

Botswana Primary School Teachers' Motivational Strategies Beliefs about Mathematics Classroom Instructional Practices

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Abstract: *The study pursued primary school teachers' beliefs about use of motivational strategies in mathematics instruction in Botswana. The study falls within a quantitative approach and utilised qualitative approaches for triangulation purposes and was descriptive in nature adopting a survey design. A sample of eighty-eight (88) teachers who had specialised in mathematics and science from thirty (30) primary schools in the Kweneng, Southern and Central Regions was drawn through a purposive random sampling procedure. A questionnaire comprising both closed and open ended questions and an interview schedule was designed to collect data. The Statistical Package for Social Science (SPSS) version 22 was used to organize and summarize the information gathered and the analysis of results was carried out using descriptive statistics. The findings revealed that most of the teachers indicated that they viewed motivational strategies as instrumental to enhance their mathematics classroom practices. The teachers also exerted some effort in promoting learner centred approaches in their teaching as a way of capturing and sustaining students' interests during learning. The findings further showed that both gender of teachers believed that activity based classroom instructions enhanced students' relational understanding of mathematics and also developed students' critical and exploratory skills. However, they were some teachers mainly those who did not hold any position of responsibility who indicated that they did not proffer timely and constructive feedback to students; a situation detrimental to students' mathematical achievement. Based on the findings, it was recommended that school based training on effective use of motivational strategies should be provided so as to empower teachers for effective classroom instruction. The findings of this research study have implications to research and practice as it provides unique and comprehensive data that will lead to insight for curriculum designers, policy implementers and instructional leaders on effective use of motivational strategies in math instruction. The results allows insight on teachers' beliefs about use of motivational strategies in math instruction, hence the key stake holders will establish challenges experienced by teachers during math instruction and come up with classroom oriented strategies such as school based training on effective use of motivational strategies intended to improve student academic performance in mathematics.*

Keywords: *primary education, teachers' beliefs, mathematics instruction, motivational strategies, mathematical performance*

1. INTRODUCTION

Motivation is a process whereby goal directed behaviour is instigated and sustained. In an organisational setup it is viewed as the willingness of employees to achieve organisational set goals. Moreover, motivation could be summarised as an internal drive that directs behaviour towards some end <http://www.shabait.com/categoryblog/3200-what-motivation-is>. Research has shown that motivation is a challenge at primary school level (Harmer, 2001) and it has been observed that motivation affects performance of individuals leading to destruction of schools (William and Burden, 1997). On a good note motivated people are energised and activated to the end of the task as their interest and desire to achieve is enhanced (Ryan & Deci, 2000) and in

particular it enhances authentic student engagement in learning (Saeed, Sitwat & Zyngier1, David, 2012).

Smith and De Cronje (2002) observed that the motivational process consists of among others the need, motive, behaviour and feedback. This therefore calls for teachers to take a deliberate move to reduce students' need deficiencies, thus reducing anxiety and tension, which could adversely affect students' academic achievement. Furthermore, teachers could also strive to develop an enabling environment whereby students are implored to do their best and to be excited about their learning endeavours. This argument is supported by Grobler (2006), who outlined two factors namely value and effort as critical in creating a motivational climate, whereby students see the worth of their work and those of their peers and also the teacher on the other hand connects students' work with things deemed important to students and other learning processes and interests. Smith and De Cronje (2002) further emphasised that motivation dramatically increases work performance and employees are likely to change negative attitude adversely affecting the achievement of work goals. The same sentiments were shared by Salleh and Abdulwahab Al-Daba (2014) who indicated that the high participation of staff in decision making may improve the employer-employee relationships and enhance governance in the organization.

This suggests that those classrooms where use of motivational strategies is effective are likely to produce sustainable quality results as every member of the class is implicitly engaged in the learning process. Contrariwise one could argue that if motivational strategies are not intensively incorporated in classroom instructional practices, the performance of our schools will continually decline. However, there is limited investigation on the impact and incorporation of motivational strategies in Botswana primary school classrooms; hence it is befitting to investigate teachers' beliefs about motivational strategies on mathematics classroom instructional practices.

2. RESEARCH QUESTIONS

For the purpose of this study, the following research questions are raised:

- i. To what extent do teachers view motivational strategies as a tool that could enhance mathematics classroom instructional practices?
- ii. To what extent do teachers incorporate motivational strategies in the mathematics classroom instruction?

