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What is happening in Ghanaian Junior High School mathematics classrooms?: A look at students' perception

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Abstract
In recent times, there has been public outcry about students' poor performance in mathematics in Ghana. Since available literature is replete with the fact that students' perception of their mathematics classroom environment influences their participation in classroom activities and hence their mathematics achievement, this study was designed to examine how junior high school students perceived their mathematics classroom learning environment. A total of 350 eighth and ninth graders (i.e., junior high school forms two and three students) from four public and two private schools in a metropolitan community in southern Ghana participated in the study. The study adapted the *What is Happening in This Class (WIHIC) questionnaire,* a questionnaire designed to measure students' perception of their classroom environment on four different subscales. The results revealed that, though in general, the perception of students were positive, ranging from sometimes to often, that of the public school students were relatively more positive than their private school counterparts in each of the subscales. Implications of this are discussed and recommendations for classroom teachers and future research are also presented.

Key words: Students' perception of their mathematics classroom learning environment, Students' cohesiveness, Teacher equity, Teacher support, Students' involvement, Cooperation among students.

Introduction

Mathematics has played a strategic role in the development of humanity and it has always assumed a significant and unique role in many societies throughout history. Human beings have felt the indispensability of mathematics since they started to become aware of

their environment. Mathematics is also perceived by many to be difficult and demanding. This notwithstanding, the pervasive role of mathematics is sometimes underestimated in both the world of work and everyday life (Hatfield, Edwards, & Bitter, 1997). Some have even considered a lot of the mathematics learned in school to be irrelevant, unnecessary and unrelated to the mathematics students will encounter in their professional and personal lives (Hatfield, Edwards, & Bitter, 1997).

In spite of such viewpoints, mathematics continues to be seen as one of the most important subjects in the school curriculum as a result of its many applications, though, according to Eshun (2004), it continues to be the most fearsome subject in the school curriculum. A number of studies conducted to understand this state of affairs have focused on the influence of learning environment on students behaviour, as well as the teaching and learning process (see Fraser, 1998, 2007, 2012; Webster & Fisher, 2003; Taylor, 2004). For instance, in a study involving 620 teachers and 4,645 students from 57 Australian secondary schools Webster and Fisher (2003) reported that the way in which curriculum is presented by teachers is directly proportional to how the students perceived the learning environment at the school level.

Fraser (2001) had earlier reported that students spend approximately 20,000 hours in classrooms by the time that they graduate from university, a time long enough for their learning outcomes to be influenced by the learning environment. On this basis, we posit that since the mathematics classroom is made mainly of interactions between students and their teachers and among students themselves and the way these interact with available resources, in studying the influence of learning environment it is necessary to focus also on students' perception of teacher-student relationship. This is the point Fraser, (1998, 2007, 2012) emphasizes as he argues that the classroom learning environment includes not only the physical space, but also the social, psychological and pedagogical contexts in which learning and teaching occur, and which in turn influence students' affective and cognitive outcomes. He further explained classroom environment as involving the shared perception of the students and teachers in a particular environment; a point also shared by Taylor (2004). To be more specific about the how students' perception of teacher-student relationship influenced their learning, Brekelmans, Sleegers and Fraser (2001) reported from their investigation that

stronger perception of the influence of teachers increased according to the degree to which teachers got their students to be involved in the classroom activities.

Other studies, conducted in countries from Brunei to Australia, have identified associations between students' affective outcomes and their perception of their mathematics classroom learning environments (see Fraser, 1998). In addition to investigating the relationship between students' cognitive and affective outcomes in mathematics and their perception of their classroom learning environments, previous research (e.g., Benchaim, Fresko & Carmeli, 1990) also found that teachers and students perceive the same mathematics classroom learning environments differently. We contend that such lines of studies are important because students' perception of their mathematics classroom environment have the potential of affecting their attitudes towards the subject. Furthermore, it can be argued that any unfavourable students' attitudes about mathematics would in turn have negative impact on the mathematics they learn.

Gender and grade level differences in students' perception of their classroom environment have also been identified (see Goh & Fraser, 1998; Khalil & Saar, 2009). For example, Goh and Fraser (1998) found that girls in their study generally perceived their classroom learning environments more favorably than boys did. It is also clear that students at different grade levels also perceived their classroom learning environments differently. This is the point Khalil and Saar (2009) made when they reported that Grade 6 students perceived their classroom learning environments less favourably than did Grade 5 students, as the former needed to prepare themselves for junior secondary school learning.

