

## HIGH SCHOOL STUDENTS' ATTITUDES TOWARDS THE STUDY OF MATHEMATICS AND THEIR PERCEIVED TEACHERS' TEACHING PRACTICES

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**ABSTRACT:** *The study employed a survey to explore 210 high school students' attitudes towards the study of mathematics and their perceptions on their teachers' teaching practices. The sample was made up of 102 males and 108 females who were randomly selected from four high schools in the Cape Coast Metropolis of the Central Region of Ghana. The data were analysed using descriptive statistics, correlation and regression analyses. The findings showed high perceived attitudes reported in the students' interest in doing mathematics, usefulness of mathematics, and confidence in doing mathematics; it was unclear whether students perceived mathematics as a male dominated subject or not. With regards to teachers' teaching practices, all the 3 subscales: use of student-centered approach, classroom management skills and communication skills studied, were reported to be important in influencing students learning of mathematics. However, communication skills adopted by teachers in teaching the subject was perceived as the strongest predictor of high school students' attitudes followed by teachers' classroom management skills. The study concludes that to ensure positive attitudes of students towards the study of mathematics, effective communication and classroom management skills should be integral in mathematics teachers' instructional practices; they should be important goals of any mathematics teacher preparation programs.*

**KEYWORDS:** High School Students, Attitudes, Mathematics, Teachers, Teaching Practices.

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### INTRODUCTION

Mathematics is indeed one of the most useful and fascinating subjects' humans have created and therefore its importance in everyday life cannot be overstated. Githua and Mwangi (2003), stated that life without mathematics is almost impossible and that it would be difficult to live a normal life in very many parts of the world without it. The importance of mathematics is also highlighted by National Council of Teachers of Mathematics (2000) that "those who understand and can do mathematics will have significantly enhanced opportunities and options for shaping their future" (p. 5). Every student must study mathematics during the educational process for their personal development and achievement in today's technological and progressing world. Mathematics has been a prerequisite of access to education worldwide; a good performance in mathematics is one of the basic requirements for further academic and professional advancement in many areas (Younn, 2009). For instance, in Australia, mathematics results are used as a critical filter for higher education and future vocations signaling the great importance the country attach to the subject (Collis, 1987). In Ghana, the situation is not different; mathematics plays a critical filter and gate keeping role in its educational system. Mathematics is a core subject of study in schools right from kindergarten to college level. A failure in Mathematics paper at both basic education level (Basic Education

Certificate Examinations [BECE]) or the senior high school level (Senior Secondary School Certificate Examinations [SSSCE] or the West African Senior School Certificate Examinations [WASSCE] Core Mathematics) organized by the West African Examinations Council (WAEC) denies the candidate progression to the next level of his or her education (Ntow, 2009).

As a result of this, the government of Ghana and other stakeholders in the education sector have introduced a number of initiatives to promote effective teaching and learning of mathematics with the aim of making the subject enjoyable ( Ampadu, 2012). The latest of these initiatives was the review of mathematics curriculum in September, 2010 buttressing the importance the country attaches to Mathematics education. Despite the efforts being made by the country as far as the teaching and learning of mathematics are concerned, all is not well with regards to the achievement of students in the subject. Students' underachievement in mathematics is captured in the reports on the WASSCE, by the WAEC Chief Examiner for core mathematics (WAEC, 2009-2014). For example, the Educational Sector Performance Report which shows the pass rate of students in core mathematics on West African Senior School Certificate Examination (WASSCE) from 2006 to 2012 (excluding 2010) were as follows; 33%, 25%, 28%, 30%, 33%, and 50% respectively (MoE, 2013). In the year 2012, out of 174,461 students who sat for the WASSCE examination in core mathematics in Ghana, only 87,231 passed representing 50%. The situation is not different in 2013 and 2014 as 37% and 32% pass rates were recorded respectively by the candidates (WAEC, 2014).

