INTERACTIVE AND REFLECTIVE LEARNING USING MULTIMEDIA:
INSIGHT FROM PRE-SERVICE TEACHERS’ MICROTEACHING EXPERIENCE
IN NIGERIA

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Abstract
This study sought to determine the perceptions of pre-service Biology and English teachers on the use of interactive reflective learning and multimedia technology in microteaching. The sample for this study was 40 (20 Biology and 20 English) pre-service teachers who had registered for Biology and English method courses, respectively. The instruments for data collection were the questionnaire on pre-service teachers’ perceptions of interactive, reflective learning and multimedia technology; microteaching feedback sheet; and semi-structured interview. Descriptive statistics using mean and standard deviation were used in data analysis. Results suggest that the interactive and reflective engagement through multimedia served as a self motivating mechanism that resulted in students engaging in self-improvement/self-directed learning activities.

Key words: Multimedia, Technology, Pre-Service-Teachers, Microteaching, Biology, English.

Introduction
Microteaching is a critical component of the curriculum for teacher education in Nigerian higher institutions. In the curriculum, it exists as a separate course or an integral part of the subject method courses in the
Sciences, Arts and Humanities. It is considered a prerequisite experience that every pre-service teacher must have before embarking on teaching practice. The significance of microteaching is hinged on the fact that it is the melting point of theoretical knowledge of teaching and its actual practice though under a simulated classroom environment. Over the years, microteaching has been relegated to the background or has become merely a routine and was no longer accorded its pride of place in teacher preparation. Its importance in teacher preparation has continued to diminish and its actual practice mundane, uneventful and obsolete. Yet, the quality of teachers and standard of education continue to attract frequent criticism in the society. There is therefore the need for teacher preparation programmes at all levels of the educational system to rise to its responsibility and begin to pay more attention to the components of teacher preparation programmes in order to engender professional growth and development of prospective teachers. Aspects of teacher education curriculum that aim at providing teacher trainees with opportunities to link theories of teaching with practice thus stimulating acquisition of teaching skills and competence has to be encouraged (Korthagen, Loughran and Russell, 2006). There is a call by Aisiku (2002) for a more authentic, stimulating, motivating and worthwhile teacher education programme that will enable prospective teachers acquire skills that will chart the course for their life-long professional development.

What is Microteaching?
Micro-teaching is a scaled-down, stimulated teaching encounter designed for training of both pre-service and in-service teachers. Its purpose is to provide teachers with the opportunity for safe practice of an enlarged cluster or teaching skills while learning how to develop simple, single-concept lessons in any teaching subject. Fernandez and Robinson (2007) conceptualized microteaching as a cooperative learning experience aimed at challenging prospective teachers’ thinking about teaching and supporting their connection of theory and practice. Similarly, Pringle, Dawson and Adams (2003), view microteaching as an on-campus way of introducing pre-service teachers to the complexities of teaching and as a bridge that connects theory to practice. Microteaching helps teachers improve both content and methods of teaching and develop specific teaching skills such as questioning, the
use of examples and simple artifacts to make lessons more interesting, effective reinforcement techniques, and introducing and closing lessons effectively. Immediate, focused feedback and encouragement, combined with the opportunity to practice the suggested improvements in the same training session, are the foundations of the microteaching protocol.

The history of microteaching dates back to the early and mid 1960's, when Dwight Allen and his colleagues from the Stanford University developed a training programme aimed to improve verbal and nonverbal aspects of teacher’s speech and general performance. The Stanford model consisted of a three-step (teach, review and reflect, re-teach) approach using actual students as an authentic audience. The model was first applied to teaching science, but later it was introduced to language teaching. A very similar model called Instructional Skills Workshop (ISW) was further developed in Canada during the early 1970's as a training support programme for college and institute faculty. Both models were designed to enhance teaching and promote open collegial discussion about teaching performance.

**Importance of Micro-teaching in Teacher Education**

Microteaching is an excellent way to build up skills and confidence, to experience a range of lecturing/tutoring styles and to learn and practice giving constructive feedback. Furthermore, microteaching gives instructors an opportunity to safely put themselves “under the microscope” of a small group audience, but also to observe and comment on other people’s performances. As a tool for teacher preparation, microteaching trains teaching behaviors and skills in small group settings aided by video-recordings.

