

**TEACHERS' INSTRUCTIONAL SKILLS AND PUPILS' ATTITUDE TOWARDS
MATHEMATICS IN UYO LOCAL GOVERNMENT
AREA OF AKWA IBOM STATE**

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ABSTRACT

The study investigated the relationship between teachers' instructional skills and primary school pupils' attitude towards Mathematics in Uyo Local Government Area of Akwa Ibom State. Ex-post facto research design was adopted for the study and the population consisted of all public primary school teachers and pupils in Uyo Local Government Area. 60 teachers and 352 pupils randomly selected formed the sample for the study. The instruments used were Teachers' Instructional Skills Questionnaire (TISQ) and Pupils' Mathematics Attitude Inventory (PMAI) which were validated and the reliability co-efficient of .84 and .79 were obtained. Pearson's Product Moment Correlation (PPMC) was used for answering the research questions for testing the hypotheses at .05 level of significance. The result obtained showed that there is a significant relationship between teachers' instructional skills and pupils' attitude towards mathematics in Uyo local Government Area of Akwa Ibom State. These are rooted in the assessment, communication, management and motivational skills teachers utilize to improve teaching. The consequences of not using these instructional skills are too grave for any teacher to ignore. Therefore, there is need for teachers to make use of these instructional skills for effective teaching /learning process. Appropriate recommendations were made based on the findings of the study.

KEYWORDS: Instructional skills, attitude, assessment, communication, management and motivation.

Introduction

Mathematics has been highly rated among other subjects and for that, has been described as the queen of all sciences and servant to all disciplines. In spite of all these importance accorded Mathematics, there exist low levels of attainment by learners at every segment of the educational system in the country. This has given many educators and stakeholders a high level of concern.

According to Adebayo (2005), among the personality factors that contributes to academic performance are self-concept and attitude. A learner's attitude relates to all the factors of his

education. According to Odufuye (2015), the attitude of a learner towards Mathematics will determine the measure of the learner's attractiveness or repulsiveness to Mathematics. This invariably, will influence the learner's choice and even, achievement in that subject. Olaosebika (2015) in his study on attitude of pupils towards Mathematics stated that attitudes are related to the achievement and enrolment in the subject. According to him, poor attitude leads to poor achievement and poor achievement leads to not offering the subject. It follows therefore, that in order to have better pupils' performance in Mathematics, there is need to motivate them to have a positive attitude towards the subject. This is supported by the findings of Adebowale (2000) who said that pupils' lack of interest in Mathematics makes it difficult for teachers to impart pertinent knowledge to them on the subject.

Research findings by (Aghenta, 2002; Soyibo, 2015) have shown that Nigerian pupils have negative attitude towards science, for those who have chosen to study science subjects, and that their performance in Mathematics and science has been poor. Williams (2004) found significant relationships between attitude to a subject and achievement in that subject. Akinola (2003), similarly, stresses that attitude has a greater influence on aspects of learning which are emphasized in the classroom. Dulton (2004) concurs that attitudes are related to academic performance when measured on promotion grades.

According to Bandura (1977), attitude is often used in conjunction with motivation to achieve. It is how well people judge themselves to perform a task successfully. Moreover, extensive evidence and documentation were provided for the conclusion that attitude is a key factor in the extent to which people can bring about significant outcomes in their lives. The relationship between attitude and academic achievement is best summed up by Bandura (1977) "The evidence is relatively consistent in showing that efficacy beliefs (such as attitude) contribute significantly to levels of motivation and academic achievement. They predict not only the behavioural changes accompanying different environmental influences but also differences in behaviour between individuals receiving the same environmental influence, and even variation within the same individual in the tasks performed and those shunned or attempted but failed (Bandura, 1977)". Aiken (2000) referred to attitude as "a learnt predisposition or tendency on the part of an individual to respond positively or negatively to some object, situation, concept, or another person". He added that the positive or negative feeling is of moderate intensity and reasonable stability. Neale (2006) defined attitude towards Mathematics as an aggregated measure of "a liking or disliking of Mathematics, a tendency to engage in or avoid Mathematical activities, a belief that one is good or bad at Mathematics; and a belief that Mathematics is useful or useless".