The foregoing points to a strong indication that classroom learning environment has a crucial role to play as far as students' outcomes such as achievement are concerned. The way the classroom environment is organized is, therefore, a crucial factor in determining students' achievement or performance. Taylor (2004) had earlier made this point when he pointed to investigations into possible connection between mathematics and learning environments as a future research concern.

Such a call by Taylor (2004) is important for Ghanaian researchers considering how the low levels of achievement currently observed in the nation's basic schools has led to a number of concerns

among the public (Acquaye, 2010; Gadugah, 2011), as well as low performance of Ghanaian eighth graders in international examinations such as Trends in International Mathematics and Science Study (TIMSS) (see Anamuah-Mensah, Mereku, & Asabere-Ameyaw, 2004; Anamuah-Mensah, Mereku, & Ampiah, 2008).

It is our opinion that one of the ways of addressing such low achievements in mathematics in Ghana's basic schools is by focusing on the conditions or circumstances within the school/classroom that promote effective teaching and learning. This is due to that fact that literature so far reviewed in this paper is replete with the fact that students' perception of their mathematics classroom environment influences their participation of their classroom activities and hence their mathematics achievement.

It is in the light of the aforementioned considerations that this study was designed to determine how junior high school students in Ghana perceive their mathematics classroom learning environment. At the time of the study, private sector participation in the establishment of basic schools (from Kindergarten to the ninth grade) in Ghana was high. It is not known whether any differences in students' perception of their classroom learning environment between students in the public and private school systems. Consequently, this study was designed to also investigate whether any differences existed in perception of basic school students from public and private schools of their mathematics classroom learning environment. Finally, in Ghana, like in many other countries, a form of common core mathematics is compulsory for all students at the pre-tertiary level of the educational system. It is our hope that findings and recommendations from this study, could point to possible changes to be made in the classroom learning environment to enable students find mathematics classrooms favourable; something that has the potential of improving the performance of students at the junior high school level who would, otherwise, have disliked the subject but are compelled to grind at it with the rest of their colleagues.

Research Questions

The study focused on the following two research questions:

1. What are the junior high school students' general perception of their mathematics classroom learning environment?

2. What is the junior high school students' perception of their mathematics classroom learning environment based upon school-type?

Procedure

The study was conducted at the Junior High School (JHS) level of Ghana's educational system. The JHS level was used for one main reason. According to Wilmot and Wilmot (2013), Ghana is a multilingual country with over 40 indigenous languages spoken within its boundaries. Unfortunately, none of these languages is used as the medium of instruction in schools in Ghana. Instead, English language, the language of its colonizers, is used as the medium of instruction from Primary class 4 (i.e., the Grade 4). As at the time of this research a transitional bilingual policy was implemented at the Basic school level in which teachers were allowed to use the local languages for instruction from KG to Primary class three while English language was studied as a subject. Students most proficient in English at the basic school level were, therefore, those at the JHS. Since the study involved getting students to articulate their perception of their classroom environment, the decision was made to use the JHS level as the research site.

Next, a decision was also made to use schools in a metropolitan community in Southern Ghana (the name of the community is withheld to ensure anonymity). This community is traditionally endowed with several good schools. As a result, within the schools in this community, there was the likelihood of getting students with backgrounds much spread across the country. Therefore, within the constraints of financial constraints that did not permit selecting schools across the country, schools within this metropolitan community were was used.

At the time of the study, there were eighty-five junior high schools comprising twenty-six private and fifty-nine public schools, in the chosen community. Out of this, six, comprising four public and two private schools, were selected at random for the study. In each of the selected schools the JHS 2 and 3 classes (i.e., grades 8 and 9) were used for the study. Thus, from the six selected schools, twelve intact classes were selected using convenience sampling method. Students from these two classes, having had the most experience (i.e., the longest stay) at the basic school level, were considered the best group to provide responses that could help understand the mathematics classroom learning environment in Ghana at that level.