According to Amobi (2005) and (Kpanja, 2001), the basic importance of micro-teaching is that of exposing students to their roles as teachers and the realities of teaching. Microteaching makes the teacher education programme, more purposeful, goal oriented and helps to decide common objectives for the programme. It provides individualized training with more realistic evidence to students which enable them to develop competency in using specific teaching skills in view of their unique needs. It also provides a democratic type of behavior among faculty members and student teachers. In the same perspective, micro-teaching facilitates supervision which is not critical
on threatening type, but is of a helpful and suggestive type, which equip them for transition to school teaching. It is a system of controlled practice that makes it possible to concentrate on specific teaching behavior and to practice teaching under controlled conditions. This way microteaching is a teacher education technique which allows teachers to apply clearly defined teaching skills to carefully prepared lessons in planned series to five to ten minutes encounters with a small group of real students, often with an opportunity to observe the result on video-tape.

Assumptions of Microteaching
Researchers (Gess-Newsome and Lederman, 1990; Brent, Wheatley, Thomson & Scott, 1995; Benton-Kupper, 2001) have identified the notion of micro-teaching in terms of helping students and teachers engage in dialogue and discussion centered on making connections between theories of teaching and practice. They assume that in every microteaching experience five knowledge bases are integrated and translated into actual practice, namely, knowledge of self as a teacher, knowledge of content, knowledge of teaching and learning, knowledge of students and knowledge of school and social context. The quality of microteaching can thus be broken down into different dimensions:

i. Microteaching can reduce the complexities of education. It simplifies the study of inter-action between the teacher and the students.

ii. It can develop teaching skills. It provides an opportunity of integration of theory and practice. Specific skills can be developed.

iii. It is completely an individualized training programme. It is a successful technique for individual training and thus facilitates continuity in the training of the teachers.

iv. It is real teaching. Microteaching technique is useful for both pre-service and in-service teachers.

v. It can control the practice by feedback. Self evaluation is possible by tape recorder, video tape or digital camera.

vi. Feedback can be provided by various means, such as criticism by a teacher, preparing video film of the lesson, etc. There is provision of immediate and effective feedback.

vii. Its objectives can be written more clearly and specifically.
viii. Its use helps in the research work related to classroom teaching.
ix. It helps students build their confidence for teaching, and,
x. It inculcates the values of reflective and interactive learning.

Reflective Learning and Microteaching
Reflection is a conscious activity undertaken by someone to recall, think over, consider and evaluate an event that has already taken place based on certain already specified parameters or purpose. It occurs with the intention of evaluating an event for the purposes of gaining an insight necessary for decision making on future plan of action concerning similar event. Amobi (2005) Freiberg and Driscoll (1992) defined reflective teaching and learning as ‘strategies that stimulate students to use experiences to discover learning for themselves and to lead, gain knowledge, understandings, skills and attitudes’. Schon (1983) and Mezirow (1990) described reflective learning, as a dialectic process used to improve the professional practice of teachers. It involves the student-teacher identifying the assumptions, values and beliefs that frame his or her practice and then critically analyze his or her teaching in terms of such assumptions. Bartlett (1990) further pointed out that becoming a reflective teacher goes beyond the teacher being primarily concerned about the methods of instruction and ‘how’. It also entails the teacher also asking the ‘what’ and ‘why’ questions regarding instructions and managerial techniques not as an end but as part of broader educational purposes. At the heart of reflection activity, therefore, is a cyclical process leading to a construction of meaning by the students.

Bartlett (1990) further provided a description of reflection in microteaching as an enquiry that emphasizes an ethics of caring, a constructivist approach to teaching and creative problem-solving. A constructivist approach, as emphasized in this study, also seeks to connect theory to practice and views the student as ‘thinker, creator, and constructor’. Integral to a constructivist theory of learning, therefore, is creative problem-solving by which teachers are asking ‘what decision should I be making?’, ‘on what basis should I be making them?’ and ‘what can I do to enhance my students’ learning?’ (Mezirow (1990). These considerations confer on the teacher a certain measure of power and control over his or her teaching. Central to any
approach of reflection are four events: the event itself, recollection of the event, review and response to the event, peer and supervisor’s observation.

