Effect of using "Just-In-Time Teaching (JITT)" Method and "Modified Lecture" Method in Teaching Cataloguing and Classification Courses in Anambra State

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Abstract

Purpose: This study was designed to investigate the effect of just-in time on the academic achievement and interest of students offering cataloguing and classification course in Anambra State. The reason behind this research was that there have been observed poor performances in the cataloguing and classification scores of students in recent times.

Design/ Methodology/ Approach: In other to effectively carry out the study, it adopted the quasi experimental design particularly the pretest and posttest non-equivalent control group. The sample for the study comprised of 81 students from 2 selected tertiary schools (Nnamdi Azikiwe University, Awka; and Federal Polytechnic Oko) out of five tertiary schools in the area using purposive random sampling technique. The instrument for data collection was Cataloguing and Classification Achievement Test (CCAT) validated by two lectures in library and information science and measurement and evaluation. The reliability of instrument was established using Cronbach Alpha which yielded coefficient of internal consistency of 0.81. Data were collected by administering CAT as pretest, and posttest .The data obtained was analyzed using mean, and ANCOVA. Three research questions and one hypothesis guided the study.

Practical Implication(s): Tertiary institutions handling the teaching of Cataloguing and Classification as a course may consider adopting this teaching method to improve students' understanding and performance of the course

Key Findings: The results showed that there is significant difference in the mean achievement scores of male and female students in the experimental group, in favour of females. The result also showed that there is a significant difference between the mean achievement scores in cataloguing and classification of students in the just-in-time instructional strategy and modified lecture method groups, in favour of the just-in-time instructional strategy group. The researcher recommended that cataloguing lecturers should adopt the just-in-time instruction approach in teaching cataloguing concepts. Special training on how to use the just-in-time teaching method in teaching should be organized for cataloguing and classification lecturers by the government and Nigerian Library Association (NLA); so as to help them become competent in its use and application.

Contribution to Knowledge: This area is less researched especially when it relates to teaching cataloguing and classification as a course in Nigeria. This study may also be repeated with other library and information science course, or for other students.

Keywords: Just-In-Time Teaching, Modified Lecture, Cataloguing and Classification Students, Library and Information Science, Academic Achievement, Lecture Method

Introduction

Cataloguing and classification occupies a unique position in the tertiary institution curriculum. It is an essential process that facilitates and provides access to all acquired information resources of the library by allowing people find information needed for their personal and professional growth and development. It also provides access points to information resources in a way that users will be able to find the needed information or resources. Cataloguing is one of the compulsory courses studied in tertiary institutions in Nigeria. It is obvious that no student intending to study library and information science can do without cataloguing. Offor (2017) opined that "the course is a discipline that can be used in solving information searching through the use of subject, author and title.

All careers in librarianship include work in cataloguing, which is always understood to be a major part of library functioning (Marcum, 2006). In like manner, Luther (2010) said, cataloguing and classification have always held a position in the curricula of library schools. Although the concepts are changing in regard to the amount and nature of the training, some work in cataloguing and classification is still required of students following prescribed courses of study in library training. In spite of the importance and popularity of cataloguing among Nigerian cataloguing students, academic achievement at tertiary institution level has been poor (Adeyemo, 2017). Even with the numerous benefits presented by cataloguing in our tertiary institution curriculum there seems to be poor handling of the course in the tertiary institutions. The desire to know the causes of the persistent poor academic achievement in cataloguing has been the focus of educators and researchers for some time now. Ogunrobi (2016) pointed out that most cataloguing lectures still rely mostly on the traditional method for imparting knowledge. Nwude (2015) has asserted that poor academic achievement in cataloguing is caused by lack of good teaching method, lack of laboratory/instructional materials. If this trend of poor academic achievement in cataloguing should continue there is tendency that this technical skill and body of knowledge will continue to be abstract, learners will lose interest and Nigeria Library and Information Science graduates will never meet up with the library and information demands of the 21st century.