Several studies and researches done in many countries have identified a number of factors that influence students' performance in mathematics (Carroll, 1963; Love & McVevey, 2001; Ma & Xu, 2004; Mcleod, 1992; Webster & Fisher, 2003). Among these factors, students' attitude towards mathematics is one important factor that has been consistently studied. Often, the studies on relationship between students' attitudes and the students' academic performance show a positive relationship (Bramlett & Herron, 2009; Ma & Kishor, 1997; Mohd, Mahmood, & Ismail, 2011; Nicolaidou & Philippou, 2003; Papanastasiou, 2000). Thus, the literature seems to suggest that attitudes towards mathematics are a major factor that influences the performance of students; Benson (1999) reiterated that students' attitudes determine the effort they put in in learning a subject. He contended that mathematics teachers should strive to sustain students' positive attitudes towards mathematics for good performance. This means teachers, invariably play a vital role in the shaping and forming of the attitudes of students and this is confirmed by literature. For instance, Iwuoha (2001) observed that it was teachers' lack of effective methods of teaching of mathematics that scared the students away from mathematics in his study. Yara (2009) also reported that how teachers behave and how they interact with students can be more paramount than what they teach. He argued that the teacher's attitude and his teaching practices can greatly influence the students' attitudes and performance. Bawuah, Sare, and Kumah (2014) in their study also identified teachers' teaching practices as one of the predominant factors influencing the formation of students' attitudes towards their learning of mathematics.

Thus, following the literature analyses, conducting a study on students' attitudes towards the study of mathematics alone may not be enough to address the issue of low mathematics performance; a clear understanding of teacher instructional practices which influence the formation of attitudes of students towards mathematics is essential. This study therefore seeks to explore not only attitudes of students towards studying mathematics but also teaching practices of their teachers, which influence their attitudes.

The study focused mainly on students from the Senior High School (SHS) (i.e. Grades 10-12 equivalents) and on general mathematics (also known as core mathematics) in particular; which is a compulsory subject for all the students within the category. The study answered the research questions: 1) What are senior high school students' attitudes towards the learning of core mathematics? And 2) To what extent are students' attitudes towards the study of core mathematics influenced by their core mathematics teachers' teaching practices?

This study focuses in particular on mathematics teachers' use of student-centred teaching approach, their communication and classroom management skills as essential measures for the predictability of students' attitudes towards the study of mathematics. Attempts are made to explore the extent to which these parameters differ in influencing high school students' attitudes towards the study of mathematics.

### **Attitudes towards the study of Mathematics**

Numerous reasons have been identified in the literature to be the underlying cause of underachievement among high school students in mathematics (Saritas, & Akdemir, 2009). A key factor discussed in most literature to have great influences on students' achievement in mathematics is students' attitudes towards the subject (Khaliq & Rodrigues, 2012). Farooq and Shah (2008) reported in a study of secondary school students in Pakistan that students' success in mathematics depended on their attitudes towards the subject. Students' beliefs and attitudes were found to have the potential to either facilitate or inhibit learning. Some studies have demonstrated a strong and significant relationship between students' mathematics attitudes and mathematics achievement (Randhawa & Beamer, 1992; Schenkel, 2009). Mwamwenda (1995) also argues that the achievement of students in a subject is determined by their attitudes towards the subject rather than the inability to study. He conceded that the role attitudes play in determining the achievement of any success is remarkable. This therefore suggests that favourable attitudes towards mathematics should be developed by students if success is to be attained.

### **Teachers' Teaching Practices**

According to literature, teachers' teaching practice is probably a major contributing factor to developing students' attitudes toward the learning of mathematics and by extension influencing their academic performance in the subject. In this study, we have classified and discussed the teaching practices that influence the formation of students' attitudes towards the study of mathematics as follows:

### **Mathematics teaching approaches**

Mathematics is learned by doing mathematics (Krajcik, Czerniak, & Berger, 2003; Lindquist, 1990; Oakes & Lipton, 2003); furthermore, learning and understanding mathematics require learners' active participation in mathematics lessons. Gartrell (1998) also noted that students learn more effectively when they are doing and interacting. According to Cobb and Markel (1990), teaching thinking strategies help learners view mathematics as an "activity that is supposed to make sense rather than one that involves memorised rules" (p. 71). Teacher-student as well as student-student interactions are important aspects of teaching-learning process. These interactions among teacher and students as well as among students and students in mathematics help to foster students' learning and understanding of the subject. Johnson and Johnson (1994) stated that if mathematics instruction is to help students think mathematically,

understand the connections among various mathematical facts and procedures, and be able to apply formal mathematical knowledge flexibly and meaningfully, cooperative learning must be employed in mathematics classes.

There have been a number of studies (Agyei, 2013; Agyei & Voogt, 2015; Cannon & Newble, 2000; Hall & Sanders, 1997; Honkimaki, Tynjala, & Valkonen, 2004) that have shown that innovative student-centred approach to learning is very effective for encouraging deep learning and academic engagement and that there is a relationship between student-centred learning and students' attitudes towards the study of a subject. This approach to learning and teaching has the potential to engage a more academically diverse student body than the more conventional teacher-centred approaches (Biggs, 2003, p. 3-4). But in spite of the evidence in favour of this approach, there is growing evidence that student-centred learning is ineffective for around 30% of students (Hockings, 2003; Honkimaki, et al. 2004).

### **Classroom management skills**

Emmor and Evertson (1981) stated that effective classroom management consists of teacher behaviours that produce high levels of student involvement in classroom activities, minimal amounts of student's behaviour that interfere with the teacher's or other student's work, and efficient use of instructional time. Teachers who are effective classroom managers have; planned rules and procedures carefully, systemically taught these to students, organised instruction to maximise student task engagement and success, as well as communicated directions and expectations to students. Teachers who have problems with behaviour management and classroom discipline are frequently ineffective in the classroom. Research from Brophy and Good (1986) showed that the time the teacher has to take to correct misbehaviour caused by poor classroom management skills result in a lower rate of academic engagement in the classroom.

Udofot (1995) explained that while the classroom serves as a theatre stage for learning, the prevailing management and discipline are strong determinants of successful learning and commensurate outputs. This therefore means that a classroom that is out of control yields lower achievement for students and high burnout rate for teachers. His explanation further re-echoes the indispensable role teachers play as classroom managers and determiners of students' success. Relevant studies have indicated that classroom management is directly correlated with student learning and academic achievements (Reinke, Lewis-Palmer & Merrell, 2008). Research findings converge on the conclusion that "teachers who approach classroom management as a process of establishing and maintaining effective learning environments tend to be more successful than teachers who place more emphasis on their as authority figures or disciplinarians" (Brophy, 1988, p.1).

### **Classroom communication skills**

Passing information to others is a primary purpose for communication and people who are effective communicators more likely engage effectively with others (Wright, 2010). A teacher who has a deep understanding of the concept to be taught is more likely to use unambiguous language; his/her presentation is likely to be more coherent and he/she would offer clearer explanation than those with a weaker background (Uya, 2011). In addition, noting the importance of communication in the mathematical process, Kotsiopoulos (2007) pointed out that students' experience interferes when they borrow language from their everyday lives to use in their mathematics world, such that their inability to minimise this interference could

potentially undermine their ability to learn. Based on this point, Adler (1999) suggested that it is important for teachers to set up learning opportunities that encourage students to use mathematical language themselves, so as to better grasp the underlying mathematical meaning of concepts (as cited in Kotsiopoulos, 2007). In the same token, they must remain mindful of their use of vocabulary because they directly contribute to students' understanding or misunderstanding of concepts (Gay, 2008).