3. LITERATURE REVIEW

It is of paramount importance to understand teachers' views and expectations of students as this phenomenon has been proved to enact instructional practices. In this manner, Brophy and Godd (1974) alluded to that teachers' individual perception and differences they bring to their classroom environments were fundamental contributors to the way they teach, motivate and engage their students during classroom instruction. Other researchers like Zbiek and Conner (2006) concluded that modelling work provides opportunities to learn mathematics as well as to motivate to learn mathematics. This is indicative that teachers need to provide an enabling environment to students that would accord them an opportunity to learn mathematics through exploratory and other interactive or learner centred methods.

The results of most studies suggests that teachers' liking for students shape the extent to which children feel that their needs are met, not only for relatedness but for competence and self-determination (Skinner & Belmont, 1993; Jamar & Pitts, 2005; Hadre & Sullivan, 2008).

While the discussion in the preceding paragraphs focus on teachers as main players in the motivation strategies, studies have shown that motivation as a concept is believed to be a vital part of developing a lifelong interest in scientific learning and for supporting students of all ethnic backgrounds who decide to pursue science beyond high school (National Research Council, NRC, 2000). Motivation is believed to be essential to the educational process (Skollingsberg, 2003) as it gives teachers the ability to maximise learning and thus leading to minimised misbehaviour among students (Wiseman and Hunt, 2001; Patrick & Yoon, 2004). In view of the aforementioned it is symptomatic that when the learning is maximised and unbecoming student behaviour eliminated, the overall classroom learning environment will be greatly improved.

An equally significant aspect on the impact of teacher motivation on students' academic achievement and learning outcomes was investigated by Tella, Ayeni and Popoola (2007) and the findings revealed that students differed significantly in their academic achievement based on the extent to which they are motivated. The results further showed that motivated students performed better than the lowly motivated ones. Likewise, Hall (1989), Health (1999) and Etsey (2005) argued that lack of pupils' motivation resulted in negative attitudes adversely affecting their academic performance. This therefore, calls for teachers to intensify motivational strategies with the view of helping students learn mathematics through relational understanding approaches as suggested by Skemp (1989).

In addition, Adams and Pierce (2013) established that research did not only prove that teacher motivation improved student performance but that teachers who valued students avoided sarcasm and impersonal behaviour, which are factors detrimental to an enabling academic environment. Svinicki (2005) also pointed out that motivated students exhibit mastery goal orientation and tend to put more effort to master the concepts or skills.

It is therefore undoubtedly right to implore mathematics teachers to offer students relevant incentives and rewards as a form of motivation. Downey and Kelly (1998), suggested prizes, good reports, examination success, and teacher approach as what teachers could offer students as a form of persuading them to learn extrinsically. An equally significant aspect of teacher motivational strategies were investigated by Druger (2000), who found that teachers' job was not only to assist students to learn but to encourage them to want to learn. This point is also sustained by Rudhumbu's (2014) study which found that teachers tended to employ confidence-building strategies that included creating conditions that enabled learners to experience success as often as possible, informing the learners of their responsibilities during learning and setting high performance standards by providing challenging tasks.

The aforementioned views imply that teachers should utilise approaches that fit their individual students' learning styles. It is hoped that by following the suggested approach it could result in an increased chance of generating a motivational learning environment in the classroom that fosters positive attitudes thus increasing the student achievement.

Further critics of teacher motivation believed that achievement motivation was often correlated with actual achievement behaviour (Eccles, Wigfield & Schiefele, 1998). For example a student may be highly motivated to achieve in sports but not in school work and this would imply that teachers should create an enabling environment that helps students associate the learning of mathematics to the source of their motivation. In other words it is critically meaningful to say students' actual achievement is dependent on their motivation to achieve (Eccles et. al., 1998).

4. RESEARCH METHODOLOGY

The research design for this study falls within the quantitative approach (Cresswell, 1994) and qualitative Approach (Bell, 1998; Mora, 2010) as use of an interview schedule was employed to corroborate data collected through a questionnaire. This therefore implies that the design adopted a triangulation approach as emphasised by Best and Kahn (1998) who alluded that each data gathering procedure has its own particular weaknesses and there is merit in using multiple methods supplementing on with others to counteract bias and generate more adequate data. Furthermore, the research design employed a descriptive survey method intended to provide a numeric description of the teachers' sample (Cresswell, 1994). A questionnaire comprising both closed and open ended questions was employed to collect data and it was meant to describe the "what" of a situation (Hale, 2011 & Christensen, 2000 in Salani, 2013).