In all, 350 junior high school students were selected to participate in the study. One hundred and forty-one (141) of these, representing 40.3% of the entire participants, were from the private schools while 209, representing 59.7%, were from the public schools. The age distribution of the respondents ranged from 12 to 20 years with an average age of 15.08 years and a standard deviation of 1.51. Table 1 summarises these characteristics of the sample used for the study

Table 1: Background Characteristics of the Participants

Class/ Grade Level	Number of participating students		
	Private Schools	Public Schools	Total
JHS 2	60	89	149
JHS 3	81	120	201
Total	**141**	**209**	**350**

Instrument

Fraser (1998) described nine major research instruments for assessing student perception of classroom psychosocial environment. These included 1) the *Learning Environment Inventory*, 2) *Classroom Environment Scale*, 3) *Individualised Classroom Environment Questionnaire*, 4) *My Class Inventory*, 5) *College and University Classroom Environment Inventory*, 6) *Questionnaire on Teacher Interaction*, 7) *Science Laboratory Environment Inventory*, 8) *Constructivist Learning Environment Survey* and 9) *What Is Happening In This Class*, and reviewed how these instruments had been used in a good number of earlier studies.

Since the focus of this study was to understand what is happening in the junior high school mathematics classrooms in Ghana by investigating students' perception of their mathematics classroom environment, the *What Is Happening In This Class* instrument (abbreviated in this report as WIHIC) originally adapted by Ntow (2009) was used as the mathematics classroom learning environment inventory instrument for this study. As Ntow (2009) puts it,

> 'since the items on the Fraser (1998) WIHIC scale were developed based on a culturally different context of the countries in which they were used, the adaptation involved modifying some of the items on it to reflect the Ghanaian culture and make the items more understandable to the respondents" (p. 36-37).

For instance, in the Ghanaian cultural context an item such as "my mathematics teacher takes interest in me" in original item on the WIHIC instrument was modified by Ntow (2009) to read "my mathematics teacher maintains a healthy student-teacher relationship with me even after his/her lesson has ended" since the original formulation could be misinterpreted by Ghanaians to mean a teacher having an amorous relationship with a student.

In addition to rewording items to reflect the Ghanaian context, the modified version of the WIHIC instrument used in this study had five subscales (i.e., a reduction in Fraser's original seven subscale after our pilot) with each subscale having eight items; bringing the total number of items on the instrument to forty. A detailed description of the five modified WIHIC Subscales are presented in Table 2.

Table 2: Description and Sample Scale in the Modified WIHIC

Subscale	Description	Sample Item
Student Cohesiveness	Extent, to which students are friendly to, and supportive of each other.	I am a friend to members in my mathematics class.
Teacher Support	Extent to which teacher helps, relate to and show interest in their students	My mathematics teacher listens to and accepts my comments on how he/she teaches
Involvement	Extent to which students have attentive interest, participate in discussions and explain their solutions	My ideas and suggestions are used during mathematics classroom discussions
Co-operation	Extent to which students are prepared to help each other rather than compete with each other selfishly	In my mathematics class there is high competition among us which leads to selfishness.

Equity	Extent to which students view the treatment they receive from the teacher to be equitable	My mathematics teacher treats me the same way he/she treats other students in this class.

In addition, the modified version of the questionnaire was constructed using a five-point Likert-type response scale to indicate the degree to which students agreed with each statement made: (1) Never; (2) seldom; (3) Sometimes; (4) Often; (5) Always. In other words, a value of 5 indicated that the classroom practice being measured takes place almost on a regular basis while a value of 1 was interpreted as junior high school students perceiving the classroom practice to hardly take place. Furthermore, a five-point Likert-type response was adopted to ease interpretation of the results.

Validity and reliability of instrument

To ensure face-validity the modified version of the WIHIC instrument used for the study was subjected to review by two Ghanaian Mathematics Education Professors who were very familiar with the Ghanaian context and also engaged in related research involving the mathematics classroom learning environment. In addition, three experienced junior high school mathematics teachers were also given the instruments to review independently. Suggestions from these five reviewers were later used for drafting of the instruments before piloting. Following the review and final draft, the instrument was piloted in two schools (one public and one private) in a nearby district with similar characteristics as those that were used for the actual study. On the whole, fifty-eight junior high school students, comprising 30 males and 28 females, from four intact classes (i.e., the JHS 2 and 3 of each school) were involved in the pilot. Data from the pilot was analysed by computing inter-item correlations. Based upon the inter-item correlation, some of the items were modified.

