Conditioning and its Implications on Secondary School Students’ Performance in Mathematics in Tiko Sub-Division, South West Region of Cameroon

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Abstract
The study investigated behavioral modification through conditioning and its effect on secondary school students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon. The study was guided by four (4) research questions. The target population of this study was made of 6300 secondary school students in Tiko Sub-Division. The accessible population was made up of 690 students of three selected schools while the sample size consisted of 100 form five students. The research design that was used in this work was the survey research design. The multistage random sampling technique was used to select one government school, one lay private school and one confessional school. In order to collect data for the study, a questionnaire for students was constructed and validated. The study revealed that there is a significant relationship between Specialized Mathematical Language (SML, $\chi^2_{cal.} = 117.8 \geq \chi^2_{crit.} (df=12, 0.05) = 23.34$), teaching methods ($\chi^2_{cal.} = 320.48 \geq \chi^2_{crit.} (df=12, 0.05) = 23.34$), attitudes ($\chi^2_{cal.} = 87.52 \geq \chi^2_{crit.} (df=12, 0.05) = 23.34$), motivation ($\chi^2_{cal.} = 189.04 \geq \chi^2_{crit.} (df=12, 0.05) = 23.34$), and students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon. Respondents affirmed that in order to succeed in learning, understanding and improving performance in Mathematics, they have to work hard, concentrate and participate actively in Mathematics problem-solving in class and at home frequently.

Keywords: Conditioning, Implications, Students’ Performance, Mathematics.

Introduction
Mathematics is an important subject that has been regarded in high esteem in Cameroon and the world at large. Mathematics is introduced at the elementary level wherein knowledge and skills are acquired to produce competent people who can more easily confront and effectuate problem solving and decision making scenarios. Educational systems all over the world prepare pupils at elementary levels with mathematical knowledge to better face the challenges in secondary school and in life. Mathematics is regarded by the society as the foundation for scientific and
technological knowledge which is a very important instrument for political, socio-economic, scientific and technological developments (Nekang, 2016).

In Cameroon, these mathematical concepts are assessed and evaluated in the classroom and in official examinations such as the First School Leaving Certificate examination at the primary level, the General Certificate of Education Examination in secondary schools and at the tertiary level of education. The fact that Mathematics is a compulsory subject in secondary schools and is taught nearly every day portrays its importance. One could vividly recall the classroom situations in primary school especially in primary 7 where the first few hours in the morning were reserved for Mathematics. When the teacher had covered content material enough to be assessed on, a traditional morning routine exercise was initiated in what is commonly known as sums, comprising about thirty speed and accuracy problem-solving exercises. Pupils were expected to pass all these mathematical problems otherwise the number of whips increased progressively as one fails. It is but normal that the whole class could not pass all the sums and those who failed woefully were severely beaten on sensitive parts of the body such as the buttocks, back or legs making the atmosphere to be very tense. Apart from the aggressive nature of most Mathematics teachers in those days, some of them especially at the secondary and tertiary levels wore funny haircut/mustache and one could notice some soliloquizing along the road. These gradually made pupils and students to feel anxious just at the sight of a Mathematics teacher (Bongmoyong, 2016).

The above mentioned characteristics made pupils and students to learn to associate Mathematical anxiety to performance anxiety. Mathematical anxiety is a phenomenon that is often considered when examining students’ problems in Mathematics. Ashcraft (2002) defines Mathematical anxiety as a feeling of tension, apprehension, or fear that interferes with Mathematics performance. Harbor-Peters (2001) refer to this phenomenon as Mathematicsphobia. Hembree (1990) conducted a thorough meta-analysis concerning Mathematical anxiety and reported that it was related to poor performance on Mathematics achievement tests. Suggestions by Ashcraft (2002) affirm that highly anxious Mathematics students will avoid situations in which they have to perform mathematical calculations. These mathematical anxiety and practices have transcended from senior primary to secondary schools. Unfortunately, one cannot solve a problem by running away from the problem. Mathematics avoidance results in fewer competencies, less exposure and less Mathematics practice leaving students more anxious and mathematically unprepared to achieve well in mathematics and the mathematical sciences.

