CHAPTERONE
INTRODUCTION

1.1BACKGROUND OF THE STUDY

Teaching is the artof imparting knowledge. It is the process by which a teacher guides the learnersin the acquisition of knowledge, skills and attitudes. Teaching is essentiallya system of interactions involving the teacher, the learner and the learningmaterials. In the previous past, the ultimate goal of education was to developthe three Rs in the students (Reading, Writing and Arithmetic). Education hassince expanded to bring about learning other disciplines. The purpose ofteaching is manifold. Teaching is undertaken to bring about learning, that is,a desirable change in behaviour, of the learners. To teach is to engagestudents in learning. Teaching is about getting students involved in the activeconstruction of knowledge. According to Isangedighi (2011), good teaching thenrequires a commitment to bring about learning. The aim of teaching is not onlyto transmit information, but also to transform students from passive recipientsof other people's knowledge into active constructors of their own knowledge.

Learning is the relatively permanentchange in a personsknowledge or behavior due to experience. This definition has three components:1) the duration of the change is long-term rather than short-term; 2) the locusof the change is the content and structure of knowledge in memory or thebehavior of the learner; 3) the cause of the change is the learners experience in theenvironment rather than fatigue, motivation, drugs, physical condition orphysiologic intervention.FromLearning in Encyclopedia of Educational Research, Richard E. Mayer

During classroominstructional processes, teacher would want to find out if the objectives ofthe lesson are being achieved by assessing the student. Based on the work ofmany scholars (Delclos, Vye, Burns, Bransford, & Hasselbring, 1992;Poehner, 2007), assessment is defined as a process for documenting, inmeasurable terms, the knowledge, skills, attitudes, and beliefs of the learner.Assessment ofstudents learning is theprocess of evaluating the extent to which participants in education havedeveloped their knowledge, understanding and abilities. Although thisdefinition of assessment is rather straightforward, the process of assessmentin the classroom is complex. At the classroom level, teachers must decide whichspecific knowledge, skills, attitudes, and beliefs warrant assessment; at whatpoint and for what specific purpose they should be assessed; and which toolsmight best accomplish these classroom-based assessments. This researchaddresses two forms of assessment, formative and summative.

What makes formativeassessment formative is that it is immediately used to make adjustments.Formative assessment is a process through which assessment-elicited evidence ofstudent learning is gathered and instruction is modified in response tofeedback. (Cauley, Richmond & McMillan, 2010). The common thread woventhroughout formative assessment research, articles and books bears repeating:it is not the instrument that is formative; it is the use of the informationgathered, by whatever means, to adjust teaching and learning, that merits theformative label (Cauley, Richmond & McMillan, 2010). Formative assessmentoccurs much more frequently, often within a lesson or unit, and allows astudent to practice their knowledge, adjust, modify and grow from constructivefeedback.

In the classroom,assessment formally carried out through assignments, tests, quizzes,performances, projects, and surveys; or informally through questioning anddialogue, observing, and anecdotal note taking. In any of these instances, anindividual may or may not be engaged in formative assessment: the determiningfactor is not the type of assessment used, but rather how students use theinformation (Cauley, Richmond &McMillan, 2010).

Formative assessmentis most effective when students have a clear idea of what teachers expect ofthem. Stiggins (2005, 2007) notes that when students have clear learningtargets and models of strong and weak student work, and when feedback iscontinuous, students have a foundation that helps them to understand what theyare learning, set goals, and self-assess. These formative assessment practicesencourage students and give them a greater