5. SAMPLE

The sample included 88 primary school teachers with specialisation in math and science and was drawn from thirty primary schools of the 10 educational regions in Botswana. The researchers stratified the schools (Cohen & Manion, 1994) into their respective regions and chose Kweneng, Southern and Central regions to generate a sample for the study through convenient sampling

procedures (Cohen & Manion, 1994) and this was so because of convenience, accessibility and economical advantage to the researchers. From the three regions the researchers employed simple random sampling procedures to select schools, thus reducing biasness (Wiersma & Jurs, 2005; Trochim, 2006).

Among the 88 teachers who formed the sample 23 were males while 65 were females. These gender imbalances could be explained by the fact that the primary education is a female dominated profession <http://www.independent.co.uk/news/education/education-news/gender-gap-in-teaching-grows-only-24-of-new-recruits-are-men-942819.html>. It has to be noted that this gender disproportion in the study sample may adversely affect the generalisability of the study. Teachers who participated in the study represented a fraction of teaching experience ranging from 1 to 21 years and were mainly Diploma holders. Participation of schools and teachers was dependent on a consensual agreement with the school heads and teachers.

6. RESEARCH INSTRUMENT AND PROCEDURES

Information was collected through a closed ended teacher questionnaire in which the researchers designed 3 scales namely improved classroom practices, enhanced learners performance and use of motivational strategies. Altogether there were 15 items representing these scales and the response were rated in a four point Likert scale with answers ranging from strongly agree to strongly disagree. The neutral option was avoided as to eliminate indecisive data. On the other hand an interview guide was designed focusing on establishing whether teachers felt motivational strategies were important aspects of teaching and learning of math; The types of motivational strategies they incorporated, how they employed them and whether or not they thought these strategies yielded desirable results.

A total of 100 teacher questionnaires were distributed to the participating schools on different dates and each respondent was given an opportunity to fill up the questionnaire within a day before the researchers collected it back. Data collection lasted for a period of three weeks and the response rate was 88%. The interviews were conducted at the agreed times with individual teachers and each session lasted for 45 minutes and it took one week to interview the 12 teachers.

7. RESULTS AND DISCUSSION

The findings of the results are discussed according to research questions as follows:

• Research Question 1

Do motivational strategies enhance teachers' classroom practices in the teaching and learning of mathematics?

The findings revealed that majority of teachers indicated that motivational strategies were instrumental factors that enhanced their classroom practices in the teaching and learning of mathematics. This is evidenced by modal scores of 3 and 4 in the positive statements 1 to 3 and 5 respectively (see Table 1). Furthermore, the findings showed that 97.7% of teachers employed activity based teaching approaches (item 1 of table 1), thus subscribing to learner centred approaches.

An equally significant aspect of motivational strategies in the teaching of mathematics has been revealed in the findings where by both gender regardless of their qualification and teaching experience viewed activity based classroom instruction as essential for strengthening their classroom practices. This is evidenced by percentages of more than 90% for statements that required teachers to indicate whether or not they viewed motivational strategies as key to improving their classroom practices (table 1). Although majority of teachers supported the view that motivational strategies enhanced teachers' classroom practices, they were few (8%) teachers who indicated that they did not proffer timely and constructive feedback to their learners during math instruction and this was in contravention to the view of Rudhumbu (2014) that providing positive comments is important in motivating students to learn mathematics. Failure to provide feedback to learners is a worrisome development in the Botswana Education system, as it is detrimental to students' learning of mathematics with understanding. In support of the above, Peters (2010) said that encouraging learners while making progress in their learning and visualising their success tended to help their conceptual understanding of mathematics. It is

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therefore given that failure to provide timely feedback to learners will not make them realise their potential and ultimately the practice will demotivate them.

Moreover, these teachers who did not perceive learner centred methods as part of motivational strategies were in disagreement with researchers such as Weimer (2012), who proclaimed that student motivation to learn tended to decrease as they adopt dependency on their teachers who tended to dominate decision making processes. In addition, Hadre and Sullivan (2008) strongly suggested that teachers who frequently incorporated appropriate motivational strategies needed to be guided to understand the forces that shape the child's numeracy development and appreciate the diversity children bring along to their early mathematics classes.

