

Some Methods of Effective Teaching and Learning Of Mathematics

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ABSTRACT

Evidence (Ale 2005) has shown the high level of failure rate of students in mathematics over the years. This is not unconnected with the poor methods of teaching employed by mathematics teachers as well as the negative attitude of the teacher himself which restrict the freedom of students to communicate freely whether inside or outside the class setting. This further strengthens the negative feeling that students have towards mathematics. It should be noted that if the record of failure in mathematics for the hearing students is on the high side, that of the hearing impaired will be on the higher side. In this paper, some methods of teaching mathematics are looked into as well as some factors that can either improve or hinder the success of these methods.

INTRODUCTION

Though mathematics is vital to student's future and national development; its study has been ineffective in meeting the demands of national development in Nigeria (Agwagah 2001). Students' performance in mathematics examinations, both internal and external, from year to year has never been encouraging as revealed by Ale in 2005 when he considered the WASCE result in mathematics between 1989 and 1998. The result shows the high level of poor performance of students in mathematics.

Research reports have offered several reasons for the students' poor performance in mathematics. The reasons include;

- Lack of qualified mathematics teachers (Adewumi, 1981; Ali 1985).
- Student's lack of interest and as well as negative attitude towards mathematics (Ale, 1989).
- Teachers own negative attitude and incompetence in certain concepts (Badmus 1989).
- Poor methods of the teaching applied by the teacher in the classroom
- Teachers' non-use of relevance instructional materials in the teaching of mathematics concepts (Agwagah 2001).

If all the reasons above can be greatly taken care of positively, there will be effective teaching and learning of mathematics and for the hearing impaired this will go a long way to increase their high level man power in the teaching of mathematics and other areas of sciences as well as creating a remarkable enthusiasm in students towards mathematics. This will later boost the technological advancement of our great country Nigeria.

BASIC METHODS OF TEACHING MATHEMATICS

The ideal teacher knows all about his children hearing or hearing impaired, how they grow, their needs and capabilities as individual at each stage in their development. He is aware of the fact that they are learning indirectly from their whole environment as well as from his direct teaching and he seeks to make the best use of both means [5]. The outcome of this approach may be interpreted as: child-centred teaching which in turn promotes learning and makes the students confident and also ready to contribute to the teaching learning activities.

For the teacher to be able to make the teaching child-centred, he must be confident of the subject matter, as one cannot give what he does not possess. In this vein, it is important for the teacher to first reassured himself of the main objects in teaching, then considers the value of the content of his teaching, distinguish between giving children experience and causing them to learn. Only then can he turn his attention to the methods. Moreover activity is one of the keynotes of modern education, and extension of the use of activity as a technique for teaching has given rise to certain methods of effective teaching much talked about in education circles as given by Farrant (1964). These include:

- I. Play-way methods
- II. The project method
- III. Centres of interest method
- IV. The assignment system
- V. Questioning method

Play-way method: This method of teaching was emerged from educational reformers like Froebel and Montessori who appreciated the part served by play in learning. It helps feeble-minded children to learn so well such that they outstripped normal children in public examinations. This method reveals the truth of the theory of Newcomb et al, (1994), who claimed that a person remembers 90% of what they say as they perform an activity [6]. The method is based on the use of activity purposefully during teaching-learning periods. In such periods, the teacher engages the students to perform an activity that will concretize the subject matter that is being introduced to them. This helps the student to learn and be independent to work harmoniously with other students in the class to express himself and gain experience, simultaneously this method can be used in the teaching of many concepts in mathematics like, fractions, equations, permutations and combinations etc. This method if well used will surely go a long way in effective teaching and learning even for the hearing impaired children.

The project method: This method came about as a result of the educational work of Dewey who lived in America at the end of nineteenth century. He observed that the children were losing a great deal of the practical knowledge and sense of cooperation that exists among the rural people. This method is based on the teacher assigning a particular project to the students. His task in a project is simply to guide the children as they find the need for his help, encourage his students by showing a lively interest in their work and assessing the value of the project by the quality of learning shown in the work they produced. Moreover, this method makes learning real by presenting a real task for the children to tackle. It makes learning effective because it supplies a concrete objectives so that the children know that they had succeeded. This method also socialise learning because it is a combine effort, each individual contributes his knowledge and skill to the success of this group work. This in turn makes the students to share knowledge and skill which makes learning to take place generally among the students. It also enables the students to discover several ideas about the subject matter. This method makes the students have an effective knowledge of the subject matter that may be introduced by the teacher.