In a more objective term, attitude may be said to connote a response consistency with regards to certain categories of stimuli (Anastasi, 2014). He said further that in actual practice, attitude has been most frequently associated with emotionally toned responses. Zimbardo and Leippe (2001) defined attitude as favourable or unfavourable evaluative reasons whether exhibited in beliefs, feelings, or inclinations to act towards something. Also attitude is commonly referred to as beliefs and feelings related to a person or event and their resulting behaviour. This means that when individuals have to respond quickly to something, the feeling can guide the way they react.

Psychologists like Greenwald, McGhee and Schwartz (2002) agree that knowing people's attitude is to predict their actions. Attitude involves evaluations. According to them, attitude is an association between an object and our evaluation of it. When this association is strong, the

attitude becomes accessible. Encountering the object calls up the associated evaluation towards it. They said further that one acquires attitude in a manner that makes one sometimes potent, and sometimes not. For this reason, they concluded that attitudes predict actions if other influences are minimized, if it is specific to the action and is potent. In considering the academic achievement of pupils as being greatly influenced by their attitude towards different subjects, findings revealed that attitude affects achievement either positively or negatively.

Greenwald, McGhee and Schwartz (2002) define attitude to Mathematics as how an individual feels about mathematics. Javis and Pell (2004) contend that when pupils were taken to a science centre and given exposure to space science, the pupils' attitude towards mathematics was positively affected. Dulton (2004), found that high achievers have more positive attitude towards mathematics than the under-achievers. He said further that when pupils were asked to list their subjects in the order of preference, the achievers gave mathematics a significantly high ranking than their other counterparts.

Attitude contributes substantially to the difficulties encountered by pupils in learning and understanding of mathematics. A learner's attitude relates to all the facets of his or her education. In both theory and practice, a strong relationship between attitude towards mathematics and achievement in it has long been assumed. As illustrated by Suydam and Weaver (2005), teachers and other mathematics educators generally believe that children learn more effectively when they are interested in what they learn and that they will achieve better in mathematics if they like it. Therefore, continual attention should be directed towards creating, developing, maintaining and reinforcing positive attitudes.

The quality of education depends on the teacher as reflected in the performance of their pupils. Teachers play crucial role in the educational attainment of pupils because they are ultimately responsible for translating into actions the principles based on practice during interaction with the pupils. The process of teaching by implication involves a teacher to apply strategies and instructional skills in presenting materials to the learners. Instructional skills are therefore necessary for effective learning. These instructional skills of teachers are essential for the classroom to function effectively. To understand instructional skills properly, there is the need for us to understand the concept of instruction. Instruction has been defined and described differently by different authors in the area of education. Kpangbon and Onwuegbu (2004) describe instruction as the process of communicating information to the learner, stimulating relevant learning activities, evaluating the result of these activities and taking remedial action if necessary. Okeke (2006) also perceived instruction as the process of passing on information from a more knowledgeable person (instructor) to a less knowledgeable person. In the process of instruction, the instructor, through order, command or direction, requires the learner to perform certain tasks or operation. The idea of instruction, judging from the view of Okeke, can be explained in terms of "drill". A command is given and there is compliance implying the stimulus response process of learning.

Instruction in the context of this study therefore, is the process of communicating information to the pupils, stimulating relevant learning activities, evaluating the result of these activities and taking remedial action if necessary by teachers in classroom. Instructional skills according to Kpangban and Onwuegbu (1992) are patterns adopted by teachers to interact with their subjects. It is the knowledge and ability the teacher uses to communicate with the pupils. According to Romiszowski (2004) instructional skills is described as the process teachers use to

communicate information to the learner, stimulating relevant learning activities and taking remedial action.

