

# **ASSESSMENT OF TEACHER PROFESSIONAL DEVELOPMENT BY UPPER BASIC MATHEMATICS TEACHERS IN KWARA STATE, NIGERIA**

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## **Abstract**

The study examined Upper Basic Mathematics teachers' assessment of Teacher Professional Development (TPD) components, which is under Teacher Quality Improvement programme, a sub-component of Education Reform Agenda of Kwara state education sector. The key aspects of Teacher Professional Development include: Learner-centered approach; learning for all and from each other; Learning Management; Assessment; Facilitating the professional development of mentor teachers among others. The assessment was carried out at the Teacher Professional Development workshops organized for Upper Basic Mathematics and Science teachers in Kwara State. The study is a descriptive survey method. A purposive sampling technique was employed to select 300(58 females and 242 males) Mathematics teachers from eight local government areas of Kwara state that participated in the workshops. Researchers-designed questionnaire, validated by two experts in Mathematics education and two in Science education was used for data collection. The data were analyzed using frequency counts, percentages, and graphical illustrations. The analysis on teachers' assessment revealed that 281(93.3%) of the respondents agreed that knowing about the learners, involving learners in classroom activities, and providing

opportunity for learners to brainstorm among others are important in teaching and learning Mathematics. It is recommended that all teachers should be given adequate training on the components identified as important.

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**Keywords:** Assessment, Professional Development and Basic Mathematics Teacher

## Introduction

Professional development is required ofany field of study in view of its potentially transformational effects on social and educational outcomes. Teacher Professional Development (TPD) is an aspect of Professional Development that deals with enhancement of teachers in classroom processes and personal traits. It plays significant roles in the success of any educational system most importantly to young people that are just joining the teaching profession. The essence of Teacher Professional Development is to provide opportunity for learners to have access to quality teachers. In addition, Hill and Cohen (2005), submitted that good teachers form the foundation of good schools, and improving teachers' skills and knowledge is one of the most important investments of time and money that local, state, and national leaders make in education.

Mathematics is the language of sciences and technology that requires competent or quality teachers to handle its contents. One of the ways to ensure this is to provide regular relevant and contextualized training and development for teachers to enhance their qualities. This is because sharing of good practices through organized training workshopshas been increasingly recognized as an effective method of professional development. This informed theTPD workshops by State Education Sector Project (SESP) of the Kwara state Ministry of Education, Science and Technologyto train and retrain teachers on good practices in other to improve teaching and learning in schoolsfor a period of three years (2008-2011).

Also, avision on changeprocess was launched in 2008 by the then commissioner for Education based on the base line study of 2007. The vision is referred to as Every Child Counts (ECC). That is, every child has equal right to education irrespective of physical or mental differences. Based on this vision, four key areas that require urgent attention were identified as follows:

- Improving Teacher Quality
- Strengthening the College of Education Oro
- Strengthening the quality of school inspection and
- Strengthening the capacity of the Ministry to manage the educational system.

Therefore, TPD is a sub- component of ‘Improving Teacher Quality’ which is a component of Kwara state education reform agenda. The reform agenda involved major changes in the entire system of Kwara state education sector. The aspects of the reform agenda given to the State Education Sector as Projects for implementation include:(i) Empowering School Based Management Committees (ii)improving the Learning Environment and Quality of Basic Teachers (iii) Improving Planning Management and Monitoring at the state level and (iv) Effective Project Management, Coordination, Monitoring and Evaluation. Hence, Teacher Professional Development is under improving the Learning Environment and Quality of Basic Teachers of Kwara state education sector projects. The TPD is of interest in the present study.

