, and peer relationship attributes, as well as their association with mathematics performance. The level of social attributes among the respondents showed varying trends [20]. As presented in Table 2, the individual attributes of the students revealed a neutral aggregate weighted mean of 3.40. This neutrality suggests that students had ambivalent perceptions of their own individual attributes. Neutral stances on indicators such as independence from teachers, coping with rebuffs, and avoiding inappropriate attention might stem from environmental, cultural, or contextual influences.

Consequently, neutrality does not necessarily imply a lack of ambivalence but may indicate underlying complexities in behavior or perception [21]. This highlights the need for further exploration to uncover deeper insights into this dimension of their social attributes [22]. In contrast, social skills attributes, as shown in Table 3, yielded a positive aggregate weighted mean of 3.69. This indicates that most respondents demonstrated the necessary skills to interact effectively with peers and thrive socially. The high scores in indicators such as respecting others' ideas, expressing preferences clearly, and participating in academic activities suggest that students have developed competencies essential for productive social interactions [23]. Similarly, peer relationship attributes, with an aggregate weighted mean of 3.67 (Table 4), were also rated positively. This result underscores the students' ability to form strong connections with their peers, empathize with others, and work cooperatively [24]. Collectively, these findings suggest that while individual attributes remain neutral, the respondents exhibit positive social skills and peer relationships, as summarized in Table 5.

The mathematics performance of the respondents, as presented in Table 6, reflected an aggregate mean score of 85.38 with a standard deviation of 5.54. The majority of the students demonstrated proficiency in mathematics, with 41.15% approaching proficiency and 26.34% achieving advanced levels. These results suggest that students generally have a strong foundation in mathematics and display a higher interest and engagement in this subject. This aligns with observations that mathematics performance can be influenced by students' motivation and interest in the subject [25].

The test for significant relationships between social attributes and mathematics performance yielded mixed results. Table 7 shows that individual attributes had a negligible positive correlation (r = 0.075) with mathematics performance, with a p-value of 0.247. This result suggests no significant

relationship between individual attributes and mathematics performance, thereby not rejecting the null hypothesis. The neutral stance observed in individual attributes might explain this lack of association, as ambivalence in individual traits may not directly influence academic outcomes [21], [26].

On the other hand, social skills and peer relationships showed significant associations with mathematics performance. The correlation between social skills and mathematics performance yielded an r-value of 0.189 with a p-value of 0.003, indicating a significant yet negligible positive correlation. Similarly, peer relationships and mathematics performance had an r-value of 0.203 and a p-value of 0.001, also indicating a significant but negligible positive correlation. These findings suggest that while the strength of the relationship is weak, the positive associations are statistically significant. The ability to effectively interact socially and maintain positive peer relationships might contribute to collaborative learning and increased motivation, which are critical factors in academic success [11], [15].

The findings emphasize the role of social dynamics in educational settings. Students' social skills and peer relationships are crucial for fostering a supportive learning environment that enhances academic performance [27]. Teachers and school administrators should consider implementing programs to strengthen these attributes, such as peer mentoring, group activities, and social skills training [20]-[28]. Furthermore, the neutral stance in individual attributes calls for interventions to boost self-confidence, independence, and emotional resilience among students. Addressing these aspects holistically can contribute to better academic and social outcomes.

5. Conclusion

This study found that the students' age, gender, parents' educational attainment, and family's monthly income may only have minimal effects on their performance at school. These factors can somehow influence their performance, but they are not considered the leading cause behind students' poor performance in mathematics. Moreover, this study revealed higher performance in mathematics was prevalent among students possessing positive social skills and peer relationship attributes. This finding highlights the need to improve the students' social skills and peer relationship attributes. Although this study revealed that individual attributes are not associated with students' academic performance, it is essential to note that students during a transitional period are more likely to encounter challenges, especially in a new environment with new peers and teachers and new levels of mathematics. This may have something to do with their individual attributes. The students' attitudes and ways of thinking towards anyone around them may influence how they interact with others. Therefore, cultivating the students' positive individual attributes may help them improve their other attributes, such as social skills and peer relations. In this way, they can acquire the positive social attributes necessary to adapt socially, making it easier for them to collaborate with others in the classroom and thus improve their performance in mathematics.

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