A teacher's classroom behaviour is constantly under scrutiny by students. As a result, students learn a great deal from a teacher's nonverbal behaviour as well as their verbal behaviour (Galloway, 1976). A teacher's facial expression, gaze, posture, and other body movements provide the students with valuable information about his or her emotional state, attitudes towards the students, and familiarity or ease with the lesson format. Ramsey (1979) suggested that 'in addition to presenting a lecture. . . by the way she moves, stands, gestures, uses eye contact and vocal inflection, a teacher also tells her class about herself, how she feels towards the subject matter and the very act of lecturing, and how she feels about them' (p. 110). In sum, students determine how a teacher feels about them by observing the teacher's communication behaviours.

## METHODS

### Respondents

A total of 210 second year senior high school students (102 males and 108 females) who were purposively sampled from 4 randomly selected SHS in the Cape Coast Metropolis of Ghana participated in this study. The senior high school system consists of a 3-year programme in which all the students take mathematics as a core subject at all levels. The second-year students were considered appropriate for the study as compared to the first and third years because at the time of data collection, the third-year students were busy preparing for their final year examinations whereas the first-year students were fresh students who had just arrived and so were novices to the senior high school system. The average age of the students was approximately 16years ranging from 11 to 25 years.

### Research instruments

Two questionnaires, Students' Attitudes towards Mathematics Questionnaire (SATMQ) and Students' Perception of Teacher Teaching Questionnaire (SPTTQ) were used to collect data for this study. Both the SATMQ and SPTTQ were adapted from existing tools (Etuk, Afangideh & Uya, 2012) and used to measure the attitudes of students towards the study of mathematics and perceptions of their teachers teaching practices respectively. Thirty-six items of the SATMQ were used to explore the attitudes of the students towards mathematics. Twenty-four of them were selected as high loadings on the extracted factors after an exploratory factor analysis. In all, 4 subscales were used: *interest in doing mathematics* (Cronbach's  $\alpha=0.76$ ), *usefulness of mathematics* (Cronbach's  $\alpha=0.73$ ), *confidence in doing mathematics* (Cronbach's  $\alpha=0.67$ ), and *mathematics as a male domain* (Cronbach's  $\alpha=0.69$ ). Similarly, the SPTTQ generated three subscales from the 25 items on students' perceptions of their teachers teaching practices. They were: *teachers' use of student-centred approaches* Cronbach's  $\alpha=0.71$ ), *classroom management skills* (Cronbach's  $\alpha=0.73$ ), and *communication skills* (Cronbach's  $\alpha=0.69$ ). In both questionnaires, a five-point Likert scale (1 = strongly disagree, 5 = strongly



agree) was used. The scores were interpreted as follows: 1 was the lowest possible score, which represented a negative attitude or perception, while the 5 is the highest possible score which represented a positive attitude or perception of the students.

## RESULTS

### Descriptive statistics

Table 1 shows the descriptive statistics of the various subscales generated from the SATMQ attitudinal scale. As seen in Table 1, the SHS students reported high interest in doing mathematics ( $M = 4.13$ ,  $SD = 0.87$ ); perceive the usefulness of mathematics ( $M = 4.06$ ,  $SD = 0.82$ ); and are very confident in doing mathematics ( $M = 4.49$ ,  $SD = 0.88$ ). The least reported attitude was on the subscale, mathematics as a male domain ( $M = 3.01$ ,  $SD = 1.26$ ). The respondents seem to have discriminated widely on this subscale relative to the others; nevertheless, the result seems to suggest that students were uncertain as to whether mathematics is dominated by males or females. That notwithstanding, the overall attitude ( $M=4.01$ ;  $SD=0.89$ ), given that the

**Table 1: Means and Standard deviations for the various subscales (N = 210)**

Subscale	M	SD
Interest in doing mathematics	4.13	0.87
Usefulness of mathematics	4.06	0.82
Confidence in doing mathematics	4.49	0.88
Mathematics as a male domain	3.01	1.26
Overall attitude	4.01	0.89

Scale: 1=Strongly Disagree; 2=Disagree; 3= Undecided; 4= Agree; 5= Strongly Agree

subscale on 'mathematics as a male domain' after re-scaling was high depicting high positive attitudes of the respondents towards the study of mathematics. Table 2 also reported high perceptions the senior high students held about their core mathematics teachers' teaching practices ( $M=4.57$ ;  $SD=1.19$ ).