## **The Problem**

The TPD training workshops came up as a result of the findings from a baseline survey conducted in Kaduna, Kano and Kwara states in Nigeria in 2007 by Education Sector Projects InNigeria (ESPIN). The survey study revealed that the learning outcomes of pupils in Numeracy and literacy were at unacceptable low levels. Other specific findings are as follows:

- Pupils got less than 10% of the numeracy questions drawn from the National Primary Mathematics Curriculum.
- Low level of reading accuracy and reading without understanding
- Scores for reading comprehension is below 10% (kwara State Education Sector Report, 2007).In addition, an assessment of teachers’ performance on the job was also carried out. The analysis of the assessment showed that:
- Teachers who are to teach the contents were found wanting. That is, large percentage of the teachers could not demonstrate how to teach the contents.
- Teachers interaction with pupils is majorly on whole class teaching rather than group and individualized or learner-centered approach

- Conflict between teacher's qualification and teacher's quality. That is,in spite of the increase in the number of qualified teachers, they were found to be of low quality in contents of their specialization.
- The quality of schooling and rapid growth of private schools employing low quality teachers were also issues of concern (Kwara State Education Sector, 2007).

**TPD Approaches**rest on the following assumptions:

- Teachers learn more effectively when working collaboratively with others
- They learn more effectively when their existing knowledge, teaching practice, teaching contexts are all taken into consideration.
- They are more likely to change their own minds if they have a chance to experiment with different options and make up their own minds about what might and might not work for them. While the

**TPD Approaches** are as follows:

- Participants are not required to accept any new idea or approaches without questioning,
- they are actively encouraged to question everything, weigh each new idea and make their own mind about its potential, its adaptability or otherwise,
- Participants are also given the opportunity to evaluate the following:
  - How the TPD approach works
  - If they are comfortable with it
  - How they might apply it in their classrooms and
  - How they might enable learners to react positively to it (KwaraTPD Project Implementation Manual, 2008, pg 15). It is on this premise the researchers sought information from the participants on their assessment of the components of the TPD which include: learner-centered approach, Learning for all and from each other, classroom management, Learning management, assessment, infusing family life health care(FLHS) among others.

## Literature Review

Rhett and Allain(2011) referred to Teacher Professional Development as workshops and classes attended by current teachers to make them better teachers. The researcher reported the experience of Bill Ferriter with Professional Development who have seen some teachers

attending Professional Development courses but learn nothing while some awesome teachers make best of the learning opportunity. It was further explained that teachers do not see themselves as learners that require regular update of knowledge through learning. According to Rhett and Allain (2011), excellent teachers are continually trying to make themselves better by continually trying to learn. In other words all teachers can be made better teachers by requiring them to learn more. In the same vein Experience around the world in developing, industrialized and information-based countries has shown that professional development is the key determining factor for improved student performance. Effective professional development experiences are designed to help teachers build new understanding of teaching and learning (Hea-Jin Lee, 2001). To be effective, professional development must provide teachers with a way to directly apply what they learn to their teaching (Resnick, 2005). Garret et al, (2001) found that teachers were more likely to change their instructional practices and gain greater subject knowledge and aligned with standards and assessments. According to Palmer (1978) staff development is a means to develop better teachers by improving their knowledge, and providing ways to help them enhance their effectiveness in the classrooms and to instill in them the desire to a better job of teaching.

## **Study Objectives**

The study sought information from upper basic Mathematics teachers on the effectiveness of the components of the Teacher Professional Development train the trainer workshops organized by the Kwara state education sector in the North Central geo-political zone of Nigeria. Specifically, the study examined:

1. Male and female upper basic mathematics teachers' assessment of the components of the TPD workshop
2. Qualified and unqualified upper basic mathematics teachers' assessment of the components of the TPD training workshop
3. Experienced and less experienced upper basic mathematics teachers' assessment of the components of the TPD workshop

## **Research Questions**

1. What is the assessment of TPD components by upper basic Mathematics teachers?

2. Does gender of teachers has influence on their assessment of the components of the TPD workshop

3 .Does qualifications of teachers has influence on their assessment of the components of TPD training

4. Does teacher's years of teaching experience has influence on their assessment of the components of TPD training workshop

### **Methodology**

**Research type:**The study employed descriptive survey method. The use of questionnaire was considered appropriate for data collection.

### **Sampling technique**

The population comprised all the upper basic science and mathematics teachers who participated in the workshops. The target population is the upper basic mathematics teachers. The sample involved 300 purposively selected upper basic mathematics teachers from eight Local Government Areas of kwara state of Nigeria. The local government includes: Moro, Baruteen, Kaiama, Edu, Patigi, Offa, Oyun and Ifelodun. The selection was purposive because only the qualified mathematics teachers were involved in the study.