Schon (1983) considered the capacity to reflect in order to engage in a continuous learning one of the defining characteristics of professional practice. He argued that the model of professional training which he termed ‘technical rationality’ merely charges students up with knowledge in training school so that they could discharge their duties when they enter the world of practice. It is in this perspective that Atherton (2005) considered the cultivation of the capacity to reflect in action (while doing something) and on action (after doing the something), an important feature of professional training programmes in any discipline.

Rationale for Using Multimedia Technology in Microteaching

James Steven cited in Ushigiale (2007) defined multimedia as “a story which combines text, still pictures, video clips, audio, graphics and interactivity presented on a web site in a non-linear format in which the information in each medium is complementary, not redundant” (p.12). Multimedia are the forms or vehicles by which instruction or information is formatted, stored and delivered to the learner or to an audience (Pippert & Moore, 1999). The use of multimedia in the recording of microteaching performance is one of the most effective strategies that enhance the benefits of interaction and reflection in microteaching. Furthermore, videoed microteachings help to promote critical interactive and reflective activity, by providing student teachers’ and course instructors with the opportunity to review lessons taught, make observations, provide feedbacks and constructive criticisms. Video recordings of microteaching have since become a necessary requirement for the stimulation of self-reflection for student teachers during microteaching (Lee and Wu, 2006). However, its use has not been encouraged in especially developing economies primarily as a result of financial and time constraints, coupled with the issue of large class sizes in teacher preparation institutions (Karthegiyan, 2006).

The Purpose of the Study

The purpose of this study was to determine the perceptions of pre-service Biology and English teachers on the interactive reflective
learning sessions in microteaching. Furthermore, the study sought to
determine the extent to which students perceive the usefulness of
multimedia technology as a self-motivating mechanism in micro-
teaching.

Research Questions
The following research questions were posited:

1) What are the pre-service teachers’ perceptions on the use of
Multimedia technology for microteaching?
2) What are the pre-service teachers’ perceptions on the
interactive reflective learning sessions in microteaching?

Methodology
The following section provides an overview of the Research
Methodology. The overview includes the following subheadings: design,
population, sample, instrumentation, validity and reliability as well as
the microteaching sessions.

Research Design
This is an action research, which utilized quantitative and qualitative
methods in data sourcing. Qualitative and Quantitative research stems
from different philosophical assumptions that shape the ways
researchers approach problems and collect and analyze data.
Quantitative research uses objective measurement and statistical
analysis of numeric data to understand and explain phenomena. It
generally requires a well-controlled setting. Qualitative research, in
contrast, focuses on understanding social phenomena from the
perspective of human participants in the study (Ray, 2003 : 27).

Population and Sample
The population of this study comprised all pre-service teachers in a
Faculty of Education in one Nigerian University. The sample consisted of
a total of 40 (20 Biology and 20 English) pre-service (300 level) students
randomly drawn from the Department of Science and Technology and
Department of Arts and Social Science Education, in the Faculty of
Education, University of Lagos, Nigeria. These were student-teachers
admitted into 4year degree programme. During the first two years of
their programme, the students took compulsory and elective courses in Arts and Sciences respectively. However, both groups of pre-service teachers took similar compulsory professional Faculty of Education courses which included courses in Educational Foundation, Philosophy and Sociology of Education and Educational Administration. The ages of the participants ranged from 19-38 years.

**Instrumentation**
The instruments for this study were: Questionnaire on pre-service teachers’ perceptions on the use of interactive reflective learning and multimedia; microteaching feedback sheet; and semi-structured interview. The questionnaire comprised three sections namely: Demographic data (Section A), Pre-service teachers’ perception of Interactive Reflective Learning (Section B) and Pre-service teachers’ perception of the use of Multimedia (Section C). Four- Likert Scale of: Strongly agree (SA), Agree (A), Disagree (D) and Strongly disagree (SD) was used with numerical values of 4,3,2,1 in that order for positive statements and 1,2,3,4, for negative statements.

**Validity and Reliability**
The content and face validity of the questionnaire and the Microteaching Feedback Sheet were ascertained by submitting the two instruments to two other experts in the area of research in addition to the two researchers. Their comments and suggestions resulted in the reduction of the number of items of the questionnaire from 25 to 10. This resulted in each of the two variables under investigation to have five (5) items each. The Microteaching Feedback Sheet comprised 20 criteria which were reduced to 12. The criteria retained included: clarity of lesson goals and objectives, lesson presentation style, implementation of constructivist teaching and learning goals, mastery of content, teaching strength and weaknesses, communicative skills, time, class management and evaluation to mention just a few. A number of researchers (Vaidya, 1970; Amobi, 2005; Karthigeyan, 2006) have observed that when feedbacks are to be generated from pre-service teachers during microteaching, there is need for the evaluation criteria to be a bit more detailed rather than general.