According to Schar and Kirk (2001) highly Mathematics anxious students can perform disappointingly on a Mathematics question due to Mathematics anxiety. Such fear in Mathematics can be related to test taking and performance anxiety. The students in a bid to avoid punishment (a concept in Psychology called negative reinforcement in Operant conditioning by B. F. Skinner in 1938) may exercise sham efforts. This implies that they try as much as possible to perform better whether they understand the concepts taught or not. Most at times, such better performance is to satisfy the teacher and to avoid criticisms. They then tend to use all forms of examination malpractices.
The Classical Conditioning Theory of Ivan Pavlov (1927) can be related in the teaching and learning of Mathematics as most Mathematics teachers used to be unkind in managing their students. At the sight of a Mathematics teacher for the first time who appears to be the neutral stimulus, would not elicit any fear in the students. But once the Mathematics teacher begins to use a cane to punish slow learners or curb inappropriate behaviors, not only the slow learners would tend to fear the teacher but the entire class. Consequently, at the sight of a Mathematics teacher even without holding a cane, students may still fear him. The students have virtually learned to elicit feelings of fear and tension just at the sight of a Mathematics teacher. With such feelings, the rapport that ought to exist between the teacher and the learner is threatened. When this threatened relationship between the two parties exist, no matter how good the teacher maybe, effective learning would not take place which will go a long way to affect understanding and performance. Poor performance in Mathematics can be attributed to several issues such as the difficulty in understanding the specialized Mathematical language (Barton, 2002), ineffective teacher-centered teaching methods, learners’ negative attitudes towards the subject, and learners lack of motivation to learn the subject (Miheso, 2012; Ngeno & Changeiywo, 2007).

Statement of the Problem
The importance of Mathematics to an individual and to the society is acknowledged worldwide. Unfortunately, learners’ performance in the subject at examinations in secondary school level is a major worry in Cameroon and the world. Students’ performance in Mathematics can be likened to the implications of how students learn to associate various stimuli to the mathematical concepts taught in class. The problem of this study therefore is: How does behavioral modification through conditioning affect students’ performance in Mathematics among secondary school students in Tiko Sub-Division in the South West Region of Cameroon?

Purpose of the Study
Specifically, the study sought to investigate:

1. The specialized mathematical language and its effect on students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?
2. Teaching methods and their effect on students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?
3. Learners’ attitudes towards Mathematics and their effect on their performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?
4. Learners’ motivations and its effect on their performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?

Specific Research Questions
1. How does the specialized mathematical language affect students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?
2. To what extent do teaching methods affect students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?
3. How do learners’ attitudes towards Mathematics affect their performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?
4. To what extent do learners’ motivations affect their performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?

Methodology
The research design that was used in this study was the survey research design. The survey research design is a descriptive research method which researchers use interviews and/or questionnaires to gather information about the attitudes, beliefs, experiences, or behaviors of a group of people. The study was conducted in Tiko Sub-Division in the South West Region of Cameroon. The target population of this study was made of 6300 secondary school students in Tiko Sub-Division. The accessible population was made up of 690 students of three selected schools while the sample size consisted of 100 form five students of Government Bilingual High School (G.B.H.S) Tiko, KOEL Bilingual Institute Tiko, and Christ the King College (C.K.C) Tiko. The multistage random sampling technique was used to select one government school, one lay private school and one confessional school. The reason was to ensure diversity such that from the responses of the students, a dependable conclusion could be arrived at. The data for this study were analyzed using descriptive statistics.

Results

Research Question 1: How does the specialized mathematical language affect students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?