**Table 1:Number of participants according to local government and sex**

Name of local government	Male	Female	Total
Moro	30	7	37
Baruteen	30	7	37
Kaiama	30	7	37
Edu	30	7	37
Patigi	30	7	37
Offa	31	8	39
Oyun	30	7	39

Ifelodun	31	8	38
Total	242	58	300

Table 1 shows the number of participants drawn from each local government that took part in the workshops.

### Instrument

The instrument used for data collection was a questionnaire prepared by the researchers. The questionnaire sought information on gender, qualification and years of teaching experience of the respondents. The components of TPD considered in this study are: Learner-centered Approach; learning for all and from each other; Assessment; and Resource based learning. Each of the components contains subcomponents. For instance, the subcomponents of Learner-centered approach are : knowing about learners; knowing about the classroom environment; Involving learners in the classroom activities; Making use of varieties of learning materials; learning in pairs; learning in groups; provide opportunity for learners to brainstorm and provide opportunity for learners to make mistakes without fear or ridicule among others. These key components are taken from the implementation guide and the workshop modulesfor each of the components. The contents of the Mathematics module were taken from the Upper Basic Mathematics curricula. That is, JSS 1-3.

### Procedure for Data Collection

A questionnaire prepared by theresearchers was used to collect information from the respondents. 300 questionnaire forms were administered to upper basic mathematics teachers selected from each of the eight localgovernment areas of Kwara state, Nigeria by the researchers. The questionnaire forms were filled and returned

### Data analysis and Results

The analysis of data was carried out based on the four research questions raised.

The response scale is at four levels, strongly agree; agree; disagree; and strongly disagree. For the purpose of analysis, strongly agree and agree are marched as agree while strongly disagree and disagree are marched as disagree.

### Research Question 1:

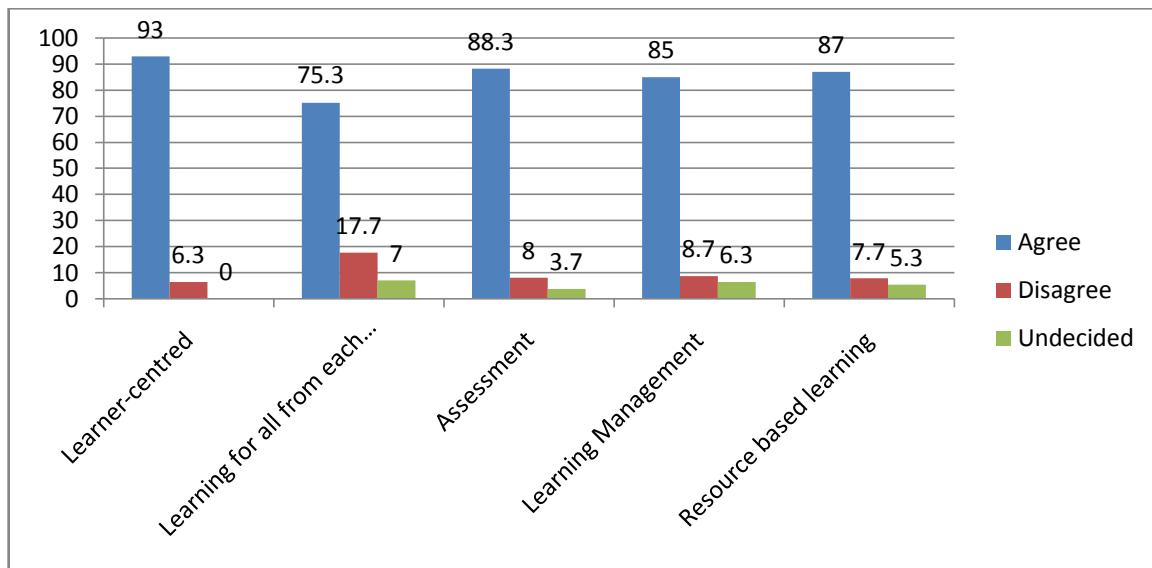
What is the assessment of Teacher Professional Development by Upper Basic Mathematics teachers?

