
The Essential Qualities of an Effective Mathematics Teacher in the Teaching Profession: Secondary Schools in Nigeria as Focus.

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Abstract

The paper examined who is an effective mathematics teacher and the manner in which such teacher relates to his students in the classroom. The paper described an effective mathematics teacher as a teacher that possessed sound contents and pedagogy of mathematics at the tertiary level and determines how best his students will successfully learn mathematics. Five (5) basic essential qualities of an effective mathematics teacher were highlighted and discussed. Among the qualities of an effective mathematics teacher were sound knowledge of mathematics, constantly learning of the subject, caring and so on. The paper also suggested some ways the incoming and old mathematics teachers will follow and become effective mathematics teachers in the classrooms. This article concluded that teaching as a profession has gone beyond the manner some members of the public looked at it in Nigeria. It is therefore, necessary for all mathematics teachers to emulate the qualities of an effective mathematics teacher and it will be better for Nigeria as a country.

Keywords: *Effective mathematics teacher, relationship, secondary schools, Students, Teaching profession.*

INTRODUCTION

A qualified mathematics teacher is a member of teaching profession. Not all teachers teaching mathematics in the classrooms at the secondary school level are regarded as mathematics teachers. To an average Nigerian, once a person is teaching mathematics to group of students in the classroom, such teacher is automatically regarded as mathematics teacher. In Nigeria, teaching profession has been abused to the extents that all manners of graduates that were not trained as teachers now called themselves as teachers because they are in the front of the students teaching in the classroom. Teaching as a profession is the mother of all other professions. Teaching gave birth to the children of all other professions. The problem with the teaching profession is the entry into the profession. According to Kabir (2018), a teaching profession has always been the most respected profession in the whole world. According to Kabir (2018), the profession was very honorable and respected during the time of British colonization in Nigeria. According to the author, during the time of British Government in Nigeria, teaching profession was given special and decent attention in the society, but right now, the teaching profession is a custodian of knowledge. Kabir (2018) also went further and defined a teacher as a master, able to teach how one could find the necessary knowledge in the boundless sea of modern science and gain experience in self education. The author further stated that, a real teacher is the one that possessed professional pedagogical skills and contents gained with many years of experiences. Haskew (2008) defined teaching profession as a profession that consisted of all those persons who teach or directly aid teachers in elementary and secondary schools. Teaching profession is a profession that embraced all qualified teachers in all levels of education. Effective mathematics teacher is a

well-trained person that assists the students to develop positive attitude towards learning of mathematics in the classroom.

Sometimes, some mathematics teachers in the secondary schools in Nigeria did not even know the essential qualities to be effective in the teaching of mathematics despite their levels of training in the competent tertiary institution. To assist such teachers, awareness need to be created and this motivated the writer to come out with this article. This paper, therefore, will examines an effective mathematics teacher, essential qualities of an effective mathematics teacher, how to builds effective mathematics teacher and students' relationship and the consequence of such relationship on teaching and learning of mathematics in our present secondary schools in Nigeria.

Effective Mathematics Teacher

Mathematics is a unique subject that is needs to be handled by an effective teacher. An effective mathematics teacher is a qualified teacher that knows how to carry nearly all his students along during teaching and learning processes in the classroom. According to Coombs (n.d) described effective teachers of mathematics as those teachers that know the pedagogy that determines how their students will successfully learn the subject. In addition, such teachers will be able to recognize the fact that in order for their students to effectively learn mathematics they need to understand the concepts presented as well as become familiar with the skills taught them by the effective mathematics teachers.

Effective teaching is the ability of the teacher to improve student's achievement in the subject as shown by research (Good, Wiley and Florez, 2009). Good, Wiley and Florez (2009) believed that if you are an effective teacher, your students must did very well in the subject as reported by researchers. These authors also went further and said that some scholars defined effective teaching in terms of teacher's behaviour, teacher's knowledge of subject matter and students, his beliefs and so on. But, to these authors, teacher's effects on students' performance was the preferred meaning of high quality teaching by advanced countries like American policy makers and those in the developing countries.