Table 1: Specialized Mathematical Language and its effect on students’ performance in Mathematics

<table>
<thead>
<tr>
<th>Item</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>( \bar{x} )</th>
<th>s</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mathematical terms disturb me from understanding mathematical concepts.</td>
<td>17</td>
<td>39</td>
<td>29</td>
<td>15</td>
<td>2.58</td>
<td>0.94</td>
<td>A</td>
</tr>
<tr>
<td>2. The teacher explains these mathematical terms so that I can understand.</td>
<td>54</td>
<td>41</td>
<td>3</td>
<td>2</td>
<td>3.47</td>
<td>0.66</td>
<td>A</td>
</tr>
<tr>
<td>3. These mathematical terms make Mathematics complicated and abstract.</td>
<td>18</td>
<td>37</td>
<td>26</td>
<td>19</td>
<td>2.50</td>
<td>1.04</td>
<td>A</td>
</tr>
<tr>
<td>4. I get lost in class when the teacher utters some of these mathematical terms.</td>
<td>20</td>
<td>29</td>
<td>36</td>
<td>15</td>
<td>2.54</td>
<td>0.97</td>
<td>A</td>
</tr>
<tr>
<td>TOTAL</td>
<td>109</td>
<td>146</td>
<td>94</td>
<td>51</td>
<td>11.09</td>
<td>3.61</td>
<td>A</td>
</tr>
<tr>
<td>AVERAGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.78</td>
<td>0.90</td>
<td>A</td>
</tr>
</tbody>
</table>

\( \bar{x} = \text{Mean}, \ s = \text{Standard Deviation}, \ \text{Dec.} = \text{Decision} \)

Students accepted that the Specialized Mathematical Language strongly affects students’ performance in Mathematics (2.78±0.90). There is therefore a significant relationship between Specialized Mathematical Language and students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon \( \chi^2_{\text{cal.}} = 117.8 \geq \chi^2_{\text{crit.}} \ (df=12, \ 0.05) = 23.34 \). Language alone is a very vital tool in communication and more especially in the teaching/learning process. The language/vocabulary used in Mathematics is so special that needs to be understood in context otherwise the message will not be sent across. Therefore, for a
student to understand Mathematics well, he/she has to get used to this mathematical language and understand it in context. In such regard, understanding is guaranteed and performance is boosted.

**Research Question 2:** To what extent do teaching methods affect students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?

<table>
<thead>
<tr>
<th>Item</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>( \bar{x} )</th>
<th>s</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I understand better when the teacher explains and demonstrates.</td>
<td>76</td>
<td>20</td>
<td>1</td>
<td>3</td>
<td>3.69</td>
<td>0.65</td>
<td>A</td>
</tr>
<tr>
<td>2. The teacher spends more time solving and forgetting to follow-up students’ understanding.</td>
<td>14</td>
<td>18</td>
<td>38</td>
<td>30</td>
<td>2.16</td>
<td>1.01</td>
<td>R</td>
</tr>
<tr>
<td>3. The teacher uses didactic materials to help me understanding better.</td>
<td>28</td>
<td>43</td>
<td>22</td>
<td>7</td>
<td>2.92</td>
<td>0.88</td>
<td>A</td>
</tr>
<tr>
<td>4. I understand better when the teacher solves many examples.</td>
<td>73</td>
<td>21</td>
<td>5</td>
<td>1</td>
<td>3.66</td>
<td>0.62</td>
<td>A</td>
</tr>
<tr>
<td>TOTAL</td>
<td>191</td>
<td>102</td>
<td>66</td>
<td>41</td>
<td>12.43</td>
<td>3.16</td>
<td>A</td>
</tr>
<tr>
<td>AVERAGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.11</td>
<td>0.79</td>
<td>A</td>
</tr>
</tbody>
</table>

\( x = \text{Mean} \), s = \text{Standard Deviation}, Dec. = \text{Decision}

The participants strongly accepted the fact that teaching methods have a very strong influence on students’ performance (3.11±0.79). There is also a strong significant relationship between teaching methods and students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon \( \chi^2_{\text{cal.}} = 320.48 \geq \chi^2_{\text{crit.}}(df=12, 0.05) = 23.34 \). Any method used in the teaching/learning process should also depend on the kind of lesson to be taught and the kind of learners the teacher is dealing with. Thus, teaching methods should be aptly chosen as they play an important role in the delivery of lessons and students’ achievement in mathematics and the mathematical sciences.