The questionnaire showed a test-retest reliability coefficient of 0.85 with two weeks intervals between the tests while for the
Microteaching Feedback Sheet, test -retest reliability coefficient obtained was 0.75. Semi-structured interview was primarily used to elicit more detailed information from some pre-service teachers depending on their perceptions of certain variables of the questionnaire.

**Biology and English Method Courses**

The students who registered for the Biology and English method courses met for two hours lectures, twice a week with their respective course instructors for six weeks out of the thirteen weeks duration of the course work. The course contents for the two method courses covered similar topics which included: objectives of the method course, methods and techniques of teaching, constructivist theory of teaching and learning, students’ learning modalities and learning style, lesson plans, objectives of each lesson, roles of the teacher and student in the teaching and learning process, goals of microteaching, criteria for microteaching assessment, use of technologies in teaching and learning among others. Student teachers in the two cohorts were expected to use constructivist epistemological framework in their microteaching and peers were also to assess microteaching performance using the same framework. The lecture part of the course lasted for six weeks of two hours per week. The second part of the course was the ‘microteaching session’ during which each student teacher had the opportunity to present two microteaching sessions of ten minutes.

**Pre-microteaching activities**

For the pre-microteaching activities, a modification of the assumption set by Brent and Thompson (1996) was adopted. In this connection, student teachers were put through the following procedures:

1. They were put into small cooperative groups of four students with each group comprising two Biology and two English Education students;
2. The goals and objectives of the microteaching sessions were explained to all the students’ teachers;
3. They received briefing on microteaching guidelines that included information regarding preparation and conduct of the microteaching;
(4) Received instruction on the use of the Microteaching Feedback Sheet;
(5) Prepare forty minutes lesson plan to be submitted to his or her course instructor /supervisor on any general topic of choice for assessment before the group’s microteaching;
(6) Prepare a ten minutes, single concept lesson plan as an excerpt from the forty minutes lesson plan. The teaching sessions were expected to also conform to the constructivist’s teaching and learning paradigm as well as other goals of the microteaching session; and
(7) To come to the microteaching group sessions with personal new Compact Disk.
   Two Digital Video Disk recorders were provided by the researchers. Digital Video Disk recorders were preferred since it is a newer technology and students generally have easy access to facilities around the campus so they could use it to record their teaching in full.

Phases of Microteaching
Generally, the microteaching was structured in four phases.
   o Phase one- Pre-micro-teaching / Orientation
   o Phase two- Micro-teaching (Knowledge Acquisition)
   o Phase three- Micro-teaching (Skill Acquisition)
   o Phase four- Post-microteaching (Consolidation)

Phase one: Pre-Micro-teaching /Orientation(1 week)
The course instructors modeled the entire processes of teaching by presenting a ten minute single concept lesson each on a neutral topic which was also video recorded. The pre-service teachers were asked to use the Microteaching Feedback Sheet to assess the course instructors’ lesson presentation. During a replay of the videos, students were encouraged to comment freely on the presentations. The instructors (researchers) themselves, also, commented on their own lessons by explaining to the students the thinking behind certain actions taken in the video in the course of the lessons.

Phase two: Microteaching (Knowledge Acquisition) (3weeks)
Two periods of two hours each were scheduled per week for the microteaching. To ensure the participation of all the student teachers,
groups were asked to feel free to schedule their presentations at other times in the week convenient for them and their supervisors. Pre-service teachers each made ten-minute presentations in their respective groups in the presence of their respective supervisors. In each group, during presentations, pre-service teachers simultaneously assessed the roles of teacher, student, classmate and peer/friend (Bell, 2007). They were expected to act as much as possible as the real students in a normal classroom situation. Each presenter made his or her presentation bearing in mind the goals of the microteaching and other attributes and features of good teaching. For every presentation, a student member of the group was appointed as a scribe and had the responsibility of summarizing the groups’ interactive reflective feedbacks. As each member of the group made his or her 10 minutes presentation, the other three teacher trainees in the group used the Microteaching Feedback Sheet to assess their peer’s presentation.