To determine the extent to which items in the various subscales was related to each other, reliability estimates using Cronbach's alpha, was calculated for each subscale. Since Cronbach's alpha is a measure of internal consistency, (i.e., how closely related a set of items are as a group), and the instrument comprised a set of items as a group for each subscale, Cronbach's alpha was considered to be an appropriate measure of reliability to use for each subscale. Table 3 shows the

reliability estimates obtained for each of the five subscales of the modified WIHIC instrument used for the study. As Table 3 reveals, the Cronbach's alpha reliability coefficients for the subscales ranged from 0.62 to 0.91. These values were taken to be good since they showed that within each subscale, the items had shared covariance and fairly measured the same underlying concept.

Table 3: Reliability Estimates of the Subscales on the WIHIC instrument

Subscale	Reliability Estimate	No. of Items
Student Cohesiveness	0.75	8
Teacher Support	0.86	8
Involvement	0.79	8
Co-operation	0.62	8
Equity	0.91	8

Analyses of Data

Two research questions guided this study. As a result, data analysis has been done in respect of each of the research questions separately. To do this, data obtained from the students in this study were scored for individual students after which individual item means and overall subscale means were calculated, first without the school-type and later aggregated for each school-type. In addition, on the five-point scale, the response coded 3 is the central value. On this instrument in particular, it is the code of the "Sometimes" response since a response of "Sometimes" does not indicate whether the respondents had a positive or negative perception of their mathematics classroom learning environment. Consequently, responses or averages more than 3 would be taken as positive while those less than 3 would be interpreted to correspond to negative perception. Thus, in the analysis of data from this study, the "Sometimes" response, which was coded 3, served as the average and this was used to determine the direction of students' responses; with an average score below 3 in these analyses being interpreted as negative perception while that above 3 was interpreted as positive.

Analysis of data related to research question one

One of the major aims of the study was to explore junior high school students' perception of their mathematics classroom learning environment. As a result, the first research question that guided the

study was: "*What are the junior high school students' general perception of their mathematics classroom learning environment?*" Item mean scores were used to describe how the research participants perceived their mathematics classroom learning environments in this study. These mean scores were obtained by dividing the subscale mean score by the number of items in each subscale. The average item mean provides a meaningful basis for comparing subscales that contain different items on the WIHCI instrument used for the study. Table 4 summarizes the mean perception (and their coded scores on each subscale) of all the 350 participants in the study.

Table 4: Junior High School students' general perception of their mathematics classroom environment.

Subscales	Mean	Std. Deviation
Students' Mean rating of equity	4.16	0.55
Students' Mean rating of teacher support	3.99	0.61
Students' Mean rating of their cohesiveness	3.79	0.64
Students' Mean rating of their involvement in lessons	3.74	0.69
Students' Mean rating of their cooperation in class	3.15	0.54

These mean scores range from 3.15 to 4.16, indicating that, for all subscales, the junior high students surveyed perceived that in their mathematics classroom learning environment they experienced the phenomenon asked about between "sometimes" and "often". In other words, though they generally perceived their mathematics classroom learning environments as positive, not all the aspects were perceived as "always" positive. Also, the relatively small standard deviations also implied that the variability among students' perception on all the subscales were quite small.

The item mean score for Co-operation was the lowest among the five subscales at 3.15, (which approximates to 3.0 to the nearest whole number) indicating that students perceived that they "seldom" or at best "sometimes" got opportunities to cooperate with their peers in their mathematics classes. In other words, participants indicated that in general, they sometimes (not even often or always) carry out mathematics inquiry activities in their mathematics classroom learning environment, such as agreeing with each other as to the solutions,

mathematics related activities, and explanations to mathematical problems rather than compete with one another on the learning task. The items mean scores for Student Cohesiveness and Involvement, all of which were above 3.50 suggesting that participants perceived that they less than "often" know themselves, are friendly to one another and most importantly, supportive of each other as well as pay attention, participate in class discussions and explain their solutions in their mathematics classroom learning environment.

The item mean scores for Equity and Teacher Support recorded, were 4.16 and 3.99 respectively, were the highest in the study. This suggests that on these two subscales, participants perceived that they often received help from their mathematics teacher, and viewed this treatment they received from them as equitable.

Analysis of data related to the second research question

Next, in order to determine whether junior high school students in the public school system had a different perception of their mathematics classroom learning environment than their counterparts in the private school system, a second research question was formulated to guide the study as follows; "*What is the junior high school students' perception of their mathematics classroom learning environment based upon school-type*?"