**Research Question 3:** How do learners’ attitudes towards Mathematics affect their performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?

<table>
<thead>
<tr>
<th>Item</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>( \bar{x} )</th>
<th>s</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel bored during Mathematics lessons.</td>
<td>12</td>
<td>18</td>
<td>47</td>
<td>23</td>
<td>2.19</td>
<td>0.93</td>
<td>R</td>
</tr>
<tr>
<td>2. I feel frustrated when I solve a mathematical problem and do not get the right answer.</td>
<td>37</td>
<td>38</td>
<td>17</td>
<td>8</td>
<td>3.04</td>
<td>0.93</td>
<td>A</td>
</tr>
<tr>
<td>3. I would have loved to drop Mathematics if it was not a compulsory subject.</td>
<td>26</td>
<td>6</td>
<td>30</td>
<td>38</td>
<td>2.20</td>
<td>1.21</td>
<td>R</td>
</tr>
<tr>
<td>4. I have a cordial relationship with my Mathematics teacher.</td>
<td>18</td>
<td>34</td>
<td>32</td>
<td>16</td>
<td>2.54</td>
<td>0.97</td>
<td>A</td>
</tr>
</tbody>
</table>

\( x = \text{Mean} \), s = \text{Standard Deviation}, Dec. = \text{Decision}
Students’ performance in Mathematics is moderately affected by their attitudes towards this subject (2.49±1.01), though there is a significant relationship between attitudes towards the subject and students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon \( \chi^{2}_{\text{cal.}} = 87.52 \geq \chi^{2}_{\text{crit.}} (df=12, 0.05) = 23.34 \). This implies that students know the relevance of Mathematics in their daily lives and in their academic pursuits but their attitudes and interest need to constantly aroused and sustained.

**Research Question 4:** To what extent do learners’ motivations affect their performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?

<table>
<thead>
<tr>
<th>Item</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>( \bar{x} )</th>
<th>s</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The school motivates those who perform well in Mathematics.</td>
<td>31</td>
<td>40</td>
<td>13</td>
<td>16</td>
<td>2.86</td>
<td>1.03</td>
<td>A</td>
</tr>
<tr>
<td>2. I try to learn better and perform well even when it is difficult.</td>
<td>48</td>
<td>46</td>
<td>3</td>
<td>3</td>
<td>3.39</td>
<td>0.69</td>
<td>A</td>
</tr>
<tr>
<td>3. My parents or guardians make promises to me if I pass Mathematics.</td>
<td>32</td>
<td>38</td>
<td>18</td>
<td>12</td>
<td>2.90</td>
<td>0.98</td>
<td>A</td>
</tr>
<tr>
<td>4. My teacher makes me to become more interested in Mathematics.</td>
<td>49</td>
<td>44</td>
<td>5</td>
<td>7</td>
<td>3.40</td>
<td>0.68</td>
<td>A</td>
</tr>
<tr>
<td>TOTAL</td>
<td>160</td>
<td>168</td>
<td>39</td>
<td>38</td>
<td>12.55</td>
<td>3.38</td>
<td>A</td>
</tr>
<tr>
<td>AVERAGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.14</td>
<td>0.85</td>
<td>A</td>
</tr>
</tbody>
</table>

\( \bar{x} = \text{Mean}, s = \text{Standard Deviation}, \text{Dec.} = \text{Decision} \)

Students opined that motivation has a very important influence on students’ performance in Mathematics (3.14±0.85). There is a significant relationship between motivation to study and students’ performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon \( \chi^{2}_{\text{cal.}} = 189.04 \geq \chi^{2}_{\text{crit.}} (df=12, 0.05) = 23.34 \). Participants also revealed that this motivation is both extrinsic and intrinsic as they struggle to learn on their own despite the odds. Such students have the propensity to develop high achievements as they make a lot of efforts to meet their goals.
The line graph shows a summary of the mean scores of the indicators of conditioning and their implications on students’ performance in mathematics in Tiko sub-division in the South West region of Cameroon.