As a tertiary institution course, cataloguing and classification involves classifying, selecting, organizing, recording, and cataloguing of books and non-book materials for users for easy information search and retrieval (Nkwo, 2015). This role of cataloguing gives a vivid picture how important a catalogue is in the society or community. The library, through the technical services provided by LIS practitioners can deliver the most efficient and highest quality service so that library users may identify and retrieve appropriate materials to meet their information needs (Cabonero & Dolendo, 2013).From the above, one can understand cataloguing and classification as a very vital tool for retrieval of information in the library and requirements for the job market. This therefore shows the need for studying it as one of the tertiary institution courses. According to Adedibu, Akinboro and Abdussalam (2012) cataloguing and classification simply is a way of organizing library materials in such a way that the retrieval will not be difficult for library users. Adedibu et al (2009), also opined that the objective for studying cataloguing and classification at tertiary institution level are as

follows; learning how to make location of library materials easy; how to display and make library books attractive to its users, how to ensure easy identification and accessibility of library materials, how to save time of the users through good descriptive cataloguing. Through cataloguing also, they learn the metadata of information such as: author, title, place of publication, publisher and year of publication, learn how to group library materials together. A cursory look at the objectives indicates that they are laudable. Accordingly, in order to achieve these objectives, cataloguing and classification lecturers should employ various traditional/ conventional teaching methods for teaching cataloguing and classification in tertiary institutions. The achievement of this objective is really dependent on which lecture method is employed.

Teaching in the modem university is heavily oriented toward the lecture: in fact we can say it is without doubt the most important formal teaching method used. Lecture method is the oldest teaching method applied in educational institution. This teaching method is one way channel of communication of information. Students' involvement in this teaching method is just to listen and sometimes pen down some notes if necessary during the lecture, combine the information and organized it. As described by Sutherland (1976), the lecture is defined loosely as a continuing oral presentation of information and ideas by the professor; it is presumably a synthesis of his own reading, research, and experiences, interpreted in light of his own insights. Theoretically, in the true lecture, little or no active student participation is involved. In practice of course we have much variation in how closely this format is adhered to. There is a varying degree of use of the blackboard, slide projector, assignments to be done outside of class and question and answer sessions: but all of these variants involve the lecturer as the primary agent in the instruction. However, there are various lecture methods, but the present study focuses on the Just-In-Time-Teaching (JITT) and the Modified Lecture Method.

The Just-in-Time Teaching or JiTT approach was developed by Gregor Novak and Andy Gavrin at Indiana University–Purdue University Indianapolis (IUPUI) and Evelyn Patterson at the U.S. Air Force Academy. The group has collaborated with Wolfgang Christian at Davidson College to create simulations that can be used over the web. The method is a synergistic curriculum model that combines modified lectures, group-discussion problem solving, and web technology. Just-in-Time- teaching and learning method was designed to promote the use of class time for more active learning. It is an innovative method that enables faculty to increase interactivity in the classroom and engage students in learning by creating a feedback loop between students' work at home and the classroom setting, time on task improved in both quantity and quality (Gavrin (2006). Just-in-time teaching is a teaching and learning method that consists of two components: classroom activities that promote active learning and World Wide Web resources that are used to enhance the classroom component. JITT involves a fusion of high-tech and low tech elements. The high tech element involves the use of the World Wide Web to deliver curricular materials and to manage communication among students in the school environment. The low –tech element requires maintenance of a classroom environment by the school which emphasizes personal instructor-student and student- student interaction. It was developed by Gregor Novak et al. JITT relies on a feedback loop between the web-based learning materials and the classroom (Novak et al 1999).

The use of JITT as a teaching method can be as follows: 1) Students may be instructed to prepare for next class by reading from the textbook or materials that will be covered in the next class OR Lecturers may decide to give students short assignments in between classes which will focus on materials that will be covered in the next class. 2) The students can also be giving exercises which may involve the combination of multiple choice and short answer/essay questions, reading of textbook or article, to complete experiment, or watch a video. The students completed assignment can be submitted or delivered to the lecture few hours before the commencement of the class for the day. 3) The students can do the assignments using textbook or other resources posted to the web. 4) The students JITT answers or responses will be reviewed by the lecturer prior to the class. The lecturer will use the JITT responses to organize, create an interactive classroom environment and modify the forth coming lecture class-hence the just-in-time label. Modified Lecture Approach includes lecture timing, learning styles, and teacher empathy. It is a lecture mixed with student activity, individual or small group work (Diamantes, 1996).