As was done in the case of the analysis of the first research question, mean ratings for each of the subscales were computed and used to understand how respondents perceived their mathematics classroom learning environments in this study but this time based upon their school-type. That is, participant were grouped based on their school-type (i.e., whether they were in a public or private school). Table 5 summarizes the mean scores for each subscale obtained with respect to the students' mean rating based on their school type.

Table 5: Junior High School students' perception of their mathematics classroom environment based on School-Type.

Subscales	Private (N = 141)		Public (N = 209)	
	Mean	S.D	Mean	S.D
Student Cohesiveness	3.70	0.60	3.80	0.60
Teachers Support	4.00	0.60	4.00	0.60
Involvement	3.60	0.70	3.80	0.70
Co-operation	3.00	0.60	3.20	0.50
Equity	4.00	0.60	4.20	0.52

A cursory look at Table 5 reveals that in general, the junior high school students who participated in the study from the different school-types perceived their mathematics classroom learning environment to be positive in terms on all five subscales. However, students from the public school system generally perceived their mathematics classroom environment slightly more positively than the private school students on each of the subscales except on "teacher support". In terms of the order, from the most perceived to the least the order of rating was the same among students in both the public and private school system. For instance, the public junior high school students perceived Equity as the most positive followed by Teacher Support, Student Cohesiveness and Involvement, and Cooperation in that order. Similarly, students in the private schools, also perceived Equity and Teacher Support as the most positive, with Student Cohesiveness, Involvement and Cooperation following in that order.

Thus, the participating junior high school students were from the various school-types, they were unanimous in perceiving the Equity and Teacher support subscales as the most positive and the Involvement and Co-operation Subscale as the least positive.

Discussion of results

As already discussed, this study used an adapted and shorter version of WIHIC Questionnaire to investigate how junior high school students in a metropolitan community in Southern Ghana perceived their mathematics classroom learning environment. The item mean scores for the questionnaire's five subscales were all close to 4 and in a few cases slightly above 3. These findings are consistent with scores reported in previous studies conducted in other contexts (e.g., Afari,

Aldridge, & Fraser, 2012; Opolot-Okurut, 2010). This finding that, generally participants perceived their mathematics classroom learning environment as positive in all of the five subscales, is also in line with the findings of Koul and Fisher (2005) and Taylor (2004) among others. Also, the high positive rating for Equity and Teacher support in both school-types is an indication that irrespective of the school type, participants perceived that they received equitable treatment from and were supported well by their respective mathematics teachers. Even with the subscales of Involvement and Cooperation which are the least positively perceived subscales, the positive perception gives an indication that, the students from both the private and public schools are sometimes involved in their mathematics lessons and are sometimes friendly to or supportive of each other though they are from different school types.

This notwithstanding, it must be said that the relatively lower mean ratings for the subscales of *Involvement* and *Cooperation* implies that in terms of their mathematics classroom learning environment, the areas participants had the least perception of were the aspects of being involved in their mathematics lessons (i.e., *Involvement)*, as well as being given the chance to cooperate with their classmates during mathematics classes (i.e., *Cooperation)*. Again, Cooperation being the least perceived positive subscale imply that participants feel that they are seldom given the opportunity to help one another in learning in class rather than compete with each other on a learning a task. These issues of Involvement and Cooperation are important because literature is replete with the fact that providing opportunities for students not only to participate or get involved in their lessons but also to work together with their classmates, both their individual learning and their learning outcomes could be improved (see for instance, Johnson & Johnson, 1989, 2009; Race, 2005; Hermann, 2013). As if to highlight the importance of the subscale of Involvement, Race (2005) has argued that one of the crucial factors supporting successful learning is involving students in class by making them to "do". Hermann (2013), on the other hand, has emphasized the importance of Cooperation, by explaining that when students are allowed to work together in groups they are likely to develop shared learning goals and come to positively depend on the actions of the group for their individual success. According to her, such positive interdependence is characterized by "students encouraging and helping each other to reach their goals, students giving

each other feedback, students challenging each other's conclusions and reasoning, and students taking the perspectives of others to better explore different points of view" (Hermann, 2013, p.1); processes which we argue are vital to improving students' learning outcomes.