Discussion of Findings
Students’ performances in Mathematics over the years have been affected either positively or negatively through conditioning. These conditional factors through behaviour modification/change have been examined using 4 variables; The Specialized Mathematical Language, Teaching Methods, Learners’ Attitudes towards Mathematics and Learners’ Motivation towards the subject.

How does the Specialized Mathematical Language affect Students’ performance in Mathematics?
From the results, the respondents accepted the fact that Mathematical terms disturb them from understanding mathematical concepts ($\bar{x} = 2.58$). Students find it difficult to follow up lessons and comprehend the terms used in the teaching/learning process which impedes learning and thereby affecting their performances in Mathematics negatively. The participants strongly accepted the option that the teacher explains these mathematical terms for students to understand and with such efforts put by the teacher, students find it easier to understand and can perform better ($\bar{x} = 3.47$). A majority of students accepted the fact that mathematical terms make Mathematics complicated and abstract ($\bar{x} = 2.54$). An abstract concept is much more imaginative and difficult to understand than something concrete and real. Apparently, this blurs the understanding of most students especially when didactic materials are not used thus making students to find it difficult to exploit their imaginative power and thus affect their performance adversely. Students accepted the fact that they get lost in class when some of these mathematical terms are uttered ($\bar{x} = 2.54$). When this happens, understanding and follow-up of lessons
become difficult. This needs an extra effort to catch up and those who are not willing to expend such efforts are on the disadvantage as their abilities to solve Mathematical problems, hence their performance will be hampered.

Nekang (2016) stated that mathematics has been a threat to students because of problems associated with its instruction. The main reason why so many students hate mathematics, and why so many fail in it, is because of poor tuition. In many cases, teachers teach mathematics in a rather abstract way because of inadequate preparation, poor teaching methods and lack instructional materials. At the tertiary level, there is the lack of mathematicians, statisticians and mathematics educators to train future mathematics teachers. The few mathematics teachers available at the secondary and tertiary levels are overloaded. This leads to low input resulting in low student achievement.

What do you do when you do not understand these mathematical terms?
61% of the students responded that they alerted the teacher and requested for more explanation. This shows their boldness, assertiveness and willingness to learn. 18% responded that they read extensively and did more research so as to gain more insight on the lesson. It is a good initiative to do research but understanding lessons and follow-up in class is of prime importance which means students should make efforts to concentrate and participate in class. 15% of students responded that they met their peers for more explanation while 6% of participants gave up which is not advisable and is a sign of failure syndrome. The results affirmed the believe that learning mathematical words go beyond memorizing stand-alone words but understanding these words in context and the teacher has a role to play in helping students understand these words. Also, the task of learning the use of mathematical words must be done within particular mathematical contexts and it is not enough to learn lists of stand words. When these mathematical concepts are misconstrued by learners, they tend to be derailed and consequently the performance will not reflect the intended objectives (Dale & Cuevas, 1987; Mousley & Marks, 1991).

To what extend do the teaching methods influence students’ performance in Mathematics?
Participants in this study accepted very strongly the fact that they understand Mathematics better when the teacher explains and demonstrates ($\bar{x} = 3.69$). When the teacher explains and demonstrates using teaching/learning aids, he/she involves all three types of learners in the lesson - the auditory, visual and kinesthetic learners. This makes the lessons interesting and easy to understand, thus improving performance. The participants rejected the fact that the teacher spends more time solving on the board and forgetting to follow up student’ understanding ($\bar{x} = 2.16$). This shows that the teacher is not carried away during the solving process but is very conscious about his lesson objectives as he/she follows up and checks for students’ understanding. The students strongly accepted the fact that teachers use didactic materials such as text books, charts, chalkboard and real objects to facilitate understanding ($\bar{x} = 2.92$). The use of teaching aids help to involve all the types of learners in the lesson. Students accepted very strongly the fact that they understand better when the teacher solves many examples ($\bar{x} = 3.66$).
In your opinion, do you think there is another method the teacher can help you understand Mathematics?
31% of the participants responded that the teacher should make Mathematics more interesting and lively by cracking jokes, making students to feel relaxed, using songs on formulae and using visual aids such as videos. 34% of correspondents responded that the teacher should get students solve often by giving more examples, more problems and assignments. 17% of the participants indicated that they were contented with the normal methods used by the teacher while 18% of the students just needed more explanation.