Further, instructional skills according to Saylor and Alexander (2004) includes; assessment skills, (that is ability and knowledge of the teacher to assess the learner) communication skills, (that is ability to interact with the learner) management skills, (that is the ability to control human and material resources) motivational skills (that is the ability to arouse the moral of the learner) and evaluation skills (that is the ability to ascertain whether learning has taken place). Assessment skills are knowledge and ability of the teachers to consider and judge pupils in the classroom (Okeke, 1996). Assessment skill as part of the instructional skills are an attempt to find out the strengths and weaknesses or the effectiveness of a programme (Anagbogu, 2005). Assessment skills are the knowledge and ability of teachers to determine the strengths and weakness of the learners.

In communication skills, teachers ought to pass on veritable lesson objectives to the learner. Rosenbaun (2005), explained that communication skills are the ability of the teacher to understand what the learner is trying to express and being able to express him/her self to the learner. Through communication skills the teacher is able to clarify his feeling about the topic being taught. In management skills however, Deczecco and Crawford (2004) explained that management skills are the process or act of controlling or organizing lesson which the teacher adopt to enhance learning. The classroom teacher needs the management skill to be able to organize the learners for effective instruction. In Motivation skills (Anagbogu, 2005) sees it as inner drive or compulsion that is not easily noticeable. Motivation has to do with the struggle to achieve a goal. Motivation skills are the inner drive of teachers which enable them to achieve their goal. All these skills according to Dearden (2003) are needed for teaching and learning to be effective. Instructional skills, therefore, in this present study is the teaching strategies or plans adopted by teachers to ensure that children reach their potentials.

A variety of instructional skills according to Shostak (2006) include: assessment instructional skills, communication instructional skills, management skills, motivational skills and evaluation skills. Assessments are frequently used to sum up a person's achievement (Knight, 2001). Assessment provides 'feed out', in the shape of a warrant to achievement or competence (such as a degree certificate), and in the form of information that can be used as performance indicators in appraising the work of teachers, departments, college and national systems of education (Knight, 2001). Assessments are also used to identify what learners need to do in order to improve their work (Lejk and Willy, 2001). Diagnostic assessment, which involves using carefully designed tasks to try and identify barriers to learning, can be seen as a type of formative assessment that is little used in higher education (Knight, 2001).

Assessment according to Black and William (1998) does not mean testing, although tests and examination are ways of assessing. Assessment plans are necessary and, ideally, should be in course handbooks given to pupils and on the course website that they use communication instructional skills. Communication is the art and process of creating and sharing ideas (Rosenbaum, 2005). Effective communication depends on the richness of those ideas communication skills take the basic skills of communication and frame them within a general understanding of how the communication process works when you understand all of the elements involved when people communicate, they can learn to influence not only your own communication, but the communication of others (Rosenbaum, 2005). Communication means a systematic way of formulating information, knowledge, ideas, opinions, feelings, among others

and passing it over to an audience who successfully interprets (decodes) it and reacts to it (Ohuuche 1996). Communication in a language may be in the oral (spoken) or in the written form. Communication skills are the tools that we use to remove the barriers to effective communication (Rosenbaun, 2005). A person might experience only one of these barriers at a time, or the person might find himself facing them all. Getting your message to the other person requires that the person recognize these barriers exist between him, and that he then apply the proper tools, or communication skills, to remove those barriers preventing his message from getting through. Communication is a two-way street. The person on the other side of those barriers will also try to send messages back to you. His ability to understand them clearly could be left to a dependence on their ability to use communication skills (Rosenbaum, 2005).

Management is an explicit process, it can be taught, and it can be learned. It takes time, dedication, and self-discipline and management is often the difference between success and failure. Several defining characteristics demarcate management skills and differentiate them from other kinds of managerial characteristics and practices (American Management Association, 2000). First, management skills are behavioural. They are not personality attributes or stylistic tendencies. Management skills consist of identifiable sets of actions that individuals perform and that lead to certain outcomes (American Management Association, 2000). Second, management skills are controllable. The performance of these behaviours is under the control of the individual. Third, management skills are developable. Performance can improve. Unlike intelligent quotient or certain personality or temperament attributes that remain relatively constant throughout life, individuals can improve their competency in skill performance through practice and feedback (American Management Association, 2000). Individuals can progress from less competence in management skills, and that is the primary objective of this study. The researcher therefore seeks to find out the relationship between teachers' instructional skills and primary school pupils' attitude towards mathematics in Uyo Local Government Area

