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## ASSESSMENT OF EFFECTIVE STRATEGIES FOR COUNSELLING EARLY CHILDHOOD PRE-SERVICE TEACHERS TOWARDS LEARNING OF MATHEMATICS

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### **Abstract**

*The study assesses effective strategies for counselling early childhood pre-service teachers towards learning of mathematics. Based on the purpose of the study, one research question and one hypothesis were formulated. The population of the study comprised of four hundred and fifty (450) mathematics teachers. Sample used consisted of 200 mathematics teachers for the study. The instrument used for data collection is Effective strategies for the implementation of Education Mathematics Curriculum (ESIEMC). The face and content validity of the instrument were done by expert judgments of two curriculum educationist and a mathematics education expert. The reliability of the instrument was found to be 0.72. The data collected were analyzed using mean scores and standard deviation for research questions while the hypothesis was tested using t-test at 0.05 level of significant. The result showed that mathematics teacher educators have positive perception towards effective strategies for counselling early childhood care education pre-service teachers on the study of mathematics and this will improve teachers' performance irrespective of gender. It was recommended that to arouse students interest in mathematics, teachers should ensure that prep-time and other free periods in schools are mapped out for tackling mathematics questions and exercises.*

**Keywords:** Assessment, Effective Strategies for counselling, and Mathematics.

## Introduction

Mathematics is one of the important subjects in the schools. It helps in our thinking, our expression of thought and the logicity of our behaviours. It is the precursor of scientific discoveries and inventions (Eguavon, 2002). It trains certain intellectual skills in individuals, which qualify the person as an intelligent being such as the ability to analyze complex problems into simpler parts, to recognize the logical relations between interdependent factors so as to discover and formulate a general law on them inter relationship. Mathematics enable students develop scientific skills, knowledge and positive attitude towards science and technology. Despite the importance accorded to the learning of mathematics, many students do not attend mathematics lessons. Even among those who attend the mathematics lesson, many do not pay attention to the teacher. Many of the students do not study mathematics on their own neither do they solve mathematics problem on their own. When the option is available, many students prefer not to have anything to do with the learning of mathematics (Uwadiae, 2007). This has led them, among other things, to achieve poorly in mathematics both in internal and external examinations. This hatred is partly due to lack of proper counselling of students on the study of mathematics in schools. One of the factors which have been given little or no attention by most researchers which inevitably could affect the students' performance in mathematics examination is the issue of Guidance and Counselling.

According to Olusakin (2005), counselling is defined as Consultation, mutual interchange of opinions, deliberating together. Similarly, Durojaye (1992) says Counselling is a dynamic and purposeful relationship between two people who approach a mutually defined problem with mutual consideration of each other to the end that the younger or less mature, or more troubled of the two is aided to a self-determined resolution of his problem. As for Shinner (1999), Counselling relationship refers to interaction which (i) Occurs between two individuals called "counsellor" and "client/Counselee" (ii) Takes place within a professional setting, and (iii) is initiated and maintained as a means of facilitating changes in behaviour of the client. The counselling relationship in this case develops from the interaction between two individuals, one a professionally trained worker and the other person who seeks his services. Murphy (2002) defines counselling as a process which takes place in a one –to –one relationship between an individual beset by problems with which he cannot cope alone and a professional worker whose training and experience have qualified him to help others reach solutions to various types of personal difficulties.

An analysis of the above viewpoints will reveal the major elements of counselling: Counselling involves two individuals; one seeking for help and the other, a professional, trained person, who can help the first. There should be a relationship of mutual respect between the two individuals. The counsellor should be friendly and co-operative and counselee should have trust and confidence in the counsellor. There are two approaches to counselling method which appear to be very distinct and, therefore, deserve special mention: (a) Directive counselling (b) Non – directive counseling Directive Counselling: According to this method, the counsellor has to make a previous preparation for the counselling interview; he collects facts about the counselee and his circumstances, for which he makes use of various techniques and sources of information. He analyses the facts, disentangles and classifies them. He then synthesizes and integrates the facts, views them inter- precise nature and causes of the problem in the light of the

synthesis. He finally makes the prognosis by viewing the various possibilities or plans of action open to the counselee and determines the one that in his judgment is most adapted to the counselee's problem.