At the end of all presentations, the interactive reflective session commenced with a time frame of 15 minutes for each presentation. To kick-start the process, the Digital Video Disk was played back in turns. For each presentation, the presenter commented first on the presentation while indicating his or her challenges. Peers and the supervisors made observations and constructive criticisms based on comments recorded in the Microteaching Feedback Sheet for each presenter. Evidences of controversial observations were sorted from the video clips. The stipulated time limits for reflective interactions were strictly adhered to. For this reason, peers were often advised to make not more than one positive and one constructive criticism each without repeating each others’ observations.

At the end of this session, the scribe appointed for a specific student’s presentation presented the groups’ summary of observations including areas to improve on. The presenter also was expected to assess his or her video recording using the microteaching feedback sheet. With this self assessment and that of the group, each student teacher wrote a final report on his or her microteaching and submitted the report to the supervisor indicating clearly areas he or she needed to work on. The self reports contained 4 sections: an introduction, teaching strengths, teaching weakness and areas for future improvement. Students were encouraged to watch some recordings of students in other groups before the next round of presentations.
Phase Three: Microteaching (Skill Acquisition) (3 weeks)
During the next phase of microteaching, each pre-service teacher in a group prepared a new 10 minutes single concept lesson plan based on the topic of choice earlier submitted to the supervisor. The lessons were presented and video recorded. Similar procedure, as in Microteaching session 1, was followed in obtaining the necessary feedbacks. These assessments, as well as the video recordings, provided enough evidence as to the extent of improvement and skill acquisition per student in comparison to the previous presentations. Interactive, reflective discussion sessions were videoed in both phases of microteaching to enable all pre-service teachers have access to discussion sessions in all the groups.

Phase Four: Post-Microteaching Activities (Consolidation): (1Week)
After the microteaching sessions that lasted for six weeks, a questionnaire titled: Pre-service Teachers’ Perceptions on Interactive Reflective learning and use of multimedia was administered on all 40 pre-service teachers. On analysis of the responses to the statements of the questionnaire, there arose an urgent need to carry out some follow-up interviews of some Biology and English language pre-service teachers in order to throw more light on certain responses they had made in the questionnaire.

Data analysis:
Descriptive statistic (mean and standard deviation) were used to analyze the responses of the pre-service Biology and English students to each of the items of the questionnaire. Interviews of some pre-service Biology and English students using the semi-structured Interview schedule were also audio-recorded and transcribed.

Results and Discussion
The results of the study with respect to the two research questions are hereby presented.
Table 1
Descriptive Statistic of Perception of Pre-service Teachers on Interactive and Reflective Learning

<table>
<thead>
<tr>
<th>Items</th>
<th>Statements</th>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Interactive and reflective learning sessions motivated me to begin to re-evaluate my beliefs and attitudes about teaching generally.</td>
<td>Biology</td>
<td>20</td>
<td>3.20</td>
<td>0.951</td>
</tr>
<tr>
<td></td>
<td>English</td>
<td>20</td>
<td></td>
<td>3.35</td>
<td>0.912</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40</td>
<td></td>
<td>3.28</td>
<td>0.925</td>
</tr>
<tr>
<td>2.</td>
<td>Through interactive and reflective learning sessions, I learnt the need to always reflect back on my teaching in order to do better next time...</td>
<td>Biology</td>
<td>20</td>
<td>3.00</td>
<td>0.794</td>
</tr>
<tr>
<td></td>
<td>English</td>
<td>20</td>
<td></td>
<td>3.10</td>
<td>0.911</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40</td>
<td></td>
<td>3.05</td>
<td>0.845</td>
</tr>
<tr>
<td>3.</td>
<td>During the interactive and reflective learning sessions, for my presentations, I felt tensed up and uneasy because of the observations and corrections being made on my presentation</td>
<td>Biology</td>
<td>20</td>
<td>3.00</td>
<td>1.123</td>
</tr>
<tr>
<td></td>
<td>English</td>
<td>20</td>
<td></td>
<td>3.05</td>
<td>0.944</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40</td>
<td></td>
<td>3.02</td>
<td>1.025</td>
</tr>
<tr>
<td>4.</td>
<td>The interactive reflective learning sessions was fun and I felt ‘safe’ expressing my observations about the teachings of others and mine.</td>
<td>Biology</td>
<td>20</td>
<td>2.80</td>
<td>0.833</td>
</tr>
<tr>
<td></td>
<td>English</td>
<td>20</td>
<td></td>
<td>2.60</td>
<td>0.940</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40</td>
<td></td>
<td>2.70</td>
<td>0.882</td>
</tr>
<tr>
<td>5.</td>
<td>I believe there was no need for the interactive and reflective learning sessions because it merely repeated what we had entered into the microteaching feedback sheet.</td>
<td>Biology</td>
<td>20</td>
<td>3.10</td>
<td>0.967</td>
</tr>
<tr>
<td></td>
<td>English</td>
<td>20</td>
<td></td>
<td>3.10</td>
<td>0.911</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40</td>
<td></td>
<td>3.10</td>
<td>0.928</td>
</tr>
</tbody>
</table>