In view of the fact that retention of students may have impact on the students' academic achievement, this study will use retention as dependent variable. Retention is the ability to recall what is taught or learnt by a student. It has to do with students being able to reproduce what they have learnt in the recent past (Nwanze, 2016). It is generally observed that teachers can help students retain information and avoid confusion if they vary their method of presentation for different materials. It is also considered that teachers can also enhance students' academic achievement by employing different teaching method.

Statement of the Problem

The teaching of cataloguing and classification is one of the fundamental strongholds of library and information science, and the heart of library education. Research has always shown that there is poor achievement of students of cataloguing and classification in semester examination. Ogunniyi and Nwalo (2016) pointed out that undergraduates are known to have poor achievement in the course for examinations. Interaction with library educators and students revealed that undergraduates portray cataloguing as being difficult and were not able to have high score in cataloguing courses. Blame has been placed on method in which library and information science lecturers adopt in teaching cataloguing and classification which is more teacher-centered than learner-centered. If this trend of poor achievement in cataloguing and classification should continue, there is the tendency that this body of knowledge will continue to be abstract, learners will subsequently lose interest; while Nigeria library science graduate will find it difficult to compete and meet up with the job market requirements of the 21st century.

Cataloguing and Classification is perceived as being a conceptually difficult course for a novice learner as well as one that requires that students build on prior knowledge they have acquired in order to progress (Isiaku, 2015). It is pertinent to note that since the creation of cataloguing and classification as a subject; there are many students who studied library and information science that perceived the courses as difficult or hard and uninteresting, and sometimes regard the cataloguing and classification lectures as a "let us just go and show our presence" phenomenon. Also, gender disparity in the study of cataloguing and classification has

become an issue that raises the interest of researchers. Male students seem to shy away from cataloguing and classification. It is thought that the lack of interest in cataloguing and classification among students is gender related and account partly for the poor achievement in cataloguing and classification.

The poor achievement to the study of cataloguing and classification has been attributed to the use of inappropriate teaching methods and inadequate practical exposure, inadequate supply of subject heading/cutter among other factors (Ndanwu, 2014).Consequently, there is need to evolve effective teaching method which could engender interest and stop the difficulty students encounter in tackling cataloguing concepts. From the above, the problem of this study is that conventional methods of teaching cataloguing and classification do not make for good students' achievement in their examination or in sound knowledge of cataloguing and classification. Therefore it becomes imperative to look for effective instructional strategy in which learning of cataloguing and classification will be made familiar to the learner, reduce abstract nature of cataloguing and classification, encourage good grasp of cataloguing concepts through the provision of necessary support which will make learners active rather than passive.

In view of the above problem, this study is designed to find out if students taught with JITT method of teaching will be able to exhibit improved academic achievement and retention in cataloguing and classification than those taught with conventional teaching methods.

Purpose of the Study

The purpose of the study is to determine the effect of using JITT method on students' achievement in teaching cataloguing and classification in comparison to the Modified methods of teaching the subject.

Specifically, the study sought to:

1. Find the achievement grades of students taught cataloguing and classification lessons using JITT method and those taught the same lesson using modified lecture methods.

2. Find the effect of gender on the achievement grades of students taught cataloguing using JITT method and those taught the same subject using modified lecture method of instruction.

3. Find the mean retention scores of students taught cataloguing and classification lessons using JITT method and those of other students taught the same lesson using the modified lecture methods.

Research Questions

The following research questions were asked to guide the study:

1. What are the mean achievement scores of students taught cataloguing and classification with JITT and those taught without JITT?

2. What are the mean achievement score of male and female students taught cataloguing and classification using JITT?

3. What are the mean retention scores of male and female students taught cataloguing and classification lessons using JITT method?