Statement of the Problem

The poor achievement of primary school pupils in examinations in recent times have become a thing of worry to parents, educators, researchers and the government. This ugly incident of pupils' poor academic achievement in mathematics is lingering, despite all the efforts of the government in ensuring that qualitative education is provided at the primary school level, for instance, the minimum qualification for primary school teachers has been upgraded by the government to National Certificate in Education (NCE), school facilities and infrastructure has equally been improved as well as funding, such that free education has been provided to public primary schools through Universal Basic Education (UBE) programme. Despite these efforts, pupils' achievement continues to decline.

Moreover, it has been observed that in recent times, most pupils are having poor attitude towards mathematics, resulting to learning disability and math phobia. These pupils lack confidence in them and in their ability to perform well in mathematics. In the bid to finding possible solution to this issue of pupils' poor attitude towards mathematics, researchers have embarked on series of studies. Evidence from some of the literature suggests that one of the essential determinants of success or failure in education is the instructional skills which a teacher adopts in the classroom teaching and learning. Therefore, the problem of this study posed as a question is: what is the relationship between teachers' instructional skills and pupils' attitude towards mathematics in Uyo Local Government Area?

Research Questions

The following research questions guided the study:

1. What is the relationship between teachers' assessment instructional skill and pupils' attitude toward mathematics?
2. What is the relationship between teachers' communication instructional skill and pupils' attitude toward mathematics?
3. What is the relationship between teachers' management instructional skill and pupils' attitude toward mathematics?

Research Hypotheses

The following hypotheses were formulated to guide this study and tested at 0.05 level of significance.

H0₁: There is no significant relationship between teachers' assessment instructional skill and pupils' attitude toward mathematics.

H0₂: There is no significant relationship between teachers' communication instructional skill and pupils' attitude toward mathematics.

H0₃: There is no significant relationship between teachers' management instructional skill and pupils' attitude toward mathematics.

Methodology

The ex- post facto research design was adopted for the study. The study was conducted in Uyo Local Government Area of Akwa Ibom State. The population of the study consisted 670 teachers and 5,723 primary three pupils in the 49 public primary schools. The sample size of this study consisted 370 primary 3 pupils and 60 primary 3 teachers in all public primary schools in selected through simple random sampling technique. Hence, the total sample size of both pupils and teachers for this study was 412. The instruments used were Teachers' Instructional Skills Questionnaire (TISQ) and Pupils' Mathematics Attitude Inventory (PMAI). There were a total of (29) items in the (TISQ), 8 on assessment instructional skill, 5 on communication instructional skill, 8 on management instructional skill and 8 on motivational instructional skill. Pupils' Mathematics Attitude Inventory (PMAI) consisted of (20) items. The two instruments were structured on 4-point Likert type Scale of strongly agree (4 points), Agree (3 points), Disagree (2 points) and strongly disagree (1 point). These instruments were validated and they had reliability co-efficient of .84 and .79 using Cronbach's Alpha statistics. The administration of the questionnaire was personally done by the researcher which were filled and returned by pupils and teachers. Pearson Product Moment Correlation (PPMC) was used for answering the research questions while Pearson Product Moment Correlation was also used for testing the hypotheses by comparing it with the critical-r-value. The hypotheses formulated were tested at .05 level of significance. In order to take decision as regards the research questions, any r-value that falls between 0.10 – 0.39 was regarded as low, 0.40 – 0.59 was regarded as moderate and 0.60 – 0.99 was high. In terms of hypotheses, whenever the calculated r-value was greater than the critical r-value, the null hypothesis was rejected and also whenever the calculated r-value was less than the critical r-value, the null hypothesis was accepted.

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RESULTS AND DISCUSSIONS

Research Question One

What is the relationship between assessment instructional skill and pupils' attitude towards mathematics?