By the same token, teachers' views about motivational strategies showed that primary school teachers believed motivational strategies were critical ingredients of teaching and learning mathematics. The average mean response for statements that required teachers to indicate whether they agreed that motivational strategies enhanced students' performance was 3.6 (see table 2), implying that the respondents affirmed the statements. This belief subscribes to Mwamwenda (1995) who asserted that motivation was a driving force that energises, arouses and upholds individuals' urge to engage in certain behaviour. It is therefore worth mentioning that primary school teachers viewed motivational strategies as tools that inculcate eagerness to learn among pupils ultimately helping them perform well in mathematics. Health (1999) shared the same views by emphasising that motivation assisted students to put effort in solving complex mathematics problems thus improving their mathematics skills. In contrast, Etsey (2005) highlighted that students who are not motivated tended to develop negative attitude towards learning mathematics and in the process negatively affecting their academic performance. The findings further revealed that the perception of teachers about motivational strategies on performance was fairly distributed among respondents irrespective of gender, qualification and teaching experience.

Consequently, this tells one that primary school teachers in Botswana clearly understood the importance of motivational strategies in the teaching and learning of mathematics as also evidenced by 93.2% and 97.7% (see table 2) of teachers who agreed that motivational strategies turned pupils into critical thinkers who always enjoyed and wanted to explore more mathematics concepts respectively.

Table 1. Primary school teachers' percentage beliefs about motivational strategies as enhancement of mathematics classroom instructional practices

| Statements | Responses | Gender | | Mean | Mode |
|------------|-----------|-------------|-------------|------|------|
| | | M | F | | |
| 1 | A | 22 | 64 | 3.35 | 3 |
| | % | 95.7 | 98.5 | | |
| | D | 1 | 1 | | |
| | % | 4.3 | 1.5 | | |
| 2 | A | 21 | 65 | 3.57 | 4 |
| | % | 91.3 | 100 | | |
| | D | 2 | 0 | | |
| | % | 8.7 | 0 | | |
| 3 | A | 21 | 63 | 3.38 | 3 |
| | % | 91.3 | 96.9 | | |
| | D | 2 | 2 | | |
| | % | 8.7 | 3.1 | | |
| 5 | A | 22 | 59 | 3.39 | 4 |
| | % | 95.7 | 90.8 | | |

| | | | | | |
|------------------------|---|------|------|------|---|
| | D | 1 | 6 | | |
| | % | 4.3 | 9.2 | | |
| 4 (Negative statement) | A | 5 | 8 | 3.44 | 4 |
| | % | 21.7 | 12.3 | | |
| | D | 18 | 57 | | |
| | % | 78.3 | 87.7 | | |

Q1, 2, 3, 4 and 5 are variables on teachers' beliefs about motivational strategies in improving their classroom practices

Table 2. Primary school teachers' percentage beliefs about motivational strategies as enhancement of learners' mathematical performance

| Statements | 6 | | 7 | | 8 | | 9 | | 10 | |
|----------------|-----------|-------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| Responses | A | D | A | D | A | D | A | D | A | D |
| Gender | | | | | | | | | | |
| Male | 2 8.7% | 21 91.3% | 23 100% | 0 0% | 22 95.7% | 1 1.1% | 23 100% | 0 0% | 21 91.3% | 2 8.7% |
| Female | 2 3.1% | 63 96.9% | 63 96.9% | 2 3.1% | 64 98.5% | 1 1.5% | 59 90.8% | 6 9.2% | 61 93.8% | 4 6.2% |
| Average % | 4.5% | 95.5% | 97.7% | 2.3% | 97.7% | 2.3% | 93.2% | 6.8% | 93.2% | 6.8% |
| Total | 4 | 84 | 86 | 2 | 86 | 2 | 82 | 6 | 82 | 6 |
| Percent | 4.5% | 95.5% | 97.7% | 2.3% | 97.7% | 2.3% | 93.2% | 6.8% | 93.2% | 6.8% |
| Mean | 3.56 | | 3.6 | | 3.6 | | 3.51 | | 3.63 | |
| Average Mean | 3.56 | | 3.59 | | | | | | | |
| Mode | 4 | | 4 | | 4 | | 4 | | 4 | |

Statements 6, 7, 8, 9 and 10 are variables on teachers' beliefs about motivational strategies in improving pupils' mathematical performance.

• **Research Question 2**

To what extent do teachers incorporate motivational strategies in the mathematics classroom instruction?