**Non- directive Counselling:** This method of approach pre-supposes no previous preparation for the interview. The counsellor meets the counselee for the first time when the counselee calls on him in a state of anxiety, worry or tension. The counsellor tries to bring about such conditions in which the counselee can make a free narration of problem and feelings and attitudes concerning himself, his situation or other persons. The counsellor provides the counselee a complete freedom to unburden him/her to relieve him/her of the emotions and feelings that he/she has been suppressing from others. In a school guidance programme, the counsellor may be required to use both approaches to counselling. The counsellor may take to directive counselling when dealing with the routine problems of educational or vocational guidance, for example, guidance in matters of selection of courses of studies or choice of a vocation, etc. The counsellor analyses the characteristics of the counselee and leads him/her to decide upon a programme of action whose requirements are in keeping with their abilities and interests. The counsellor has to lean on the non-directive approach when the counselee's problems are emotional. The counselee comes to seek the counsellor's help in a state of strong anxiety and tension especially when they are by doubts and uncertainties, feeling of guilt and shame. Also, when they are overwhelmed by attitudes of self-inadequacy, shyness and timidity. All that counselee needs is an atmosphere for the free expression of his attitudes and feelings and the development of insight and self-understanding. The counsellor should enable them to view their problems from a new angle, to get a new perspective about themselves and their situations. The modification of counselee's emotionalized attitudes, and a re-organization of their goals and values would result in a change in their personality. They would have restored to themselves a feeling of well-being and satisfaction.

Counselling service can play a critical role in maximizing a student's educational success and getting the most out of their poor achievement in mathematics: Helping students to prevent and eliminate barriers to learning, helping to equip students with the personal and social skills they need, balanced, successful lives, resolving emotional and personal issues that interfere with academic success. Also, counselling services offer the caring, expert assistance one needs during these difficult times. Professional counsellors offer help in addressing issues such as: To help students make adjustments to the situations in the school as well as in the home, to supplement the efforts at home, to minimize the mismatch between education and employment and help in the efficient use of man power, to identify and motivate the students from the weaker section of society, to help in checking wastages and stagnation, to ensure the proper utilization of time spent outside the classrooms, to minimize the incidence of indiscipline. The provision of these guidance services to the Students will assist them have total and all-round development which will in turn help them develop realistic self-concept according to their academic capabilities. Generally speaking, Guidance and Counselling is helpful in enabling students to develop a clearer understanding of their concerns and helps them acquire new skills to better manage personal career and educational issues. The counsellor can also offer a different perspective and help someone think of creative solutions to problems.

Now, considering the importance of counselling and mathematics and its position in the Basic Education level there is great need for the emphasis on effective strategies for counselling early childhood pre-service teachers towards learning of Mathematics. Ugwuegbulam (2015) opined ways for effective counselling of students in mathematics. The following strategies can be used to counsel students on how to improve their performances in mathematics.

#### **Guide the Students on the need to know the importance of studying mathematics**

Students should be made to understand that mathematics is the foundation of science and technology. Mathematics is the power set embracing all other branches of science –the physical, biological, social and medical sciences, the arts and management. It is most invaluable for the Engineer, the Technocrat, the Doctor, Pharmacist, Accountant, the Banker e.g. To the Pharmacist and Chemist for example, the right proportion of each of any drug constituent involves some mathematics, similarly the Banker, Accountant, Insurer, Architect, business managers need some mathematical knowledge if they are to succeed, students should know that mathematics at the secondary school level determines the courses Students offer at the tertiary institutions. Therefore, mathematics at this level is very crucial and has immense effects on a nation's technological development. Once this awareness is created, students will take the subject more seriously and that will improve their learning mathematics (Ali, 1989).

#### **Discourage the students from associating with teachers, peer group, guardians that have negative attitude towards mathematics**

Some parents and teachers and even students' peers and relations discourage some students from learning mathematics. Some of these people indoctrinate students that mathematics is difficult or that mathematics is not compulsory or important for the course they want to do (Stephen, 2007). Parents even tell their children how they hate mathematics when they were in school. Students should be encouraged to keep away from people that may want to discourage them from learning mathematics. They should be closer to brilliant students in mathematics who in turn will teach them in case they have assignments to solve (Pimpa, 2003).