Table 1: Pearson's Product Moment Correlation Analysis of the relationship between assessment instructional skill and pupils' attitude towards mathematics (N=412)

Variables	ΣX ΣY	ΣX^2 ΣY^2	ΣXY	r
Assessment instructional skill	3548	56550	117851	0.92
Pupils' attitude towards Mathematics	8037	264389		

$\alpha = 0.05$, $R^2 =$ coefficient of determination

Result on Table1 showed that the correlation between assessment instructional skill and pupils' attitude towards mathematics was 0.92. This means there was a very high and strong positive relationship between assessment instructional skill and pupils' attitude towards mathematics.

Research Question Two

What is the relationship between communication instructional skill and pupils' attitude towards mathematics?

Table 2: Pearson's Product Moment Correlation Analysis of the relationship between communication instructional skill and pupils' attitude towards mathematics. (N=412)

Variables	ΣX ΣY	ΣX^2 ΣY^2	ΣXY	r
Communication instructional skill	3656	60134	121505	0.97
Pupils' attitude towards Mathematics	8037	264389		

$\alpha = 0.05$, $R^2 =$ coefficient of determination

Result on Table 2 showed that the correlation between communication instructional skill and pupils' attitude towards mathematics was 0.97. This means there was a very high and strong positive relationship between communication instructional skill and pupils' attitude towards mathematics.

Research Question Three

What is the relationship between management instructional skill and pupils' attitude towards mathematics?

Table 3: Pearson's Product Moment Correlation Analysis of the relationship between management instructional skill and pupils' attitude towards mathematics (N=412)

Variables	ΣX ΣY	ΣX^2 ΣY^2	ΣXY	r
Management instructional skill	3584	58264	119284	0.91
Pupils' attitude towards Mathematics	8037	264389		

$\alpha = 0.05$, $R^2 =$ coefficient of determination

Result on Table 3 showed that the correlation between management instructional skill and pupils' attitude towards mathematics was 0.91. This means there was a very high and strong positive relationship between management instructional skill and pupils' attitude towards mathematics.

Hypothesis One

There is no significant relationship between assessment instructional skill and pupils' attitude towards mathematics.

Table 5: Pearson Product Moment Correlation of relationship between assessment instructional skill and disruptive pupils' attitude towards mathematics. (N=412)

Variables	ΣX ΣY	ΣX^2 ΣY^2	ΣXY	r-cal.	r-crit.
Assessment instructional skill	3548	56550	117851	0.92	0.139
Pupils' attitude towards Mathematics	8037	264389			

The result presented in Table 5 revealed that the calculated r-value of .92 is greater than the critical r-value of 0.139 at .05 level of significance with 410 degrees of freedom. With this result, the null hypothesis that says there is no significant relationship between assessment instructional skill and pupils' attitude towards mathematics was rejected. This implies that there is a significant relationship between assessment instructional skill and pupils' attitude towards mathematics.

Hypothesis Two

There is no significant relationship between communication instructional skill and pupils' attitude towards mathematics.

Table 6: Pearson's Product Moment Correlation of significant relationship between communication instructional skill and pupils' attitude towards mathematics (N=412)

Variables	ΣX ΣY	ΣX^2 ΣY^2	ΣXY	r-cal.	r-crit.
Communication instructional skill	3656	60134			
			121505	0.97	0.139
Pupils' attitude towards Mathematics	8037	264389			

The result presented in Table 5 revealed that the calculated r-value of .97 is greater than the critical r-value of 0.139 at .05 level of significance with 410 degrees of freedom. With this result, the null hypothesis that says there is no significant relationship between communication instructional skill and pupils' attitude towards mathematics was rejected. This implies that there is a significant relationship between communication instructional skill and pupils' attitude towards mathematics.

Hypothesis Three

There is no significant relationship between management instructional skill and pupils' attitude towards mathematics.