The findings as shown from table 3 indicate mean responses of 2.23, 3.00 and 3.03 for items 11, 12 and 14 and 3.45 and 3.64 for items 13 and 15 respectively. It is evident that primary school teachers agreed that they used motivational strategies in all aspect of mathematics teaching and that they believed the strategy was necessary for students to learn mathematics with understanding. By the same token, it is undoubtedly specified that teachers employed motivational strategies that promoted learner centred approaches. Evidence for in support of this position, was observed during interview sessions where teachers mentioned that they incorporated motivational strategies by using score board record and displaying learners' marks on the school notice board to encourage active participation during math instruction. This finding corroborates findings of Alan's (2009) study that investigated the effects of incorporating real-life applications and rewards to measure their impact on student motivation where it was revealed that real- world situations motivated students to learn mathematics. Moreover, findings from a study by Zbiek and Corner (2006) revealed that students were more engaged in the applications problems than in drill and practice problems.

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As a consequence, the teachers indicated that they accorded students the opportunity to suggest rewards of their choice so that there is no duplication of the same reward that could demotivate the learners. High achievers were also encouraged to help the low achievers as a form of promoting non-monetary reward which is in support of Guo (2008) who indicated that managers are constantly searching for ways to create a motivational environment where employees can work at their optimal levels to accomplish organisational objectives through managers acknowledging their own weaknesses and strengths and others' needs and wants.

Narrowing the above assertion to classroom instructional practices, it goes without saying that this will therefore give high achievers a sense of accomplishment after helping their peers to master mathematics concepts which in itself bring fulfilment and self-motivation. There is also, however, a further point to be considered, as obtained from the interviews where it revealed that teachers motivated students by praising good behaviour, giving incentives and rewards such as placing a star or stickers, besides the mark a learner got and prizes in form of pens, mathematical sets or puzzles. The sentiment expressed in the preceding statement, embodies the view that, for learners to perform certain tasks and behave in a socially acceptable manner, they must be given incentives and rewards to motivate them (Downey and Kelly, 1998). Similarly, Adams and Pierce's (2013) study showed that learners' self-esteem can be suckled through praising good performance so that they can become motivated and as a result attain excellent results. Furthermore, the findings of this study augment Alan's (2009) finding that rewards were beneficial for students' class motivation.

It can be seen from the above analysis that the incorporation of motivational strategies in classroom instruction as revealed by the findings of the study plays an integral part in enhancing learners' academic performance. Furthermore, it can stimulate learners' intellectual and moral growth to help them develop into independent individuals. It could also be said that, the findings revealed that teachers elicited and built on learners' prior knowledge (Jamar & Pitts, 2005) as the learners had the foundation necessary to tackle new mathematics problems. Whilst the discussion in the preceding paragraph, seem to indicate that teachers view motivational strategies in high regard, there were in instances, in which some teachers did not hold similar views. The findings revealed that 30.4% male and 18.5% female respondents (see table 3) did not offer incentives and rewards and did not always use motivational strategies to facilitate the learning of mathematics. One could attribute these unfortunate situations to lack of motivation on the part of teachers as most teachers held no position of responsibility in the school management. This point is also sustained by the work of, Williams and Burden (1997) who pointed out that demotivated teachers loose impetus and eagerness to act and if this attitude persists, it could pull down magnificent efforts put forth by teachers in trying to improve learners' mathematical performance. Similar views were shared by Rudhumbu's (2014) study on Motivational Strategies in the teaching of primary school mathematics in Zimbabwe, where it was found that even though most teachers concurred that it was important to motivate learners to learn mathematics through the use of motivational teaching strategies, the majority of the same teachers did not seem to be regularly using motivational strategies in the teaching of mathematics. Furthermore, the findings showed that teachers attributed this irregular use of motivational strategies in their teaching to high workloads and large class sizes in their schools.