Furthermore, an effective mathematics teacher is a teacher that is really available to assists the students to learn mathematics in an understanding and flexible manner. Such teacher has the capacity to change the negative attitude of some of the students towards mathematics into positive attitude. Zeiger (2018) noted that not all learners like mathematics in the classroom, but an effective mathematics teacher has the capacity to change such negative attitude of such learners to positive attitude. Zeiger (2018) further reviewed that an effective mathematics teacher made his class a place where students want to be and learned in an interesting environment. Teaching is a decent profession, therefore, the members of the teaching profession must be decent also. Although, not all the members, but the effective teachers are decent members of the teaching profession. An effective mathematics teacher is a teacher who has the brighter future of his students in his heart. At every point in time, he loved teaching the students and the students loved him also by paying adequate attention to what the effective mathematics teacher is teaching them. According to Ezenweani (2006), described an effective mathematics teacher, no matter the mathematics content, endeavour to use the language at the level of understanding of the students while teaching in the classroom. Ezenweani (2006) added that such effective mathematics teacher uses concrete learning materials, simplified English language and examples from the learners' immediate environment.

An effective mathematics teacher is a good mathematics teacher. Imre (2017) defined a good mathematics teacher as a teacher that has sound knowledge of mathematics contents and teaching approaches and at the same time possessed good effective features. Imre (2017) also went further and described a good mathematics teacher as a teacher that has mathematics

teaching ability, developed himself professionally, communicate with students, colleagues and parents effectively, and obeyed the rules and regulations of the school. The author further noted that a good mathematics teacher is a teacher that was effective for the mathematics itself, teaching approaches, school management and the society at large.

In all, an effective mathematics teacher is a teacher that is humble, diligent, dedicated and courageous to his teaching profession at all times. Such teacher does not take anything concerning his duties as a teacher for granted.

Qualities of an Effective Mathematics Teacher

Qualities of an effective mathematics teacher are the characteristics that distinguished an effective mathematics teacher from other mathematics teachers. Zeiger (2018) and Best Value school (n.d) have identified five (5) essential qualities of an effective mathematics teacher. According to Zeiger (2018) and Best Value school (n.d), the essential qualities of an effective mathematics teacher are stated below:

1. Sound knowledge of mathematics
2. Engaging students to carried out mathematics tasks.
3. Good motivator of students
4. Constantly learning of mathematics
5. Care and concern

These essential qualities highlighted above were further discussed below:

1. **Sound knowledge of mathematics:** An effective mathematics teacher has a sound knowledge of the contents of mathematics. This sound knowledge of mathematics is acquired by the teacher at the approved colleges of education and faculties of science and education of the various approved universities. This knowledge allows an effective mathematics teacher to be confidently explain concepts and processes to his students in the classroom (Zeiger, 2018). Zeiger (2018) further stated that an effective mathematics teacher did not constantly consulting the answer key in the back of the teacher's guide to assists students solve problems in mathematics. The author added that the strong confidence in him because of the sound knowledge of the subject boost his credibility before the students, and they trust his ability to exposed them what they needed to know in mathematics. With this quality, an effective mathematics teacher is not afraid of going to the class and delivered his lesson to the students.
2. **Engaging students to carry out mathematics tasks:** An effective mathematics teacher does not assumed that he knows every things in mathematics. Such mathematics teacher always allows himself to be criticized by his students whenever his is out of track when solving problems with the students. He does not forced his students to comply with his rules except those laid down rules in mathematics. An effective mathematics teacher acts as a facilitator, allowing his students to offer suggestions and solve mathematics problems differently on their own in accordance with the laid down rules of mathematics. According to Best Value School (n.d), such an effective mathematics teacher allows room for collective discussion among the students so that everyone in the class arrived at the same conclusion. The Best Value School (n.d) also noted that in case a student was unable to solve a problem, an effective mathematics teacher will not allow such a student to quit instead he will works with such student by motivating the student until the student got the right answer to the problem.
3. **Good motivator of students:** Students of mathematics came to the class with different interest of what they will be in life in the nearest future. An effective mathematics teacher recognizes this fact among the students and encouraged them to

achieve their dreams. There are some students want to be a medical doctor, engineer, accountants and all related science based courses. An effective mathematics teacher will takes his time to motivate such students to work harder in mathematics because without mathematics, the dreams cannot be materialized. Such an effective mathematics teacher speaks with his students on regular basis to helps them acquire the right problem solving skills applicable in the professions they want to enter into and at the same time prevent such students from losing interest and disengaging from studying mathematics at the secondary school level (Best Value School, n.d). An effective mathematics teacher plays the role of guidance and counseling to his students.