**Table 2: Perceptions of students on their core mathematics teachers' teaching practices (N = 210)**

Teaching Practices	M	SD
Student-centred approaches	4.76	1.41
Classroom management skills	4.94	1.20
Communication skills	4.02	0.99
Overall	4.57	1.19

Scale: 1=Strongly Disagree; 2=Disagree; 3= Undecided; 4= Agree; 5= Strongly Agree

The highest reported teaching practice adopted by the mathematics teachers was in their effective classroom management skills ( $M = 4.94$ ,  $SD = 1.20$ ). This was followed by teachers' use of student-centred approaches ( $M = 4.76$ ,  $SD = 1.41$ ) in their instructional practices. Although the least reported was in the teachers' communication skills ( $M = 4.02$ ,  $SD = 0.99$ ), the mean value reported here was still significantly high and depicted a positive response.

### Relationship between students' attitudes and their teachers' teaching practices

The study also sought to explore the relationship between teachers' teaching practices and their students' attitudes towards the study of mathematics. First, the overall attitude was correlated with the overall perceived teachers' teaching practices.

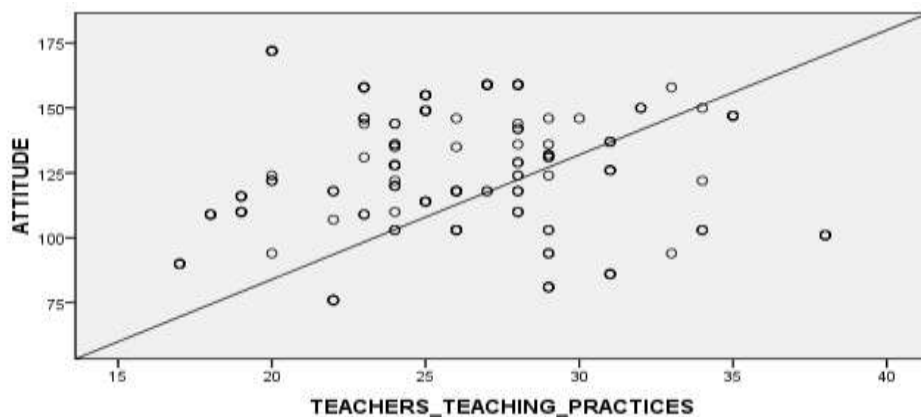


Figure 1: Scatter plot of students' overall attitude and their perceived teachers' teaching practices

The scatter plot shown in Figure 1 depicts a positive but linear relationship between the perceived teachers' teaching practices and attitudes of the students. A correlation analysis confirmed a significant, but weak positive correlation ( $r = .30$ ,  $p < 0.05$ ) between the perceived teachers' teaching practices and students' attitudes towards the subject. Thus, the study seems to suggest that when teachers adopt good instructional practices, the attitudes of their students towards the subject are positive.

Further analyses were conducted to investigate the relationship between students' attitudes and the subscales generated from their teachers' teaching practices. The purpose was to establish which subscale(s) of the teachers' teaching practices correlate(s) with students' overall attitudes. Table 3 provides a summary of the results.

**Table 3: A correlation analysis between student attitudes and teachers' teaching practices (N = 210)**

		Attitude	Classroom Management Skills	Student-Centred Approach	Communication Skills
<b>Attitude</b>	Pearson Correlation	1	.171*	-.028	.216*
	Sig.(2 tailed)	.000	.013	.687	.002

\* Correlation is significant at the 0.05 level (2-tailed)

As displayed in Table 3, correlations were significant and positive between attitudes of students and their perceived teachers' "classroom management skills" ( $r = .171$ ,  $p = .013$ ) as well as "communication skills" ( $r = .216$ ,  $p = .002$ ) at 0.05 level of significance respectively. The correlation ( $r = -.028$ ,  $p = .687$ ) between the perceived teachers' use of "student-centred

approach” in instructional practices and students’ attitudes towards the study of mathematics was found to be very weak and insignificant.