From the Table 1 above, Biology and English pre-service teachers’ responses to Item 1 showed a mean of 3.20 and 3.35 respectively. For Item 2 also, Biology and English student teachers’ responses showed a mean of 3.00 and 3.10 respectively. These results clearly indicated that both groups were in agreement with the two statements 1 and 2 above. For Item 3, with a mean of 3.00 and 3.05 for Biology and English
student teachers, it appeared that both groups of students disagreed with statement 3. However, with SD = 1.123 for Biology groups, the perception of the groups appeared more dispersed from their mean of 3.00 than that of their English language counterparts. With respect to Item 4, with a mean of 2.80 and 2.60 respectively, Biology and English pre-service teachers’ appeared to disagree with the statement that interactive and reflective learning was fun and also provided a comfortable environment for self expression. With a mean of 3.10 in response to Item 5, both groups of pre-service teachers disagreed with the statement that there was no need for the interactive reflective learning sessions with the microteaching feedback sheet already used to obtain feedback.

Research Question 2

Table 2
Perception of Pre-service Teachers on the use of multimedia technology for microteaching

<table>
<thead>
<tr>
<th>Items</th>
<th>Statements</th>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Use of video recordings in microteaching helped me to focus on improving my areas of weakness.</td>
<td>Biology</td>
<td>20</td>
<td>3.20</td>
<td>0.894</td>
</tr>
<tr>
<td></td>
<td></td>
<td>English</td>
<td>20</td>
<td>3.00</td>
<td>0.917</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>40</td>
<td>3.10</td>
<td>0.900</td>
</tr>
<tr>
<td>2.</td>
<td>The use of videos in microteaching did not benefit me except for entertainment it offered.</td>
<td>Biology</td>
<td>20</td>
<td>3.20</td>
<td>0.894</td>
</tr>
<tr>
<td></td>
<td></td>
<td>English</td>
<td>20</td>
<td>3.25</td>
<td>0.910</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>40</td>
<td>3.23</td>
<td>0.891</td>
</tr>
<tr>
<td>3.</td>
<td>I was distracted by the video recordings and so could not concentrate fully on my teaching during my presentation.</td>
<td>Biology</td>
<td>20</td>
<td>2.90</td>
<td>1.071</td>
</tr>
<tr>
<td></td>
<td></td>
<td>English</td>
<td>20</td>
<td>2.85</td>
<td>1.182</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>40</td>
<td>2.88</td>
<td>1.113</td>
</tr>
<tr>
<td>4.</td>
<td>During the playback of the video, a lot of time was wasted because the technicians spent so much time adjusting the pictures and sound effect.</td>
<td>Biology</td>
<td>20</td>
<td>3.10</td>
<td>0.852</td>
</tr>
<tr>
<td></td>
<td></td>
<td>English</td>
<td>20</td>
<td>3.35</td>
<td>0.670</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>40</td>
<td>3.23</td>
<td>0.767</td>
</tr>
</tbody>
</table>
5. Video recordings of presentations made it possible for me to view the presentations of peers in other groups and to learn and expand my teaching methods.