The responses of the participants to the TPD components are in table 2.

**Table 2: Frequency counts and percentages of assessment of TPD components by upper basic mathematics teachers**

TPD components	Agree	Disagree	Undecided response	Total %
Learner-centred approach	281(93%)	19(6.3%)	-	300(100%)
Learning for all and from each other	226(75.3%)	53(17.7%)	21(7%)	300(100%)
Assessment	265(88.3%)	24(8%)	11(3.7%)	300(100%)
Learning management	255(85%)	26(8.7%)	19(6.3%)	300(100%)
Resource based learning	261(87%)	23(7.7%)	16(5.3%)	300(100%)

Table 1 shows the agreement level with TPD components for handling topics in the Mathematics curriculum by upper basic mathematics teachers. In other words, the TPD key components are important for the teaching and learning of Mathematics in schools and should be adopted. Figure 1 shows graphical representation of the percentages of agreement.



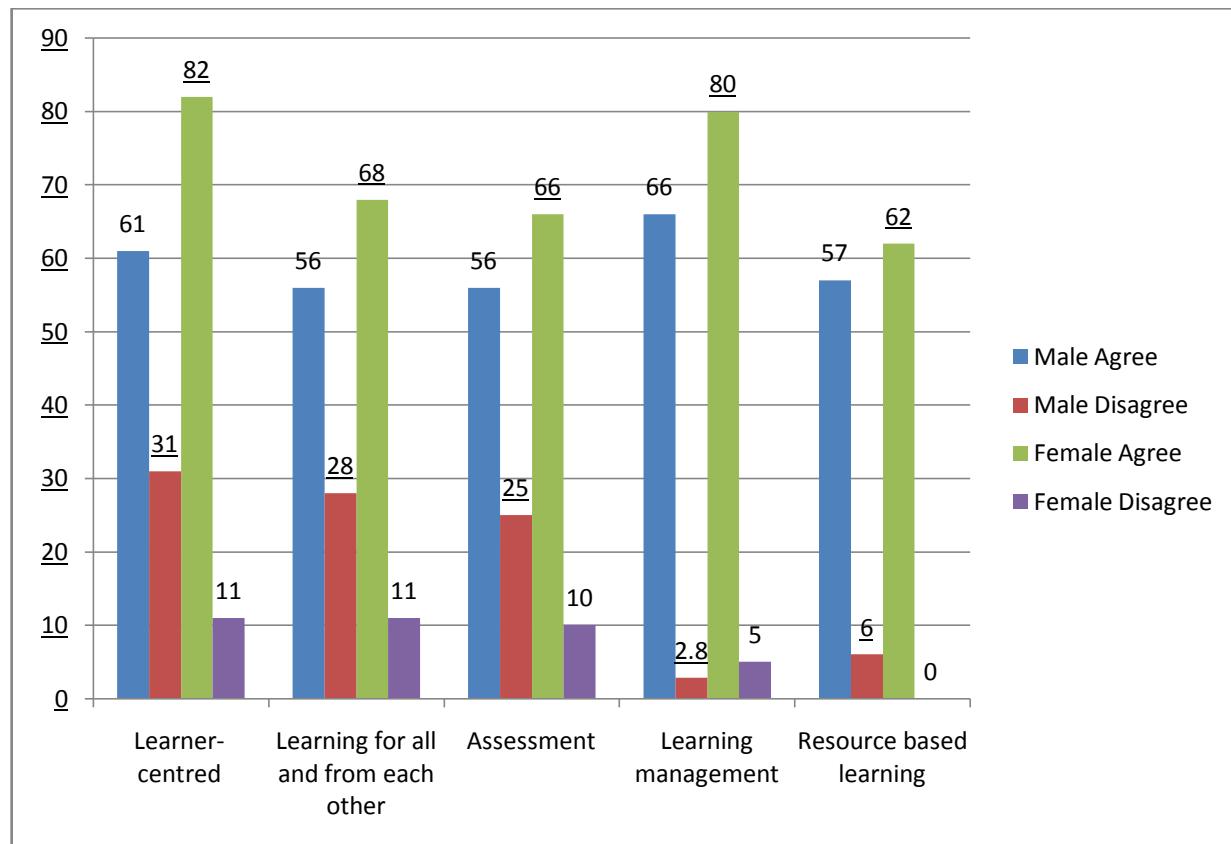
**Fig 1:** Assessment of TPD components by upper basic mathematics teachers.