The results confirm Resnick (1992) claims that Constructivist teaching methods recognize and build on prior knowledge, emphasizing discovery, reflection, multiple solutions, and explanation of learning processes by learners themselves. Harbor-Peters (2002) stressed that teachers’ competence in mathematics content has a strong relation to students’ achievement and is consequently a source of interest in mathematics learning for students. Harbor-Peters went further to say that mathematics should be charming, fascinating as well as attractive to the learners, the teachers and the users. This means that various structures must be properly put in place (instructional strategies and materials, attraction and retention of mathematics teachers). Harbor-peters concluded that since mathematics students of today will become mathematics teachers of tomorrow, they need to be attracted to learn and study mathematics.

How do learners’ attitudes towards Mathematics affect their performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?
Most students rejected the option that they feel bored during Mathematics lessons ($\bar{x} = 2.19$). They opined that their teacher keeps students busy, encourages and motivates those with difficulties which keep them going. Students strongly accepted that they feel frustrated when they solve a mathematical problem and finally do not get the right answer ($\bar{x} = 3.04$). Such frustration may lead to a negative influence on students’ attitude towards Mathematics and the Mathematical sciences if they do not have the stamina to try again and move on. This may lead to what is commonly called Mathematicsphobia which at the long run may affect performance negatively (Harbor-Peters, 2001). Students rejected the option that they would have loved to drop Mathematics if it was not a compulsory subject ($\bar{x} = 2.20$). This shows that students have seen the need and the role Mathematics play in their lives and are ready to expend personal efforts to learn the subject even if it is not mandatory. Students accepted the option that they have an averagely cordial relationship with their Mathematics teacher ($\bar{x} = 2.54$). In this light, the rapport built between the teacher and students gives the students the upper hand of relying and trusting their teacher. With such healthy relationship, students can learn well and perform better.

What is your personal belief about Mathematics?
60% of them responded that Mathematics is a good and helpful subject as it cuts across many aspects in life. 27% acknowledged the fact that Mathematics is important but requires a lot of efforts through thinking and constant solving. 8% of the participants remain neutral while 5% just hated the subject.
Poor attitude towards Mathematics has often been cited as one factor that has contributed to low participation in class work and greatly responsible for poor performance in Mathematics and the Mathematics sciences (Willis, 1995). Interest and attitude in the subject are the special predictors for the students’ participation and success in the subject which can be observed in students nowadays. Nekang (2016) asserted that there is no area of knowledge where a teacher has more influence over the attitudes as well as the understanding of his pupils than his professional life. A teacher of mathematics may influence for good or ill the attitudes of mathematics of several thousand young people and decisively affect many of their career choices. It is therefore necessary that mathematics should be taught to pupils, but also well taught. All pupils should have the opportunity of studying mathematics in the company of enthusiastic and well-qualified mathematics teachers.