#### **Encourage teachers and school management to motivate the students towards learning mathematics**

The school is a source of extrinsic motivation to students. For example, the fact that every student in a school graduates with a credit pass in mathematics can motivate a student to obtain credit in mathematics. Other examples are school award of prizes to best mathematics students in each stream at the end of the term or end of the session. Students can be counselled to ensure they win mathematics prizes that the schools use to give at the end of the year. This will allow for healthy competitions among students and indirectly enhance learning of mathematics.

#### **Guide the students on the need for good subject combination with mathematics due to the fact that many students are not properly guided in their selection of subjects with mathematics**

Many students tend to end up with unsatisfactory subject combinations at the school level; thus, hindering any chance of entry into degree courses in mathematics without some kind of remedial course inter posed. For example, Physics has for a long time been a notorious killer of ambitions of students in the sciences. Some science subjects like Physics, Chemistry, Technical drawing

aid learning of mathematics and students must be properly educated on selection of subjects in school (Olayinka, 1976).

### **Encourage the students to practice more exercises in the topics they were taught in mathematics**

Students should be advised not to rely only on what they have been taught in the classroom alone. They should form the habit of practicing more questions relevant to the topics they have done and, in a situation, where they could not get the solution, the teachers or other students who are better in the subject must be consulted. Prep-time and other free periods should be mapped out for tackling mathematics questions. Students should spend less time watching movies, television and other non-gainful ventures around them.

### **Stress the importance of group study for the students**

Students should be made to understand that group study in mathematics allows for exchange of mathematics ideas among themselves. Students that are unable to ask their teacher questions in the classroom can possibly express themselves in the group study venue. The group study should comprise of the good, average and below average students in mathematics. They should be committed and regular in their studies (Burrow, 1979).

### **Encourage students to join mathematics club in school**

Like other subject clubs and societies, there should be a genuine place for mathematics club in the schools. The mathematics club plays a significant role in the total programme of a school. Through this club, the students get opportunities of mathematical hobbies, recreational mathematics, mathematical projects, mathematical games, mathematical discussions and debates, and mathematical innovations. The club will be a medium of developing interest in mathematics.

### **Emphasize patience while solving mathematics problems**

Mathematics is a brain-tasking subject and students need to prepare their reading timetable in favour of mathematics. When problems are met, students should keep striving until the correct solution is got. It should be a challenge and they could overcome it by consulting books, other students and teachers for assistance and most importantly they need to be patient.

### **Discuss with the students how their grades are determined both in the internal and external examinations**

It is important that students are made to be knowledgeable of how their grades are determined. Information relevant to computation of scores can be obtained from teachers or use rubrics (making guide) for students to study during exams. The marking schemes can be photocopied and discussed with the students. This will guide them on how to answer mathematical questions in examinations.

### **Encourage students to be very inquisitive during mathematics lessons**

These questions should always be asked: What is this? How is it solved? Why is it solved like this? These probing questions enhance students understanding of concepts and processes of solving mathematical problems. These questions must not be asked rudely as it may discourage some teachers to explain further.

### **Encourage students to keep abreast with past mathematics topics learnt**

One of the major problems students face in learning mathematics is that they understand during lessons, but find it difficult to revise after sometime. Thus, they soon forget the lessons already taught. For instance, an SSI student may have forgotten the topics covered in junior classes; therefore, students need to be encouraged to revise the topics learnt in junior classes to maintain linkage with their present classes.

### **Counsel the students on the need to buy reader friendly textbooks on mathematics**

One particular aspect of the problems of textbook in schools is lack of reader friendly textbooks. While there are many textbooks in the market, very few of them are reader friendly. The implication is that many students develop phobia and hatred for reading mathematics textbooks. But reader friendly textbooks are designed to enable students understand and enjoy reading mathematics. Therefore, mathematics teachers, should help to encourage students to buy reader friendly textbooks on mathematics even if they are costly. Research indicates that school counselors are effective in teaching social skills (Verduyn et al., 1990). Students who have access to counseling programs reported being more positive and having greater feelings of belonging and safety in their schools (Lapan et al., 1997).

### **School Counselors and Career Development**

School counselors are very effective in assisting children in the area of career development (Lapan et al. 2003). Counselors are effective in assisting high school students with college choices (Student Poll, 2000). Mau (2000) found that high school counselors influenced their students' future plans by encouraging them to have high expectations. A high proportion of 10th and 12th grade students who were surveyed perceived that their counselor expected them to attend college, regardless of their racial background. High school students own educational expectations for themselves increased over time (Mau, 1998). In studies on the effects of a small group counseling approach for failing elementary school students, 83 percent of participating students showed improvement in grades (Boutwell and Myrick, 1992).