4. **Constantly learning of mathematics:** An effective mathematics teacher knows that he is not perfect in mathematics. He is constantly reading new materials to update himself in the subject. An effective mathematics teacher does not uses his lesson plan/note prepared six years ago to teach his students. He constantly read and updates his knowledge base. In some cases, such mathematics teacher enrolls for further studies in his area of specialization in mathematics. He always thinks the best ways of teaching the subject to his students and this further boost his confidence in mathematics. According to the Best Value School (n.d), once an effective mathematics teacher learned about a new mathematical concept, he will let's all the students know about it which in turn leading to effective learning and better grades of the students. In addition, such teacher does not hide new knowledge from his students.
5. **Care and concern:** An effective mathematics teacher does not focuses on the mathematics contents being taught his students only but also the well beings of the students. Such an effective mathematics teacher recognizes the fact that not every time that some of the students are happy to learn mathematics because of certain circumstances they are passing through. Under this situation, an effective mathematics teacher will offer words of encouragement to such students. According to Zeiger (2018), such an effective teacher recognized that occasionally life got in the way of homework and that studying the subject sometimes took a back seat to family obligations. As a result of that, Zeiger (2018) noted that an effective mathematics teacher will offers such students second chance when warranted and takes time out of his own scheduled to assists such students catch up again in mathematics.

Any mathematics teacher that possessed the above five (5) basic essential qualities, such teacher will definitely experience effective teacher – students' relationship in the classroom during teaching and learning processes. Such positive behaviour of the mathematics teacher will improves the achievement of students in mathematic both at present and in the nearest future.

How to Become an Effective Mathematics Teacher?

The simple answer to the above question is the acquisition of the above discussed five (5) basic essential qualities of an effective mathematics teacher by the teacher. To acquire these basic essential qualities depend on the mental ability and positive attitude of the teacher towards mathematics teaching and they cannot be obtained overnight. This paper, therefore, will suggests ways the incoming and old mathematics teachers to become effective mathematics teachers in the classrooms. The suggested ways of acquiring these basic essential characteristics are highlighted and discussed below.

1. Don't study mathematics and education at the tertiary level when you know that you don't have the mental capacity to teach the subject after graduation. Some mathematics teachers in our secondary schools studied mathematics education at the

tertiary institutions against their wish. Originally, it was not their interest to study the subject. Sometimes, it might be due to admission problem and other challenges that warranted the teacher to study mathematics education. Upon employment, such mathematics teacher will, although not all, definitely hate teaching profession, and becomes ineffective in the classroom. In all, study the subject of your interest.

2. Don't join other teachers to gossip an effective mathematics teacher in your place of work. Always think how you can better your mathematics teaching to your students.
3. Always determines to be hard working in the teaching of mathematics to the students. The teaching of mathematics is tasked involving. On daily or weekly basis, activities such as class works, assignments and grouped works will be given to the students on topics taught by the mathematics teacher. All these class activities are expected to be evaluated by the mathematics teacher, and indeed, hardworking mathematics teacher. It is only the mathematics teacher in the secondary school that is desirous to be effective in his/her teaching profession will be able to carry out these teaching activities in the classroom with the students.
4. You must love teaching as a profession. A teacher may be sound in mathematical contents but inadequate in disseminating such contents to the students.
5. Always seeks advice from the already effective mathematics teachers in your place of work or from other schools. There are some mathematics teachers that are not too strong in mathematics but some of them are not ready to learn from the already effective mathematics teachers in their place of work. In addition, such category of mathematics teachers can never be effective in the teaching of mathematics.
6. As a mathematics teacher, let your yes be yes, and your no be no at all times before your students and colleagues. Mathematics is a unique subject that demanded truth from the mathematics teacher before the students during teaching and learning processes. For instance, if a student asked his mathematics teacher a particular question and the teacher doesn't have adequate answer to the question, please, kindly tell the student to give you more time to research about the question. Also, having obtained the right solving and answer to the question previously asked, please kindly give feedback to the student.
7. Always regular and punctual at your duty post and makes yourself available to your students in the classroom. A truant mathematics teacher, in most cases, may not be effective in the teaching of mathematics to the students in the classroom. Such mathematics teacher will lost contact in terms of mathematics teaching with the students. To the mathematics teacher, don't wait in your office until the class prefect comes and called you before going to the class to deliver your lesson to the students. Always been curious with your lesson and time of the lesson.
8. Be patient with your students during teaching and learning processes in the classroom. Mathematics teacher should be aware that students possessed different mental abilities, carry nearly all of the students along by the teacher may not be easy. For such teacher to be an effective mathematics teacher, he or she must exercise patience with the students while teaching them. Let the students feel that they can get closer to you easily for mathematics assistance whenever they have problems in mathematics. A mathematics teacher who is always in haste while teaching the students may not likely be effective. Such mathematics teacher may always hashed with the students and some of the students on their parts will be scare of such mathematics teacher, hence, hatred in learning mathematics by the students will be the result. Mathematics as an abstract subject, demanded care and love from the teacher towards the students during teaching and learning in the classroom and even after teaching. Such positive behavior from the mathematics teacher will makes the learning of the subject simple