Table 3. Primary teachers' percentage beliefs about the extent to which teachers incorporate motivational strategies in the mathematics classroom instruction

| Statement | Responses | | Gender | | Mean | Mode |
|-----------|-----------|---|--------|------|------|------|
| | | | M | F | | |
| +11 | A | N | 8 | 19 | 2.23 | 2 |
| | | % | 34.8 | 29.2 | | |
| | D | N | 15 | 46 | 2.23 | 2 |
| | | % | 65.2 | 70.8 | | |
| +12 | A | N | 16 | 53 | | |

| | | | | | | | |
|---------|-----------|---|--------------|------|-------------|------|---|
| | | % | 69.6 | | 81.5 | 3.00 | 3 |
| | D | N | 7 | | 12 | | |
| | | % | 30.4 | | 18.5 | | |
| +14 | A | N | 19 | | 51 | 3.03 | 3 |
| | | % | 82.6 | | 78.5 | | |
| | D | N | 4 | | 14 | 2.75 | |
| | | % | 17.4 | | 21.5 | | |
| Average | Agreed | | 16.3 | | 46.6 | | |
| | % | | 62.4% | | | | |
| | Disagreed | | 9.8 | 27.3 | | | |
| | % | | 37.3% | | | | |
| -13 | A | N | 2 | 4 | | 3.45 | 4 |
| | | % | 8.7 | 6.2 | | | |
| | D | N | 21 | 61 | | 3.64 | 4 |
| | | % | 91.3 | 93.8 | | | |
| -15 | A | N | 2 | 2 | | | |
| | | % | 8.7 | 3.1 | | | |
| | D | N | 21 | 63 | | 3.55 | |
| | | % | 91.3 | 96.9 | | | |
| Average | A | N | 2.3 | 3.4 | | | |
| | | % | 6.7% | | | | |
| | D | N | 23.9 | 70.5 | | | |
| | | % | 93.3% | | | | |

Statements 11, 12, 13, 14 and 15 are variables on teachers' beliefs about the extent of use of motivational strategies in the classroom.

8. CONCLUSIONS

The findings from this study revealed that most of the teachers indicated that motivational strategies were instrumental factors that enhanced their classroom practices in the teaching and learning of mathematics. These findings support what other studies have found which revealed that motivation is a two-way street, and it requires the active participation of both teacher and student and it also improves positive behaviours in the classroom and student's positive attitudes towards mathematics (Portal, Jamie, Sampson & Lisa, 2001; Jamar & Pitts, 2005; Saeed, Sitwat & Zyngier, David, 2012). Findings from this study further suggest that both gender regardless of their qualification and teaching experience viewed activity based classroom instruction as essential for strengthening their classroom practices. However, on the contrary they were a couple of teachers who indicated that they did not proffer timely and constructive feedback to their learners during math instruction. Evidence in support of this preceding finding, is found to be inconsistent with Kariuki and Wilson (2002)'s study that showed that students who were taught using motivational teaching strategies interacted with each other, the teacher, and also had the privilege of receiving daily constructive feedback on their progress.

In view of the extent of use of motivational strategies most of the primary school teachers agreed that they used motivational strategies such as giving high achievers challenging tasks in all aspect of mathematics teaching and that they believed the strategy was necessary for students to learn mathematics with understanding. These findings support a study by

Bembenutty (2005), which revealed that intrinsic motivation were positive and significant predictors of math academic achievement.

RECOMMENDATIONS

The findings provide some clues on teachers' views about motivational strategies employed during mathematics instruction in Botswana primary schools. It has been shown that teachers used activity based teaching approaches, thus subscribing to learner centred approaches. Furthermore, both gender regardless of their qualification and teaching experience viewed activity based classroom instruction as essential for strengthening their classroom practices. Primary school teachers believed that motivational strategies in all aspect of mathematics teaching were necessary for students to learn mathematics through relational understanding as advocated by Skemp (1989).

They were however, few teachers who unfortunately indicated that they did not proffer timely and constructive feedback to their learners during math instruction, a situation that could aggravate a deteriorating country's education state of affairs as envisaged by the poor primary school leaving examination results (BEC- PSLE 2010, 2012). The study, therefore, recommends that:

- Training preparation institutions should review the mathematics pedagogical content to infuse motivational strategies as a driver of the educational system in Botswana primary schools. This is intended to empower future teachers with motivational and appropriate pedagogical skills for mathematics classroom use.
- School Academic Heads (School heads, Deputy Heads, Senior Teachers for Math and Science) should organise School Based Training geared towards empowering teachers with motivational strategies or skills for effective use during math instruction. This will help increase teachers' confidence levels to effectively integrate relevant motivational techniques to enhance students' zeal for mathematics. This therefore calls for the Ministry of Education and Skills Development to increase the vote for school based workshops and seminars to enable School Heads organise quality workshops for teachers without being constrained by financial resources.
- Officers from the Department of Teacher Training Development who are responsible for mathematics subject teachers in schools should monitor the effectiveness of teachers' mathematical pedagogical approaches during math instruction and develop intervention strategies to address the challenges experienced by teachers in their pursuit to create an environment that is fascinating and interactive.