A study done in Gwinnett County, Georgia shows that school counselors' impact students' academic performance and can increase the on-task, productive behavior of students and reduce disruptive behaviors. The Behavior Rating Checklist indicated statistically significant decreases in disruptive behaviors and significant increases in productive, on-task behaviors for both the third grade and the fifth-grade students tested. Language achievement progress was statistically significant for both grade levels as well (Mullis and Otwell, 1997). Baker and Gerler (2001) reported that students who participated in a school counseling program had significantly less inappropriate behaviors and more positive attitudes toward school than those students who did not participate in the program. Another study reported that group counseling provided by school counselors significantly decreased participants' aggressive and hostile behaviors (Baker and Gerler, 2001). Health and mental health care services can play an important role in violence.

Researcher like Njeri (2007) investigates the influence of guidance and counseling programme on academic performance of selected public-school students. Results of the study showed that guidance and counseling programme has positive impact on the academic performance of the students. Tawiah, Alberta & Bossman (2015) investigated impact of guidance and counseling on academic performance. Results of the study showed that significant difference

was realized between post test scores of experimental and control groups with regards to academic performance. Chikwature and Oyedele (2016) investigated effectiveness of guidance and counseling in teaching learning process at Gomorefu high school in Mutare District. Results of the study showed that guidance and counseling improve the educational curriculum and academic of the school. Given the meaning and the role of guidance and counselling, poor performance in mathematics of students in public examinations, the afore mentioned work in the area under review, the researchers therefore decided to find out the effective strategies for counselling Early childhood care education pre-service teachers on the study of mathematics.

### **Purpose of the Study**

The main purpose of the study is to assess effective strategies for counselling early childhood care education pre-service teachers on the study of mathematics. Specifically, the study sought;

- (1) To assess effective strategies for counselling early childhood care education pre-service teachers on the study of mathematics.
- (2) To examine whether significant difference will exist in mean scores of male and female mathematics teachers on effective strategies for counselling early childhood care education pre-service teachers on the study of mathematics.

### **Research Question**

The following research question guided the study;

- (1) What are the effective strategies for counselling early childhood care education pre-service teachers on the study of mathematics?

### **Hypothesis**

The following null hypothesis was tested at 0.05 level of significance;

**HO1:** There is no significant difference on the mean score of male and female mathematics teachers on effective strategies for counselling early childhood care education pre-service teachers on the study of mathematics.

### **Methodology**

The design of the study is analytical survey research design. The population of the study comprises all primary school mathematics teachers in Owerri and Orlu Education zones of Imo State with a population size of four hundred and fifty (450). A sample of two hundred (200) primary school mathematics teachers was randomly selected for the study. This was made up of 120 female and 80 male teachers. The instrument used for data collection is researcher structured questionnaire titled Effective strategies for the implementation of Education Mathematics Curriculum (ESIEMC). The questionnaire contains two sections namely A and B. Section A contains the demographic data of the respondents while section B contains the objectives of the study. The questionnaire was structured using four-point rating scale of strongly agree (4), agree (3), strongly disagree (2) and disagree (1), for any item to be accepted it must score above 2.50 while less than will be rejected. The face and content validity of the instrument were done by expert judgments of two curriculum educationist and a mathematics education expert. Their inputs were considered in restructuring the questions. A pilot study was carried out among

mathematics teachers who were out of the sample for the study to determine the reliability of the instrument. Cronbach Alpha Method was used to determine the coefficient of reliability of 0.72 which was accepted for the study. The data generated was analyzed using descriptive statistics (mean and standard deviation) for the research question and inferential (Z-test) were used to test the hypothesis at 0.05 level of significance.

## Results

**Research Question 1;** What are the effective strategies for counselling Earlychildhood care education pre-service teachers on the study of mathematics?