### A predictive model for SHS students’ attitudes towards the study of mathematics

As mentioned earlier, the study has established a significant relationship between students’ attitudes and their perceived teachers’ teaching practices along two subscales: Classroom Management Skills (CMS) and Communication Skills (CS). The study did not show any significant relationship between students’ attitudes and their perceived teachers’ use of the student-centred approach for teaching mathematics. As a result, it was not in the best interest of the authors to include the dimension on ‘teachers’ use of student-centred approach’ of the perceived teachers’ practices in exploring the best predictor of students’ attitudes towards the study of mathematics.

The regression analysis performed therefore included only the two dimensions on CMS and CS to explore how best they fit the model as well as to ascertain the extent of the change in students’ attitudes that were accounted for by each of the dimensions on CMS and CS. The result is presented in Table 4.

**Table 4: Summary of Regression Analysis of teachers’ predictive variable (CMS and CS) on student attitudes**

Subscale	Co-efficients			F-test	
	Unstandardised	Standardised	Sig	F	Sig
Intercept	128.088		.000	9.551	.000
CMS	.597	.209	.004		
CS	1.552	.384	.000		

*Significant at  $P < 0.05$ ; Multiple  $R=0.349$ ,  $R^2=0.122$ , Adjusted  $R^2=0.109$*

As shown in Table 4, approximately 12.2% of the variation in the change of students' attitudes towards the study of mathematics is explained by the variations in teachers' CMS and CS. The F-test [ $F(2,207) = 9.551$ ,  $p < 0.05$ ] associated with the independent variables (CMS and CS) were significant indicating that CMS and CS predict students’ attitudes which is the dependent variable. According to the standardised coefficients the regression model is given by:

$$Attitudes_{positive} = .209CMS + .384CS.$$

This indicates that CS appear to be a stronger predictor of student attitudes compared to CMS based on the model. Thus, though CMS and CS are both predictors of students’ attitudes, the study has shown that the impact of CS is more pronounced on the attitudes of students in studying mathematics.

## DISCUSSION

The study sought to explore SHS students’ attitudes towards the study of mathematics. The results showed a positive attitude reported in the students’ high interest in doing mathematics. This is not consistent with results of a similar study conducted by Awanta (2009), in a similar context; it was revealed that students’ interest in solving mathematical problems, performing mathematical calculations and attending mathematics classes all dropped substantially when



students moved from junior to senior high school. The participants in this study also reported that mathematics is a useful subject, a view shared also by Eshun (2000) in his study to explore sex differences in the attitudes of secondary students towards mathematics. Eshun's results show that students who showed interest in doing mathematics saw mathematics as useful, had success in doing mathematics and had less anxiety in mathematics. The current study also showed that SHS students had confidence in doing mathematics. In relation to this, Hannula, Evans, Philippou and Zan (2004), in their longitudinal study on self-confidence indicated that the study of mathematics is influenced by the student's mathematics related beliefs, especially self-confidence. There are many studies which suggest that gender has an important part to play for success in mathematics among high school students (Fennema & Sherman, 1976; Badger, 1981; Galbraith & Haines, 2000). Nevertheless, this study reported that students were uncertain as to whether mathematics is dominated by males or females. This result did not align with the general perceptions and findings of many researches which show that mathematics is a subject for males and as such males perform better than females (Beswick, 2007). There may be the need for a further study to be conducted in the same or similar context to investigate this issue much better.

The study also explored what students' attitudes towards studying mathematics are influenced by their teachers' teaching practices. It was intriguing to know that mathematics teachers of the students who took part in the study use mostly student-centred approach of teaching in the classroom. However, the study reported an insignificant correlation between students' attitudes and their perceived teachers' use of student-centred approach as an instructional practice. This is not in line with multiple studies (Cannon & Newble, 2000; Hall & Sanders, 1997; Honkimaki, Tynjala, & Valkonen, 2004) which have been able to show a consistent relationship between teachers' use of student-centred approach as an instructional practice and students' attitudes towards the study of mathematics.