Finally the research findings have implications on research and practice in that future research need to be conducted with the following pedagogical issues in mind:

- ❖ What skills and abilities do teachers need to effectively integrate motivational techniques in math instruction?
- ❖ What support is needed by teachers to effectively implement use of motivational strategies during math instruction?

Moreover, the findings have implications on classroom practices in that teachers as instructional implementers need to re-define their views about use of motivational strategies and adopt positive views intended to promote effective use of motivational techniques as a catalyst to learning mathematics with understanding. It is therefore on the basis of the aforementioned that teachers should strive to embrace progressive motivational strategies and techniques and make it the basis of their classroom mathematics instructional practices.

REFERENCES

- Adams, C.M. & Pierce, R. (2013). Characteristics of Effective Teaching. Retrieved 18 March, 2014 from <http://www.lingofest.com/resources/characteristics>.
- Bell, J. (1998). *Doing Your Research Project* (2nd ed.). Buckingham: Open University Press.
- Bembenutty, H (2005). Preservice teachers' motivational beliefs and self-regulation of learning. Retrieved 26 May, 2014 from <http://files.eric.ed.gov/fulltext/ED496521.pdf>.

- Best, G. O and Kahn, J. (1998). *Research in Education*. (8th ed.). Boston: Allyn & Bacon.
- Botswana Examination Council (2010). PSLE results summary. Retrieved 16 November, 2013 from [http://www.bec.co.bw/past-results/2010/2010 psle summary.pdf](http://www.bec.co.bw/past-results/2010/2010_psle_summary.pdf).
- Botswana Examination Council (2012). PSLE results summary. Retrieved on 16 November, 2013 from [http://www.bec.co.bw/past-results/2010/2010 psle summary.pdf](http://www.bec.co.bw/past-results/2010/2010_psle_summary.pdf).
- Brophy, J and Good, T. (1974). *Teacher student relationships: causes and consequences*. New York: Holt, Rinchart and Winston.
- Cohen, L. & Manion, L. (1994). *Research methods in Education* (4th ed.). Routledge: London.
- Creswell, J. W. (1994). *Research Design: Qualitative & Quantitative Approaches*. Sage Publications: London
- Downey, C. & Kelly, A. (1998). *Using effective data for school improvement: Developing and utilising metrics*. New York: Routledge.
- Etsey K. (2005). Department of Educational foundations, University of cape Coast. Accra. Cape Coast.
- Gay, L.R., & Airasian, P. (1996). *Educational Research: Competence for analysis and application*. New Jersey: Prentice – Hall.
- Guo, K. L. (2008). DECIDE: A Decision-Making Model for More Effective Decision Making by Health Care Managers. Volume 27 Number 2, Pages 118 – 127 Retrieved 03 May, 2014 from <http://www.nursingcenter.com>.
- Grobler, P. (2006). *Human Resource Management in South Africa*(3rd Ed). London: Thompson Learning.
- Hall,J.F. (1989). *Learning and memory conditions*. Massachussetts: Allyn and Bacon
- Handre, P & Sullivan, D.W. (2008). Teacher Perceptions and Individual Differences: How they influence rural teachers’ motivating strategies. *Teaching and Teacher Education*, 24 (8), 2059- 2075.
- Health, D. (1999). Motivational strategies for teaching mathematics. Retrieved 18 March, 2013 from [http://www.ehow.com/infor7986702-motivational startegies](http://www.ehow.com/infor7986702-motivational_startegies).
- <http://www.shabait.com/categoryblog/3200-what-motivation-is>. Retrieved 01 November, 2014.
- Jamar, I & Pitts, V.R. (2005). High expectations: A “how” of achieving equitable mathematics classrooms. *Negro Education Review*, 56(2/3), pp.127-134.
- Kariuki, Patrick; Wilson & Paula (2002).The Effects of Motivation on At Risk High School Students in Math Performance. Retrieved 16 March, 2014 from <http://eric.ed.gov/?id=ED474447>
- Mwamwenda, T.S. (1995). *Educational Psychology: An African Perspective*. Durban: Butterworths.
- Mora, M. (2000). How to use Qualitative and Quantitative research in new product development. Retrieved on 25 March, 2013 from [www. relevantinsight.com](http://www.relevantinsight.com) ezine articles.com.
- National Research Council (2000): *Progress Assessment of the PATH Program*.
- Patrick, H. & Yoon, C. (2004). Early adolescents motivation during science investigation, *Journal of Educational research*, vol 97, pp.319-328.
- Peters, L. C.(2010).Teachers help students succeed by using multiple intelligences theory in the classroom. Retrieved 14 July, 2014 from <http://www.ttacnews.vcu.edu>
- Portal, Jamie; Sampson & Lisa (2001). *Improving High School Students' Mathematics Achievement through the Use of Motivational Strategies*. Retrieved 18 March, 2014 from <http://files.eric.ed.gov/fulltext/ED460854.pdf>.
- Rudhumbu, N. (2014). Motivational Strategies In The Teaching Of Primary School Mathematics In Zimbabwe. *International Journal of Education Learning and Development UK* Vol.2, No.2, pp. 76-103. Retrieved 03 July, 2014 from <http://www.ea-journals.org> on.
- Salleh, M.J. & Abdulwahab Al-Daba, A.M (2014). *An Analysis of Administrative Staff’s Participatory Decision Making through Syura at International Islamic Tertiary Institution*.