**Table 1: Mean and standard deviation on effective strategies for counselling early childhood care education pre-service teachers on the study of mathematics.**

| S/N | ITEMS                                                                                                                                                                                    | MEAN       | SD         | DECISION        |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|-----------------|
| 1   | Guide the Students on the need to know the importance of studying mathematics.                                                                                                           | 2.7        | 1.1        | Accepted        |
| 2   | Discourage the students from associating with teachers, peer group, guardians that have negative attitude towards mathematics.                                                           | 2.8        | 1.0        | Accepted        |
| 3   | Encourage teachers and school management to motivate the students towards learning mathematics.                                                                                          | 2.8        | 0.9        | Accepted        |
| 4   | Guide the students on the need for good subject combination with mathematics due to the fact that many students are not properly guided in their selection of subjects with mathematics. | 3.0        | 0.9        | Accepted        |
| 5   | Encourage the students to practice more exercises in the topics they were taught in mathematics.                                                                                         | 3.2        | 0.6        | Accepted        |
| 6   | Stress the importance of group study for the students.                                                                                                                                   | 3.4        | 0.7        | Accepted        |
| 7   | Encourage students to join mathematics club in school.                                                                                                                                   | 2.8        | 1.0        | Accepted        |
| 8   | Emphasize patience while solving mathematics problems.                                                                                                                                   | 2.8        | 1.0        | Accepted        |
| 9   | Discuss with the students how their grades are determined both in the internal and external examinations.                                                                                | 3.0        | 0.9        | Accepted        |
| 10  | Encourage students to be very inquisitive during mathematics lessons.                                                                                                                    | 3.1        | 0.8        | Accepted        |
| 11  | Encourage students to keep an abreast with past mathematics topics learnt.                                                                                                               | 3.4        | 0.7        | Accepted        |
| 12  | Counsel the students on the need to buy reader friendly textbooks on mathematics.                                                                                                        | <b>3.4</b> | <b>0.7</b> | <b>Accepted</b> |

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## Hypothesis

**HO1:** There is no significant difference on the mean score of male and female mathematics teachers on effective strategies for counselling Early childhood care education pre-service teachers on the study of mathematics.

**Table 2: Summary of t-test analysis on gender**

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| Gender | N   | Mean | SD  | df  | $\alpha$ | t-cal | t-tab | Decision    |
|--------|-----|------|-----|-----|----------|-------|-------|-------------|
| Male   | 80  | 2.6  | 0.4 | 198 | 0.05     | 1.429 | 1.96  | Accept null |
| Female | 120 | 2.5  | 0.6 |     |          |       |       |             |

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Results in table 2 shows that the calculated t-Cal (1.429) is less than the critical t-value (1.96) at degree of (df =198) and 0.05 level of significance. Based on the result, the null hypothesis is upheld at 0.05 level of significance. This implies that there is no significant difference between male and female mathematics teacher on effective strategies for counselling early childhood care education pre-service teachers on the study of mathematics.

## Discussion

The analysis of the results of the study revealed that mathematics teachers' educators have positive perceptions while the hypothesis showed no significant difference between male and female mathematics teacher educators on effective strategies for counselling Early childhood care education pre-service teachers on the study of mathematics. This was evident from the high mean scores of the teachers on the items which are above the scale mean of 2.50. The result is in agreement with Lapan et al. (1997, 2003) who indicated that school counselors are effective in teaching social skills (Verduyn et al., 1990). Students who have access to counseling programs reported being more positive and having greater feelings of belonging and safety in their schools. School Counselors and Career Development School counselors are very effective in assisting children in the area of career development. Counselors are effective in assisting high school students with college choices (Student Poll, 2000). Mau (2000) found that high school counselors influenced their students' future plans by encouraging them to have high expectations. Also, this result is in agreement with the findings of Chikwature & Oyedele (2016) which showed that guidance and counseling improves the educational curriculum and academic performance of the school.

## **Conclusion**

This study was carried out to investigate effective strategies for counselling Earlychildhood care education pre-service teachers on the study of mathematics. The result of the study showed that, irrespective of gender, mathematics teacher educators have positive perception towards effective strategies for counselling Earlychildhood care education pre-service teachers on the study of mathematics and this will improve teachers' performance.

## **Recommendation**

In order to arouse students' interest in mathematics, teachers should ensure that prep-time and other free periods in schools are mapped out for tackling mathematics questions and exercises and parents should discourage their wards from spending more time watching movies, television and other non-gainful ventures at home, rather they should be told to do their home works to enhance better performances in mathematics.

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