for the students. Whenever such teacher is in the classroom for teaching, majority of the students will be interested in learning mathematics.

9. Always ready to assist the students whenever they come to you for mathematics problems. For a teacher to be an effective mathematics teacher, you must be ready to attend to students that come to you for assistance in mathematical problems at all times within school hours.

Factors That Might Prevented an Effective Mathematics Teacher not to be Effective

According to Ezenweani (2006), mathematics teaching is faced with many problems in our secondary schools in Nigeria. Some of these problems may likely affect the productivity of an effective mathematics teacher negatively. This paper will try as much as possible to discuss the various factors that will likely prevented an effective mathematics teacher not to be effective in his/her teaching profession.

1. **Poor recognition of mathematics teachers by the society:** Frankly speaking, mathematics teachers, and indeed, teachers generally in public secondary schools in Nigeria are poorly recognized. This kind of attitude from the public towards mathematics teachers may likely affected their teaching moral in the teaching profession.
2. **Poor remuneration and allowances for mathematics teachers:** Mathematics teachers in Nigerian secondary schools are not well paid by their employers, especially those mathematics teachers that work with the various State Governments. An effective mathematics teacher cannot paid himself/herself salary and allowances, such an effective mathematics teacher may look for an alternative job, hence, ineffectiveness in his/her present place of work will be the result.
3. **Lack of mathematics instructional materials:** Mathematics instructional materials are the teaching materials that enable the mathematics teacher presents his/her lesson in a clear and understanding way to the learners in the classroom. Some of these instructional materials are supposed to be provided by the government. A situation where the mathematics instructional materials are not available to be used by the teacher, the effectiveness of such mathematics teachers will be affected.
4. **Examination Malpractice:** Examination malpractice is an illegal way of passing internal and external examinations by the students in secondary schools. A situation where some principals and teachers are deeply involved in examination malpractice during external examinations like WAEC and NECO and sometimes put pressure on the effective mathematics teacher against his wish to assist the students in such external examinations. Such illegal habit may likely affect the productivity of such effective mathematics teacher and even some brilliant students.
5. Lack of structures such as classroom building for students to learn in secondary school.
6. Overcrowded of mathematics students in the classroom. The population of students in some mathematics classrooms makes class management very cumbersome and by extension renders mathematics teaching and learning ineffective (Ochnonogor & Umudhe, 2007).
7. Shortage of mathematics teachers in secondary schools. In some secondary schools, because of the shortage of mathematics teachers, the few mathematics teachers that are available are overstretched.

Conclusion

Teaching as a profession has gone beyond the ways some members of the public looked at it in Nigeria. Some members of the public looked at teaching as a common profession where any graduate, irrespective of his discipline can enter and teach. An effective mathematics teacher is one of the children of the teaching profession. This paper defined an effective mathematics teacher as a teacher that possessed sound contents and pedagogy of mathematics at the tertiary level of education and determines how his students will successfully learn mathematics in the classroom. An effective mathematics teacher has very unique essential characteristics that differentiated him from other mathematics teachers. To acquire the basic essential qualities of an effective mathematics teacher by the incoming and old teachers may not be easy. Such mathematics teachers must have total obedient to the teaching profession, and sound knowledge of mathematics in both contents and methodology from approved tertiary institutions. In all, if all mathematics teachers will emulate the effective mathematics teachers in the secondary schools, Nigeria as a country will achieve a brighter future for mathematics teaching, hence, better achievement of students in the subject.

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