Research Hypotheses

The following null hypotheses which were tested at 0.05 level of significance provided focus for this study.

$H0_1$: There is no significant difference in the achievement grades of students taught cataloguing and classification lesson using JITT method and those taught the same lesson using modified lecture methods of instruction.

Methodology

The quasi experimental design was used for this study. The population for the study consisted of all the students of the tertiary institutions in Anambra State, Nigeria. The sample for the study is made up of 81 students from two institutions (Nnamdi Azikiwe University, Awka; and Federal Polythecnic, Oko) selected using purposive random sampling technique. Two instruments were used for data collection. They were cataloguing and classification Achievement Test (CCAT) and Cataloguing and Classification Retention Scale (CCRS). The instrument was validated by research experts in library and information science; and Evaluation & measurement. The Cronbach Alpha was used to determine the reliability of the instrument and the reliability coefficient was 0.81. The study was conducted in the computer room for experimental group and in the school classroom for control group in the various classes offering cataloguing and classification from 2nd to final year, at the times of their distinct normal classes. CCAT and CCRS were given to the students to respond to and no feedback on the pre-test achievement was given to them. Immediately after the four week teaching (treatment) and revision period, the same instruments were administered to the same students in their classrooms. The Cataloguing and Classification Achievement Test (CCAT) was administered to the students in the first week of the four weeks as pre-test likewise the CCRS to which their retention was pre-tested. At the end of the four weeks of teaching, the fifth (5th) week was for the post-test. The students were given the reshuffled CCAT and CCRS. Mean were used to answer research questions and analysis of covariance (ANCOVA) was used to test all the hypotheses at 0.05 significant levels.

Results and Discussions

The data collected on the research questions and hypotheses were analyzed and presented in this chapter.

Research Question 1: What are the mean achievement scores of students taught cataloguing and classification with just-in-time and those taught without just-in-time?

Table1: Mean, and Mean gain score of students on CCAT for Just-In-Time-Teaching method and modified lecture method.

Table 1:

Subject	N	Pretest X̄	Posttest X̄	Mean gain
Experimental	20	52.45	68.16	15.71
Control	20	42.51	59.91	17.40

In table 1 it can be observed that students taught cataloguing and classification using just-in-time method of teaching had the mean of 68.16 in the posttest and those taught with conventional method has the mean of 59.91, just in time group (experimental group) had higher mean than modified lecture method group. Also from the table mean gain scores showed that just in time group has 15.71 gain score while modified lecture method group had the mean gain of 17.40. This showed that the just in time group performed better than the conventional group.

Research Question 2: What are the mean achievement score of male and female students taught cataloguing and classification using just-in-time?

Table 2: Mean, and Mean gain score of male and female students on CCAT for just in time

Table 2:

Subject JITT	N	Pretest $\overline{X}$	Posttest $\overline{X}$	Mean gain
Male	5	29.63	44.81	15.18
Female	15	47.30	64.21	16.91

In table 2 the male students in the just in time group had a mean achievement score of 44.81 in their posttest scores. The female students had the mean of 64.21. This showed a slightly higher mean from that of the male students. It showed that female students performed slightly better than their male counterpart.

Research Question 3: What are the mean retention score of male and female students taught cataloguing and classification using just in time and those taught using modified lecture method?

Table 3: Mean of pretest and posttest retention scores of male and female students in experimental group.

Table 3:

Gender	N	Pretest Retention	Posttest Retention	Mean gain
Male	5	37.57	53.19	15.62
Female	15	48.94	68.25	19.31

Data presented in table 3 show that in experimental group the male students have a pretest mean retention score of 37.57 and posttest Mean retention score of 53.19. On the other hand, the female students have a pretest mean score of 48.94 and posttest mean score of 68.25. It would observed that the gain in mean retention score of male students (15.62) is lower than the gain in mean retention score of the female students(19.31).It showed that female students performed slightly better than male students.

Table 4:

H0$_1$: There is no significant difference in the mean achievement scores of students taught cataloguing and classification using just in time and those taught using modified lecture method.