**To what extent do learners’ motivations affect their performance in Mathematics in Tiko Sub-Division in the South West Region of Cameroon?**

Participants strongly accepted the option that the school motivates students who perform well in Mathematics and also recognizes those with remarkable improvements ($\bar{x} = 2.86$). This has a positive influence on students’ performance as they will have the zeal to work hard to succeed. Students strongly accepted the option that they try to learn and put in sufficient efforts even in difficult times ($\bar{x} = 3.39$). With such degree of intrinsic motivation by students, expectations are high and this influences performance positively. Also, students strongly accepted the option that parents motivate and make promises to their children if they pass Mathematics ($\bar{x} = 2.90$). This gives students the urge or the drive to work harder to achieve the promises made and by so doing, performance is boosted. They strongly affirmed teachers use of different means to make their students become interested in Mathematics ($\bar{x} = 3.45$). With this developed interest in Mathematics, the students are more prepared and ready to face the challenges that the subject demands, thus improving concentration, understanding and performance.

**In your opinion, what makes you want to study Mathematics?**

49% of the respondents replied that Mathematics is a prerequisite for their future prospects and that it is a preparation for future challenges. 35% of the participants responded that Mathematics is a very important subject that requires everyone to learn and understand it. 16% of the students responded that their love for Mathematics is undisputable and that they enjoy solving. Hall (1989) believes that there is a need to motivate learners so as to arouse and sustain their interest in learning mathematics. Lo-oh (2005) found that the possible causes of mathematical learning difficulties were the lack of interest, poor academic background, parental influence, societal influence, poor learning environment, poor teaching, attention deficits, lack of mathematical equipment and adolescent problems. Lo-oh’s findings also revealed that the different areas of students’ mathematical learning difficulties in Cameroon were the understanding of word problems, doing basic arithmetic, understanding steps in mathematics and understanding arithmetic facts.

**Conclusion**

The findings show that conditioning affect secondary school students performances in Mathematics both positively and negatively depending on how the variables derived from
conditioning are manipulated. Conditioning works more on a positive note since learners are aware of the importance of Mathematics in our contemporary society. Also, those who contribute in students’ academic life such as teachers and parents are using subtle ways of dealing with students suffering from Mathematicsphobia and learning disabilities like dyscalculia. Respondents affirmed that in order to succeed in learning, understanding and improving performance in Mathematics, they have to work hard, concentrate and participate actively in Mathematics problem-solving in class and at home frequently. This requires time and energy which a majority of students are willing but not able to offer due to laziness, distractions, and other aversions. Teachers, parents and all stakeholders are therefore called upon to try by all means to avert these aversions for better results to be expected in Mathematics and the Mathematical sciences.

Recommendations
- The government should recruit and post more trained Mathematics teachers in the various schools available so that the myth about Mathematics should be eradicated through the skills and techniques acquired and used by these trained personnel. They should also motivate teachers by paying them an appropriate salary, give them incentives, and improve on their working conditions. The government should continue in their efforts of providing minimum packages early enough at the beginning of the academic year. National competitions in Mathematics could be organized (mathematics Olympiads) at different levels of schooling so as to recognize and boost the efforts and skills of learners.
- Teachers should continue in their efforts of building a good rapport with their students so that with such healthy relationship, the students will experience an enabling environment suitable for learning. The teachers too should continue to encourage and motivate students in their efforts so that they do not give up easily. Teachers should try as much as possible to use quality didactic materials during their lessons. These teaching aids should be apt in that they should not be interpreted differently and should convey the message for which the lesson is intended. The teachers should develop a personality style that is approachable and should be able to captivate learners’ interests in their dynamic teaching styles. The teacher should also hold students in high esteem and high expectations so that students will be able to work hard to meet up with such expectations.
- Counselors should use their skills to help students identify, define and overcome their problems in Mathematics. Some students may have the skills in Mathematics but are just scared of the subject may be due to peer influence and in such a case, Systemic Desensitization Technique (SDT) used by the interventionist can solve the problem. Therefore, counselors should reach out to students who face difficulties in Mathematics and help them because not all students will be bold enough to seek for counseling services. Counselors should also reach out to students who perform well in Mathematics to encourage them and help them stay focused.
- Parents should encourage and motivate their children by assisting them in their assignments, helping to recruit teachers for remedial teaching when necessary and building in them a spirit of self-worth and self-confidence.
References


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