<table>
<thead>
<tr>
<th></th>
<th>Biology</th>
<th>20</th>
<th>2.85</th>
<th>0.933</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>English</td>
<td>20</td>
<td>2.55</td>
<td>1.099</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>40</td>
<td>2.70</td>
<td>1.017</td>
</tr>
</tbody>
</table>

Results on Table 2 showed the mean response to Item 1 for Biology and English pre-service teachers’ to be 3.20 and 3.00 respectively. This indicated that the two groups were in agreement that the use of multimedia helped them focus on improving their areas of weakness. However, with a mean of 3.20 for Biology and 3.25 for English pre-service teachers’ in response to Item 2, both groups disagreed with the view that the use of multimedia merely offered them entertainment during the microteaching. With respect to Item 3, and with a mean of 2.90 and 2.85, respectively, Biology and English pre-service teachers’ appeared to be in agreement with the statement that the use of multimedia was somehow distracting. Table 2 above also showed the mean responses of Biology and English student teachers to Item 4 to be 3.10 and 3.35 respectively. These means indicated that both groups disagreed with the perception that the use of multimedia used was time wasting. Responding to Item 5, with a mean of 2.85 and 2.55, respectively, Biology and English pre-service teachers disagreed that the use of multimedia for microteaching made them learn and expand their teaching method and techniques through watching the videos of others outside the groups.

Findings from the study appeared to indicate that pre-service Biology and English teachers hold the perception that interactive and reflective learning motivated them to begin to re-evaluate their beliefs and attitude to teaching generally. This finding may not be unconnected with the fact that during the reflective learning sessions, the students had opportunities to review their conception of what teaching is especially from a constructivist perspective. Also, as a result of the interactive and reflective learning sessions, the two groups of pre-service teachers learnt to reflect back regularly on their teaching in order to improve on their future teaching. These finding accorded well
with Wilkinson (1996), Amobi (2005), Benton-Kupper (2001), Pringle, Dawson and Adams (2003). Although, the pre-service groups of Biology and English students teachers did not experience tension and discomfort while their presentations were being commented on, they did not perceive the interactive reflective sessions as fun either. Perhaps, these observations may be due to the fact that interactive and reflective learning is a new experience for the pre-service students. An attempt was made to find out why a few of the Biology and English student teachers indicated a feeling of tension and discomfort with the interactive and reflective learning sessions. On interviewing two of such students, it was clear the student teachers were yet to get used to their presentations being critically but objectively analyzed. One of the students responded this way:

I want to say that I liked the reflective sessions. But people in the group talked on everything I did and ended up embarrassing me.

Furthermore, the findings of this study, with respect to the perception of Pre-service teachers on the use of multimedia, indicated that the use of multimedia in microteaching helped Biology and English pre-service teachers to focus on improving their professional skills in teaching. This result appeared to be in harmony with Pippert and Moore (1999) who observed that the use of multimedia helped to capture the attention and interest of the students. Another interesting finding of this study showed that Biology and English pre-service teachers found the use of multimedia distracting. On further interview of two students from the two groups, it became clear that this was due to the fact that the students were yet to get used to being videoed while teaching.

A biology student had this to say:

While teaching, the video (video camera) was almost permanently (focused) on me. I could not concentrate fully on my teaching. I mean, I was self conscious most of the short period'.

The second student made this response:

'I did not like the way I looked in the first video. I tried to improve on my appearance more than on my teaching.

Studies like Brent, Wheatley and Thompson (1995) and Pippert and Moore (1999) attested to the fact as observed in this study, that the use
of multimedia assisted pre-service teachers obtain objective assessment of their microteaching. It also helped them to be specific as to the areas of the teaching they needed to work on or change. Further findings of the study showed that the students disagreed that watching the video of others helped them learn and expand their reflection. Through the interview of two students, each from both groups, it became obvious that students were reluctant to give their videos to others outside their groups to observe. This was attributable to the fact that they did not feel comfortable allowing others outside their microteaching group to see their mistakes. These comments indicate that the pre-service teachers were self-conscious and were yet to get used to being corrected by others. On the whole, the pre-service teachers did not perceive the use of multimedia for microteaching as having no effect or a waste of their valuable time. Hougham (1992), Thomson (1992) and Amobi (2005) to mention just a few, appear to be in agreement with these findings.