Table 4: Summary of Analysis of covariance (ANCOVA) on the effect of method on Just- in- time method and modified lecture groups' Means Achievement on CCAT

Table 4:

Source of Variance	DF	SSY.X	MSSY.X	SD	FY.X	Decision
Between groups	1	326.4	161.1			H0 is
Within group	38	237.2	31.26	5.59	10.05	accepted
Total	39	563.6				

The F table value at .05 level is 4.10. This is lower than the calculated value of 10.05 which shows that there is a significant difference in the mean achievement scores of students taught cataloguing and classification using just in time and those taught using conventional method. As a result the treatment had significant effect on the achievement of the students in cataloguing and classification and therefore the hypothesis will not be upheld.

Summary of Major Findings

The major Findings that emerged from the study are summarized as:

1. Just-in-time-lecture method has significant effect on students achievement in cataloguing and classification as those taught with it are better off in their mean gain than those taught without it

2. Just-in-time-lecture method also lead to increase in academic retention of cataloguing and classification students exposed to it than students who are not exposed to it.

3. Female students taught with Just in time performed slightly better in their achievement than their male counterparts.

4. There is a significant difference in the achievement of students exposed to cataloguing and classification using just in time to those who are taught without just in time.

Discussion of Results of Findings

Effect of Just-In-Time on Students' Achievement in Cataloguing
The result of the findings showed that just in time has improved the achievement of students in cataloguing concepts as students taught with just-in-time had a higher mean in their posttest scores than students taught without just in time. However when the pretest and posttest were taken into account, the just-in-time group were able to top in the mean gain than the other group. When the hypothesis was considered there was a significant difference at .05. This finding was in line with the work of Novak (2011) that just-in-time has proven effective in improving classroom climate, student motivation and foster deeper learning. Bayo (2010) also recorded significant difference in the achievement of students taught with just-in-time than those taught with modified lecture method, hence confirming the claim that just-in-time can promote internal individual variables like motivation and this can lead to learners' full participation.

Effect of just in time on Gender with Respect to Achievement Retention
The result of the effect of just-in-time on students achievement in this work showed that there is significant difference in the mean achievement score of male (53.19) and female (68.25) placing the female students higher than the male student/counterpart. The finding of the study is contrary to the work of Ogbonna and Ali (2017) who found that male students performed better than female in cataloguing and classification course.

Conclusion
Evidence from the analysis of data reveals that there was a significant difference in the achievement of students taught cataloguing and classification using just in time method and those taught using modified lecture method of teaching, just in time was effective in improving the achievement of students in cataloguing and classification than those without it. Just in time was significant in improving the retention of the students in the concept (cataloguing and classification) more than those taught without it. Gender has no effect on the achievement of students in experimental group exposed to just in time. Female students had more retention in the subject cataloguing and classification than their male counterparts.

Educational Implication of the findings
The study goes a long way to prove that a just-in-time method of teaching is more effective in improving the academic achievement of students. Having proved to be effective; if lecturers continue to use conventional method only, achievement of students will remain poor. Just-in-time method of teaching has been found in this study to be a valuable technique for helping students attain high academic standard as it makes them actively engaged, and in turn increases their retention.

Recommendations made on the Research Findings

1. Library and Information Science lecturers should use the just-in-time teaching method and strategies for effective teaching of cataloguing and classification to enhance better academic achievement of students and their retention in cataloguing and classification.

2. Since Just in time is not selective in terms of gender it is important that lecturers use it to teach from time to time so as to encourage more participation of female students in the subject cataloguing and classification.

3. Library and Information Science students should always seek for academic help when it seems necessary especially when the task ahead of them seems beyond their level of knowledge. Government, educationists, Nigeria Library Association (NLA) should help lecturers to learn the skills of just-in-time-teaching by organizing in-service programmes such as seminars, workshops and conferences.

5. Curriculum planners should place the just-in-time method as an instructional technique/method at the core of educational curriculum so as to promote academic achievement and development as curriculum planning and instruction go hand in hand.

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