Table 7: Pearson's Product Moment Correlation of significant relationship between management instructional skill and pupils' attitude towards mathematics (N=412)

Variables	ΣX ΣY	ΣX^2 ΣY^2	ΣXY	r-cal.	r-crit.
Management instructional skill	3584	58264			
			119284	0.91	0.139
Pupils' attitude towards Mathematics	8037	264389			

The result presented in Table 6 revealed that the calculated r-value of .91 is greater than the critical r-value of 0.139 at .05 level of significance with 410 degrees of freedom. With this result, the null hypothesis that says there is no significant relationship between management instructional skill and pupils' attitude towards mathematics was rejected. This implies that there is a significant relationship between management instructional skill and pupils' attitude towards mathematics.

Discussion

The findings of the relationship between teachers' assessment instructional skill and pupils' attitude towards mathematics revealed that there is a significant relationship between teachers' assessment instructional skill and pupils' attitude towards mathematics. This result is based on the fact that, teachers who assess the strength and weakness of a pupil, have the ability to informally assess the skills of pupils needs, involve parents and pupils in the assessment process, employ meaningful pre-assessment and differentiation, relate the behaviours of particular pupils in learning situations, including the use assessments to draw up plans for pupils,

re-evaluate from time to time in order to add, subtract depending on child's need, use assessment as a planning tool for the class as a whole, interprets a child's assessment result and plan effective programme of intervention and encourage peer and self-assessment and feedback to pupils on how to improve and not just their intakes. Therefore, it was evidently clear that there is the need for assessment instructional skill of teachers for classroom instruction. Agreeing to this fact, Knight (2001) noted that assessment provides feedback in the shape of a warrant to achievement or competence (such as a degree certificated) and in the form of information that can be used as performance indicators in appraising the work of teachers, departments, college and national systems of education. More so, Black and William (1998) opined that assessment plans are necessary and, ideally, for classroom instruction.

The findings of the relationship between teachers' communication instructional skill and pupils' attitude towards mathematics revealed that there is a significant relationship between teachers' communication instructional skill and pupils' attitude towards mathematics. The findings of the study supports of Rosenbaun (2005), who posited that the ability to understand information, knowledge, ideas, opinions, feelings, among other clearly could be left to a dependence on teachers ability to use communication skills. The author also noted that effective communication depends on the richness on communication skills.

The findings of the relationship between teachers' management instructional skill and pupils' attitude towards mathematics revealed that there is a significant relationship between teachers' management instructional skill and and pupils' attitude towards mathematics. This result is possible because it is based on the fact that, teachers who make use of appropriate behaviour management techniques, make use of adequate timing and materials when teaching, establishing self confidence among the pupils, create posts that go with responsibility and authority among the pupils, provide an opportunity and encouragement for learner's involvement in teaching-learning activities, systematically eliminate mathematics anxiety as well as encouragement of positive attitude towards mathematics. Supporting the above statements, Isaacs and McAllister, (2008) agreed that management is the practice of making rational decisions for allocating scarce resources of satisfy goals in a risky environment. Moreover, American Management Association (2000) posits that management skills are behavioural. It consists of identifiable sets of actions that individuals perform and that lead to certain outcomes.

Conclusion

The study has indeed revealed a significant relationship between teachers' instructional skills and pupils' attitude towards mathematics in Uyo local Government Area of Akwa Ibom State. These are rooted in the assessment, communication, management and motivational skills teachers utilize to improve teaching. The consequences of not using these instructional skills are too grave for any teacher to ignore. Therefore, there is need for teachers to make use of these instructional skills for effective teaching /learning process as well as enhancing positive mathematics attitude among pupils. One of the findings of this study is that teachers in primary schools need assessment instructional skills for teaching /learning process. Therefore, this indicated the need for primary school teachers to achieve professional growth through instructional skills, for effective in teaching. The result also indicated that the teachers' communication skill is important. This implies that teachers should utilize skills for effective teaching /learning process. This also applies to management skills, and motivational skills.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Seminars and conferences should be organized by teacher educators for teachers from time to time to keep them abreast of different instructional skills which they would use in teaching their pupils.
2. Teacher educators should work hard to ensure that teachers are prepared in various ways of assessing learning.
3. Teacher educators on their own should strive to build energy with other teachers with the view of getting acquainted with necessary skills for teaching pupils.
4. Teachers should be trained on the rudiments of effective communication. This will make them avoid the use of one-way communication.

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