Implications of the findings
One major implication of this study is the urgent need for teacher Education programmes in Nigeria and other African countries to begin to pay greater attention to the microteaching experience of pre-service teachers. Specifically, teacher educators especially subject method course instructors need to re-define microteaching experiences to incorporate interactive, reflective learning and the use of multimedia technology as explicated in this study. Microteaching, being the first contact with teaching for most pre-service teachers, needs to incorporate opportunities that will sensitize and encourage prospective teachers to begin early to acquire the skills of constantly reflecting on their teaching for sustainable growth of teaching skills and general competence in teaching. Interactive and reflective learning practices as well as the use of multimedia especially in small groups have been demonstrated in this study to be an effective means of improving student teachers’ professional growth in teaching. Also, microteaching sessions for each student needs to be extended to give them enough time to get used to the camera and become familiar with the process and concentrate more on growth in their teaching skills. This study has further shown that microteaching experience can be multidisciplinary. The implication of this finding is that microteaching can be effectively managed by any method course instructor provided contexts are well specified and presentation
topics are open-ended rather than subject-bound. It is expected that the results of this study, will help to address the problem of large class sizes which had tended to make a mockery of microteaching in some subject areas in Nigeria (Odusina, 1991:49-73).

Conclusion
In concluding this paper, the following recommendations are made to enhance the effectiveness of microteaching experiences of pre-service teachers in higher education:

(1) Teacher Education should emphasize the pivotal role of microteaching in the entire experiences of pre-service teachers by increasing its credit load and status to the level of that of Project Writing in the curriculum. This is in view of the fact that it is the first initial experience of the pre-service teachers that defines teaching as a real profession to them.

(2) Interactive and reflective learning using multimedia preferably (DVD) should be made important features of pre-service teachers’ microteaching experience since the ability to reflect holds the key to growth in teaching skills.

(3) Course instructors and peer assessments should be encouraged during reflective learning sessions.

(4) The use of Microteaching Feedback Sheets by microteaching instructors and students should be encouraged as it was observed to compliment interactive reflective learning.

(5) Small multidisciplinary groups are recommended for microteaching as it will help to make the experience more meaningful and manageable to students’ and supervisors’ respectively. By making microteaching an interdisciplinary experience, method course instructors with large classes can be assisted by colleagues with smaller class size.

(6) Extra copies of some groups’ presentations should be made and student teachers should be encouraged to view them with the purpose of learning and enhancing their teaching skills, methods and techniques.

(7) Workshop should also be organized to awaken in-service teachers’ consciousness to the benefits of the new microteaching.
Finally, the findings of this study draw the attention of all Teacher Education institutions to the need to begin to accord microteaching experience its pride of place in the teacher preparation programme. The effectiveness and success in the professional growth of pre-service teachers, especially in the teaching practicum and in their subsequent future careers as teachers are dependent on the level of success achieved during microteaching, which will enable them to acquire the basic teaching skills and the arts of teaching. Microteaching provides an effective avenue for teacher educators to begin early to sensitize prospective teachers’ on the need to always reflect back on their teaching and constantly strive to improve on mistakes of the past. Based on the findings of this study, interactive, reflective learning and the use of multimedia and feedback sheets should be an integral component of every education process. Inter-disciplinary microteaching in small groups should also be considered as one of the best practices in Teacher Education in view of the challenges that large classes pose to microteaching presently.

**Limitations of the Study**

Although, it is not our intention to discourage future researchers, we will at this point review some of the limitations of this study that might be helpful in thinking through potential problems for futuristic researchers. First, there was nothing easy, fast or simple about this type of research and ensuring its rigor becomes even more demanding. Not only was the handling of the qualitative data difficult, but we needed to carefully manage the data. Secondly, the themes that emerged from the interview data clustered within the four phases of the study. It is possible that these themes could have been recorded and further merged together in presentation. However, this study was exploratory in nature, and so the decision was made to display only a few excerpts from the interviews. Third, the process of transcribing the interview data and creating a quantitative data set were all very rigorous, labour intensive and financially involving. Fourth, getting the subjects to assemble together at the right time in the same venue was not an easy task. We had to spend a lot of money on phone cards calling them and reminding them about the lessons. Fifth, a lot of delays where encountered on adjusting the pictures and sounds and this added to the rigor of the exercise. Finally, more Universities and Colleges of Education could have been utilized to provide
more insights into the culture of reflective learning and microteaching teaching in Nigeria. Nevertheless, researches involving more Universities should be carried out to properly understand and articulate the dynamics and dimensions of interactive reflective learning in multidisciplinary small groups.

References