sense of ownership in instructionalactivities.
When the informationfrom an assessment is used solely to make a judgment about level of competenceor achievement, it is a summative assessment. At the classroom level, anassessment is summative when it is given to determine how much students havelearned at a particular point in time, for the purpose of communicatingachievement status to others. The communication usually takes the form of asymbol, a letter grade or number, or a comparison to a standard such as meetsthe Standard or Proficient, that is reported to students and eventually toparents. (Directions for Assessment in New Zealand, 2009). Feedback is veryimportant after any form of assessment.
Reports from previousstudies (Babayemi, 2014) and examination showed that students academic performancein Basic science and Technology is not consistent (Federal Ministry ofEducation, Research Statistics and Planning Section, 2013). The academicperformance of students in Basic Science and Technology has been a majorconcern to administrators, educators, teachers and parents. This is because itis at the basic level of education that, the foundation of building sound scientistsand technologists begins. If the foundation is not well developed, then,achievements at other levels of educational pursuits will be worrisome. The lowacademic performance of students in science and technology fields at the higherlevels is an indication of a faulty foundation Basic Science and Technology atupper basic education level of Junior Secondary Schools. Basic science, likeany other subject, has its own peculiar terms, and therefore, needs specialattention to be mastered by learners at the basic level of education. But thesituation is not encouraging as there is a low academic performance of studentsin the subject (Cornelius-Ukpepi, Esu & Ndifon, 2017).
The problem of lowacademic performance among students has led experts and all stakeholders ineducation to research into possible causes of this disheartening problem(Nwadinigwe & Azuka-Obieke, 2012). One of the probable cause is feedback.When providing feedback to a student, a teacher is essentially givinginformation about the student´s performance or understanding (Hattie &Timperlay, 2007). Teachers should use feedback to try to reduce the gap betweenthe students understanding and actual performance and how the teacher wants himto perform or develop (Hattie, 2009).
Research has shownfeedback to be among the most powerful and effective influences on students'achievement (Hattie, 2009) as well as an important component of the pedagogicalprocess (Brookhart, 2008). Since it links teachers practice to students learning needs(Bayley & Gamer, 2010). There is a vast amount of research that identifiesthe characteristics of effective feedback and feedback that is not effective orhas a negative effect on learning (Sendziuk, 2010; Brookhart, 2012; Hattie,2012; Wiggins, 2012; Thurlings, Vermeulen, Bastiaens & Stijnen, 2013). Manyteachers claim to provide their students lots of feedback, however, the realquestion is whether the students receive, understand and act on it.
Mixed reports aboundfrom fields of research on gender as it affects students' learning outcomes.Some researchers report a decline in gender differences in science achievement(Afuwape & Oludipe, 2008; Yuwen, 2008). Others find significant main effectof gender on subjects' learning outcomes in science. Babayemi (2014) find inhis studies that male students achieved significantly better than female inBasic Science. In a related study conducted by Babayemi and Ahmed (2019), thisresearcher also showed that male performed better in academic achievement thantheir female counterpart in Basic Science. While in the studies carried out bySoltani and Nasrl (2010), girls performed better than boys in science subjects.Since there are conflicting reports from various studies, there shouldtherefore be further studies on the influence of gender on students' learningoutcomes.
With all theseresearch efforts, it seems as if the performance is still not reallyencouraging. Researchers in education are making concerted effort to proffersolution to this disheartening problem in Basic science and Technology. Basicscience and Technology as important as the subject is to scientific andtechnological development of the nation and as a foundational subject is facedwith the problem of low students' learning outcomes. It means that the

foundationof the scientific and development of this nation seems a mess unless solutionis proffered to solve this worrisome academic problem.
Researcher made somesuggestions or recommendation such as the use of appropriate teaching strategy,use of instructional materials among others. They tried to correct somepsychological problems students could face and inhibit their learning or theirperformance. Despite these efforts of previous researchers and the problem oflow academic performance still persists, further research still needs to beinvestigated. For this reason, this study investigated on effects of feedbackon students' academic performance in Basic science and Technology

1.2STATEMENT OF THE PROBLEM

Frequent andmeaningful feedback is a cornerstone of learning. Without it, assessmentbecomes only a measure of failure rather than a tool of learning. However, itis highly disheartening that most teachers are not really giving feedback theattention it deserves. Previous studies showed that when feedback is given atthe appropriate time without being unnecessarily delayed, students can use itto judge their academic progress and maintain adjustment where necessary. Assome literature showed that some teachers give regular feedback, some otherteachers do not give at all and some other teacher delayed. Therefore, thisstudy investigates Feedback as Predictor of Students' Academic Achievement inBasic Science and Technology

1.3PURPOSE OF THE STUDY

The study sought todetermined Feedback as Predictor of Students' Academic Achievement in BasicScience and Technology in Mkpat Enin Local Government Area. Specifically, thestudy:
Determined differencein the mean ratings of male and female Basic Science and Technology in howfrequent feedback was given to students.
Determined howfrequent the teacher gives feedback to JSS2 Basic Science and Technologystudents in Mkpat Enin Local Government Area.
Determined thedifference in academic performance of students that were given immediate anddelayed feedback.
Established thenature of relationship between feedback and students academic performance inBasic Science and Technology

1.4RESEARCH QUESTION

What is thedifference in the mean ratings of male and female Basic Science and Technologyon how frequent feedback was given to students?
How frequent does theteacher gives feedback to JSS2 Basic Science and Technology students in MkpatEnin Local Government Area?
What difference existin the academic performance of Basic Science and Technology students that weregiven immediate and delayed feedback?
What is therelationship between feedback and students academic performance in Basic Scienceand Technology?

1.5STATEMENT OF HYPOTHESES

There is nosignificant difference in the mean ratings of male and female Basic Science andTechnology students on how frequent feedback was given to students.
There is nosignificant difference in the academic performance of Basic Science andTechnology students that were given immediate and delayed feedback.
There is nosignificant relationship between feedback and academic performance of studentsin Basic Science and Technology.

1.6SIGNIFICANCE OF THE STUDY

The outcome of thisstudy would help inform teachers of Basic Science and Technology on the role offeedback on students performance. It would also inform stakeholders in drawingup policies which would help promote effective feedback delivery in BasicScience and Technology.

1.7SCOPE OF THE STUDY

This study is limitedto JSS2 Basic Science and Technology students. This study will cover fourschools in Mkpat Enin Local Government Area, Akwa Ibom State.

1.8DEFINITION OF TERMS

The following termsand variable are defined as used in the study:-

Feedback:- Feedbackis a process in which learners make sense of information about theirperformance and use it to enhance the quality of their work or learningstrategies.

Achievement in BasicScience and Technology:- These are the scores obtained from the administrationof Basic Science Achievement Test.

Gender:- The state ofbeing male or female

FEEDBACK AS PREDICTOR OF STUDENTS' ACADEMIC ACHIEVEMENT IN BASIC SCIENCE AND TECHNOLOGY