- International Journal of Humanities Social Sciences and Education (IJHSSE) Volume 1(9), pp. 33-39. Retrieved 30 September, 2014 from <http://www.arcjournals.org> on.
- Ryan, R. M. and Deci, E. L.(2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology* 25, pp.54–67. Retrieved 20 June, 2014 from <http://www.idealibrary.com>.
- Saeed, Sitwat & Zyngier1, David. (2012).How Motivation Influences Student Engagement:A Qualitative Case Study. *Journal of Education and Learning*; Vol. 1, No. 2, pp.252. Canadian Center of Science and Education. Retrieved 25 June, 2014 from <http://dx.doi.org/10.5539/jel.v1n2p252>
- Salani, E. (2013).Teachers' Beliefs and Technology: Calculator Use in Mathematics Instruction in Junior Secondary Schools in Botswana. *EUROPEAN JOURNAL OF EDUCATIONAL RESEARCH* Vol. 2, No. 4, pp.151-166. Retrieved 26 May, 2014 from <http://www.eurojedu.com>.
- Skemp, R. R. (1989). *Mathematics in the primary school*. London: Routledge. Retrieved 03 June, 2014 from http://www.sagepub.com/upm-data/13902_Sample.pdf.
- Skinner, E.A. & Belmont, M.J. (1993). Motivation in the classroom: Reciprocal effects of teacher behaviour and student engagement across the school year. *Journal of Educational Psychology*, 85(4), pp.571-581
- Skollingsberg, (2003). *A comparison of Intrinsic and Extrinsic classroom motivation*. London. Roper Publication.
- Smith, S. (2002). EHS Today study: Incentives more important than ever in motivating employees. Retrieved 25 March, 2013 from www.Ehstoday.com/news/ehs.
- Svinicki, M.D. (2005). Student goal orientation, motivation and learning. Retrieved 23 March, 2013 from <http://www.theideacenter.org/site/default/files/idea.paper41.pdf>.
- Tella, A., Ayeni, C.O., & Popoola, S.). (2007).The impact of motivation on students' academic achievement and learning outcomes in mathematics among secondary school students in Nigeria. Vol 3(2), pp. 149-156. Retrieved 18 March, 2013 from <http://www.ejmste.com/Tella.pdf>.
- Weimer, M. (2012).Five Characteristics of Learner-Centered Teaching. Retrieved 20 May, 2014 from <http://www.facultyfocus.com/articles/effective-teaching-strategies/five-characteristics-of-learner-centered-teaching>.
- Wiersma, W. & Jurs, S.G. (2005). *Research Methods in Education* (8th Ed.). Virginia: Allyn & Bacon.
- Wiseman, D.G. & Hunt, G.H. (2001). *Best practice in motivation management*. Springfield. IL: Charles and Thomas.
- Zbiek, R. M., & Conner, A. (2006). Beyond motivation: Exploring mathematical modelling as a context for deepening students' understanding of curricular mathematics. *Educational Studies in Mathematics*, 63(1), 89-112. Retrieved on 13 May, 2014 from <http://www.digitalcommons.fiu.edu/cgi/viewcontent.cgi>.