In fig 1, the percentages of Agree across the components are higher than Disagree. It implies that mathematics teachers consider the components important in class room practices and management.

### Research question 2:

Does teacher's gender has influence on assessment of TPD components?

The analysis on gender influence is carried out on the graph below.

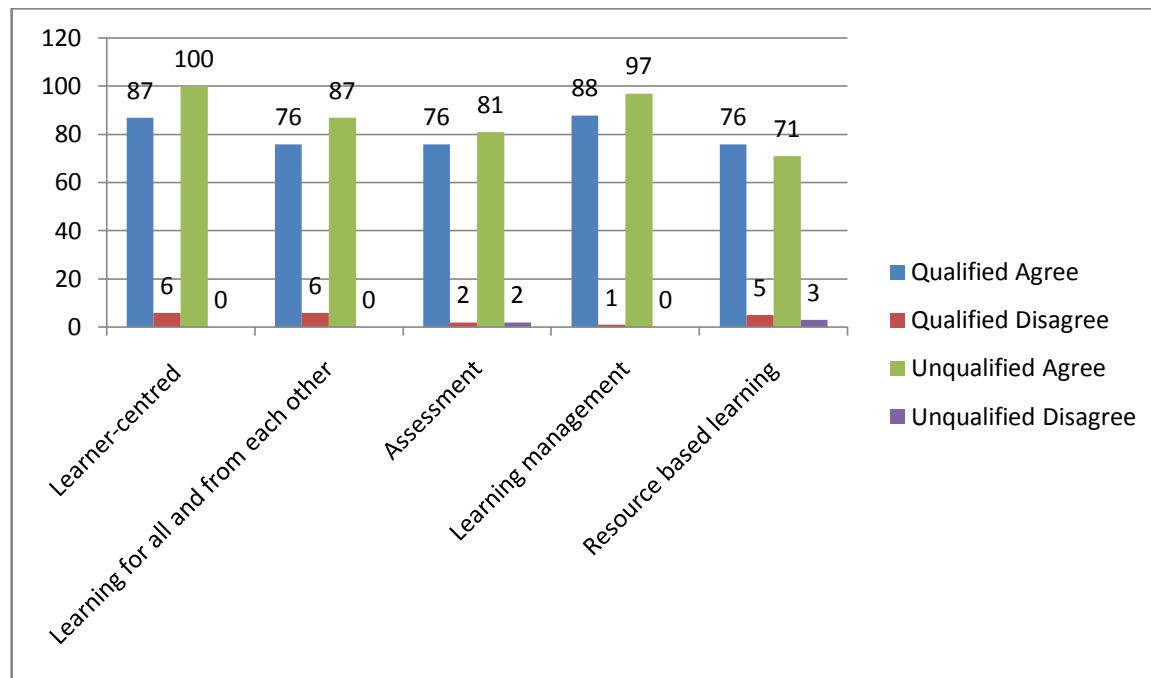


**Fig.2:** Graphical illustration of upper basic mathematics teachers' assessment based on gender. It is observed on the graph that high percentage of females agreed that the components are essential for professional development. The same applies to the males.

### Research Question 3:

Do qualifications of teachers have influence on the assessment of the TPD components?

The analysis on the influence of teachers' qualifications on assessment by teachers is done in percentages in the graph below.



**Fig 3:** Graphical illustration of assessment of TPD components by upper basic teachers based on qualification.

The qualified teachers are those that have either NCE, B.Ed; B.Sc.Ed; M.Sc. Ed; M.Ed; PGDE with B.Sc or PGDE with M.Sc certificate in Mathematics. While the unqualified teachers are those that do not have any certificate in education. It is observed on the graph that 100% of the unqualified teachers agreed that the components are required by teachers for enhancement on the teaching job.