Centre of interest: This method is based on using a central topic of interest to the students in order to coordinate all their learning for a length of time that may be as short as a few hours or as long as a few days. The skill of the teacher lies in knowing which topic is suited to this kind of treatment. For example post office or functional activities like buying and selling. This method could be used in the study of money, algebraic expression, equations, and volumes of objects, just to mention a few.

The assignment system: This system of learning using the skilful organisation of individual assignment was worked out by Hellen Parkhurst in Dalton, U.S.A, and came to be known as Dalton Plan (Farrant 1964). In this method, the student is given responsibility for his learning. The teacher prepares assignment in each topic for the students to tackle individually, while the teacher is always available to advise and guide the student in case of any difficulty he may encounter. This method as opposed to project method emphasis on individual, the method has several advantages. It encourages initiative and independence, and provides students with the maximum amount of individual practice. And assignment should always be a task which is within the capability of the student and has some interest for him. It should always produce a result that can be seen so that the student can see what he has achieved and the teacher can assess the pupil's progress.

Question method: This method is based on the ability of the teacher to pose appropriate questions which only invite but provoke and ignite students' intuition and thinking. This teaching methodology also encourages interaction and discussions among teachers to jointly share and criticize and rebuild their teaching practices.

The above methods or any other method, if properly used singly or combining two or more would yield desired result in the mathematics teaching-learning procedure not only for the hearing but also for the hearing impaired.

It is important to note that, no matter how effective a method of teaching, its success rate lies greatly on the attitude of the teacher. Negative attitude from the teacher to the student's can cause a permanent damage to their interest in mathematics. Some teachers are not approachable, hence students find it difficult to seek help thus remediation is not effective because effective means of teaching is lacking (popoola, 2006). Thus, failure in mathematics continues to pass on from age to age, thus making the difficulty of students in mathematics to be persistent and continuous. In view of this, the present day teachers should turn over a new leaf in the discharge of their pedagogies so as to reduce the failure rate in mathematics both internal and external examination. Not only that, the interest of students in mathematics both hearing and hearing impaired will be greatly increased. Also, the activity based method of teaching mathematics will enable even the hearing impaired students to discover some of the applications of some of the subject matter in mathematics to real life situation.

Mastery of the subject matter plays a great role both in the teacher's attitude towards the students and the

teaching methodology. It is advised that teachers consult several texts on the topic to be taught. This will enable the teacher to draw similarity and differences in approach which will help him to device a good method of teaching and a better way explaining each step of the teaching which will make learning to take place and permanent in students.

The teacher student's ratio is another obstacle in the teaching and learning of mathematics. In a situation where a teacher will take six arms of class of 120 students each in a day, it will be difficult for the teacher to employ effectively any of the above mentioned methods. Also, not many want to study mathematics or take mathematics as a teaching subject in higher institutions of learning. This keep on reducing the number of teachers of mathematics compared to other subjects. This seriously needs the intervention of the government to avail the situation. The government in developing countries especially Nigeria have to show sensitivity to the improvement of teaching and learning of mathematics so as to increase the rate of technological development in our country.

CONCLUSION

The teacher having a positive attitude towards the students enables the students to communicate freely in the class and participate fully in all respect. He should also try to have a good mastery of the subject matter. When these are put in place, using any of the above teaching method will yield desired results. The teachers should also derive joy in the success of their students.

For the teachers to discharge their duty effectively, government also have significant role to play. The government need to employ more qualified mathematics teachers so that the teacher student's ratio will be the maximum. Incentive should also be given to the best mathematics teacher of the year and the best mathematics students of the year. This will enable the teacher to put in their best to make their class students oriented and the students will then work harder in order to achieve good performance in mathematics.

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