Conclusions, Implications and Recommendations

Three major conclusions are drawn from this study. In this section, these conclusions have been drawn and their implications discussed. In addition, recommendations related to each of the conclusions have been made. However, before taking each of the conclusions, it must be emphasized that this study was limited to junior high school students in a metropolitan community in Ghana. Further research is needed on a large scale to cover more communities in Ghana. Replication of this study at the Kindergarten to Primary, as well as the Senior High School levels is also recommended.

First, it can be concluded that, with the exception of the subscale of *Teacher Support* which were rated equally by students of the two school types (i.e., private and public schools), students from the participating public schools rated their classroom environment marginally better than their counterparts in the private schools on four out of the five subscales of focus in the study. However, where there were differences, the differences in ratings were negligible. For instance, on the subscales of *Cooperation, Involvement*, and *Student Cohesiveness*, where ratings were below 4 (which interpret as occurring only occasionally) the two groups were in agreement. As a result, we hesitate to read meanings into the marginal differences in ratings and conclude that irrespective of school type, students who participated in the current study had similar perception of their mathematics classroom environment. Since the number of schools use in the study was not that large (i.e., four public and two private schools), further research on a larger scale is recommended to see if differences would be observed as the sample size of schools is increased.

Second, the participating junior high school students' perception of their mathematics classroom learning environment was found to be positive on each of the surveyed subscales of *Equity, Teacher Support, Cohesiveness, Involvement*, and *Cooperation*, irrespective of the students' school-types. The implication of this is that students perceive that there is more room for improving their mathematics classroom environment. As has been discussed, these five

subscales are essential in looking at the mathematics classroom environment because the extent to which they prevail in the classroom may be a measure of how students perceive their legitimate participation in lessons. For instance, a classroom where teacher *support* is perceived highly by students is that type of classroom where students value the help the teacher gives them and the extend to which the teacher shows interest in their learning. We argue that in such classrooms students will be free and willing to give feedback on how their teacher works with them and this could in turn influence how students learn mathematics and their learning outcomes. It is, therefore, recommended that mathematics teacher educators build into their training programmes effective ways of improving the mathematics classroom environment. Professional development programmes for practicing teachers or in-service teachers on ways of improving the mathematics classroom environment is also recommended. In this regard, a focus on those subscales are recommended for effective learning of mathematics and its implications. It is further recommended that practicing teachers take note of this need for further improvement and adopt strategies for achieving the needed improvement due to the possibility of a resultant improvement in student performance.

Third, irrespective of the school type, the lowest of these average perception ratings were on the subscales of Cooperation and Involvement, and Student Cohesiveness. These were all below 4 meaning they only occurred occasionally (i.e., did not happen often). The implication of this is that in the junior high school mathematics classrooms in Ghana, students perceive the opportunities given to them to cooperate with each other in class and to actively participate in their lessons to be quite inadequate. In addition, this study has revealed that students' perception of the extent to which they are encouraged to be supportive of each other (i.e., student cohesiveness) to be adequate. Though these findings have emanated from students' self-report, we argue that they should not be downplayed but be taken seriousness since their perception of their classroom environment tells us a lot about how they are experiencing the type of teaching they are exposed to. Consequently, we recommend that teachers adopt more student-centred pedagogies, especially those that use approaches such as constructivist, inquiry-based, problem-based and project-based methods since these have the tendency to not only improve students' involvement in their mathematics classes but also provide more opportunities for students to

collaborate with each other in class and eventually their learning outcomes.

Lastly, this study has also revealed that irrespective of the school type, the subscales with the greatest average rating were Equity and Teacher Support with averages close to 4 generally and irrespective of the school-type. As already explained the average rating of 4 implies that, according to the students, the classroom environment related to these two subscales (Equity and Teacher Support) often existed in the junior high school mathematics classrooms in Ghana. Another implication of this is the possible suggestion from the participating students from both the public and private schools perceive their mathematics classroom learning environment to be most influenced by Teacher Support and Equity. The fact that students perceive the mathematics teachers to be equitable implies, in the perception of students, the existence of equal opportunity for all students (or fair treatment of students) in the mathematics classrooms at the junior high school level in Ghana. In addition, rating the support from their teachers high also implies that students consider the ability of their teachers quite high. This implies that students trust their teachers to be fair and are also happy with their teachers' support for their learning. Such conditions have the tendency to remove the phobia usually attributed to mathematics and surrounding the mathematics lessons. This finding about the junior high school mathematics environment is commendable. However, since students' ratings of these are not up to 5, sustained efforts are recommended to further improve equity and teacher support.

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