#### **Research Question 4:**

Does teacher's years of teaching experience has influence on their assessment of the components of TPD training workshop

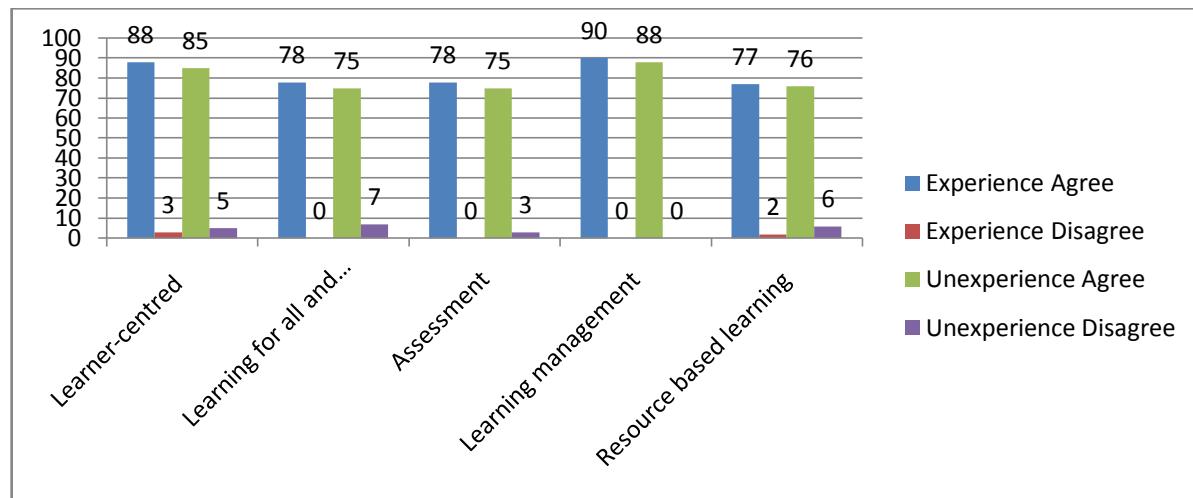


Fig.4: Graphical illustrations on years of teaching experience in %.

The information on the graph shows that higher percentage of the experienced teachers agreed that the components are adequate for professional development of teachers and should be integrated into teacher training programmes.

### **Summary and Conclusion**

The main purpose of the Teacher Professional Development was to improve teaching and learning in schools by encouraging teachers to adopt the TPD components in their classrooms. The workshops referred to include: face-to-face workshops, school based visits and cluster workshops on teaching of English (First Year), Mathematics and science (2<sup>nd</sup> year) and social studies (3<sup>rd</sup> year). The learning materials for the workshops were drawn from the Upper Basic Mathematics Curricula. It could be deduced that the TPD component are generally acceptable to the Upper Basic Mathematics teachers who were participants at the workshops. Findings from the study revealed that the Upper Basic Mathematics teachers agreed that the selected TPD components would improve teachers' quality as well as students' performance in Mathematics. Their agreement was not influenced qualification, gender and years of teaching experience. For instance 100% of the unqualified teachers agreed that TPD components should be practiced by teachers.

## Recommendations

Based on the findings from the study, the following recommendations are made:

- Other states in the North Central zone as well as other Senatorial districts in Nigeria should emulate the K-states (Kano, Kaduna and Kwara) by conducting similar job assessment of their teachers to ascertain their qualities.
- It is also essential for Ministries of Education in each state to examine the Literacy and Numeracy ability levels of pupils particularly the levels covered by Universal Basic Education. This may assist the achievement of the objectives of the UBE.
- Professional skills of Mathematics teachers should be ensured by Ministries of Education before giving employment.
- Courses should be designed for teachers to encourage continuous learning and improvement on the job.
- Recruitment into teaching profession should be on qualification of teachers for better handling of the curriculum contents.
- The government of Nigeria should as a matter of necessity attach importance to professional development of teachers by sponsoring mathematics teachers to attend conferences and workshops annually.
- A course on Teacher Professional Development should be introduced into teacher training program.

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