Furthermore, the study reported high perceived positive mathematics teachers' classroom management skills in controlling the behaviours of students in the mathematics classroom. Consequently, a positive correlation existed between students' attitudes towards the study of mathematics and their teachers' classroom management skills. This confirms numerous studies (Blazar & Kraft, 2016; Orji, 2014; Reinke, Sprick & Knight, 2009; Reinke, Lewis-Palmer & Merrell, 2008) that have indicated that classroom management is directly correlated with student learning, attitudes and academic achievements. Many of such studies (Brophy 1988; Brophy & Good, 1986; Emmor & Evertson, 1981; Jones, 1995) have established that classroom management using an authoritarian or punitive approach did repress disorderly behaviour, but did not foster students' growth or allow the acquisition of more sophisticated modes of learning, such as critical thinking and reflection.

Another instructional practice which received favourable responses from participants of the study was the perceived teachers' communication skills. Students retorted that their mathematics teachers demonstrated good communicative skills in teaching the subject. Further analysis also showed a positive correlation existing between students' attitudes towards the study of mathematics and their teachers' communication skills. This has been reiterated by Etuk, Afangideh and Uya (2012) who asserted that teachers' communication skills and students' attitudes towards mathematics indicate a significant relationship. The finding is also shared by Afangideh (2001) that, the purpose of communication in the teaching-learning process is to effect change, to produce a desired response; or to influence action contributing to the welfare of the school system.

Finally, from the regression analysis, the results confirmed other studies ((Brophy, 1987; Mojavezi, Tamiz, 2012) that the two subscales on teachers' communication skills and classroom management skills are essential in predicting students' learning and attitudes towards the study of mathematics.

### **Practical implications**

Several implications for professional development for mathematics teachers can be inferred from this study. The results of this study indicate that increasing mathematics teachers' use of good communication skills and classroom management skills will enable students to develop positive attitudes towards the study of the subject. Teacher education institutions need to include courses on pedagogical issues related to effective use of communication and classroom management in their curriculum. In this way, prospective teachers' competencies in these areas will be enhanced and their experience to integrate them in their future classes will increase. This will ensure that trained teachers are sufficiently prepared on how to develop positive attitudes in the study of mathematics in their future students. In order to support government efforts, other stakeholders in education such as the Parent Teachers Association, School Management and Boards must also put priority on these two skills by supporting the provision of in-service training programmes for practicing mathematics teachers on how to communicate and manage their classrooms during their instructional practices for improved results.

### **Limitations and further research**

This study was not without some limitations. The fact that findings from a sample of SHS 2 students have been used is a limitation for the generalisation of the findings. Although the second-year senior high students were the most convenient for the study, involving SHS1 and 3 students in the study could have enhanced the extension of the findings and the conclusions. Again, the study which was conducted with only the SHS 2 students from the Cape Coast Metropolis of Ghana provides no evidence to shed light on whether the findings of this study reflect the situation in the whole country and different context.

### **CONCLUSION**

The purposes of the study reported here were achieved in the modification and adoption of some measures on: attitudes, perceptions, teaching practices and the influence of teaching practices on students' attitudes towards mathematics. The following conclusions could be drawn from the findings of the present research. In line with senior high school students' attitudes towards the study of mathematics, it was realised that, students have interest in doing mathematics; students found mathematics to be a very useful subject; and students were confident in doing mathematics. The study confirmed that mathematics teachers' use of student-centred approach in teaching does not influence SHS students' positive attitudes towards the study of the subject although it is a predominantly used teaching method in Ghanaian SHSs. The study further confirmed that mathematics teachers in the senior high schools use good classroom management skills and good communication skills in their instructional practices and these two are major factors that contribute to SHS students' positive attitudes towards the study of the subject. However, teachers' use of good communication skill is reported the stronger predictor of students' positive attitudes towards the study mathematics.

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