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Availability and Accessibility of Information Resources as Predictor of Lecturers' Teaching Effectiveness

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Background to the Study

Availability of information resources plays a major role in teaching and learning. For effective teaching to take place information resources must be provided and teachers must have access to various types of resources particularly in their areas of specialization. This will not only broaden their knowledge base but also prepare them ahead of the challenges that may face them in the course of imparting knowledge. A variety of activities that are performed by teachers in the course of carrying out their professional duties is hinged on close interaction with the various information resources in their areas of specialization. These include preparation of course materials, communicating in the language of the discipline, facilitation of learning activities with relevant materials, engaging in elaborate conversation with learners, giving exercises that involve critical thinking to learners, and so on.

Existing literature affirms that availability and accessibility of information resources are two inseparable factors in determining information resources utilization (John-Okeke, 2006). Availability of information resources is key to use. After all, an information system that is not available to users when needed is almost as useless as none at all (University of Miami Leonard M. Miller School of Medicine, 2008). Consequently, such resources cannot be accessible. Teachers as the mainstay of educational goal cannot but make use of information resources if they are to impart knowledge adequately and successfully, regardless of the level of teaching.

Nowadays, varieties of trends are affecting the education sector globally, and educators are being urged to shift from an emphasis on teaching to that of learning, but with an alignment of teaching, learning and assessment which boils down to the concept of effective teaching. The primary goal of teaching is to ensure that meaningful learning occurs (Ogunyemi, 2000). It is assumed that whenever teaching occurs, learning is likely to take place. As a result, one may be right to conclude that teaching in all ramifications should be made effective in order to produce a well-rounded human being, thereby bringing about teaching effectiveness. Hence, teaching effectiveness can be described as an embodiment of activities (cognitive, affective and psychomotor) that the teacher undertakes in the course of discharging his duties, which in turn yield professional fulfillment on the part of the teacher and knowledge transfer that brings about academic achievements on the part of students (Odunlade, 2012). At the center of these activities lie information resources and its day to day application to teaching and learning.

Statement of the problem

Information resources utilisation is germane to the teaching profession. This is particularly true for teachers in technological education where they are expected to employ various instructional and learning resources to enhance the effectiveness of their teaching and to promote students' learning outcomes and hands-on skills. Information materials are key aspects of instructional and learning resources. In spite of this, it is not certain if these resources are available for use in Nigerian Polytechnics and where there are, access to the resources could pose a major threat. It is in view of this that this study aims to find out the type of information resources available for polytechnic lecturers in complimenting teaching and how access to these resources has contributed to their teaching effectiveness.

Review of Related Literature

Teaching is perhaps as old as the creation itself. In the last few decades, there has been a lot of controversy among educators as to whether teaching is a profession or a career (Oprah, 2003). While some regard teaching as an occupation which anybody can engage in without training, due to their belief that the skills necessary to make a person an expert teacher are inborn, the other school of thought holds that there are basic skills that an expert teacher needs to acquire (Encyclopedia Britannica, 2006; Renzulli, 2009). For instance, a teacher needs to understand a subject well enough to convey its essence to students. Good teachers must be able to translate information, good judgment, experience and wisdom into relevant knowledge that a student can understand, retain and pass down to others (Claxton, 2009). Teaching, therefore, involves a level of competence that is both theory and practice- oriented.

Of late, the concept of teaching effectiveness has become a subject of discussion across the world; and cannot be discussed outside the taxonomy of educational objectives proposed by Benjamin Bloom and his team (Bloom, 1956; Krathwohl, 1964). The taxonomy provides a classification of educational objectives that is similar to classification schemes used for plants and animals. It consists of a set of general and specific categories that encompass all possible learning outcomes that might be expected from instruction. It is based on the assumption that learning outcomes can be best described in terms of changes in student behaviour. The taxonomy is divided into three parts: the cognitive, affective, and the psychomotor domains.

The cognitive domain of learning emphasizes remembering or producing something which has presumably been learned. It also emphasizes objectives which involve the solving of some intellectual task for which the individual has to determine the essential problem and then record given material or combine it with ideas, methods or procedures previously learned. Put in another way, cognitive domain stresses intellectual outcomes: that is, what goes on in the head such as knowledge, understanding, recalling of and remembering previously learned materials, facts and principles, grasping ideas or theories, and using learned knowledge in new situations. In other words, showing knowledge and reasoning skills (Krathwohl, 1964).

The affective domain emphasizes learning objectives that have to do with feeling, emotion, appreciation, and degree of acceptance or rejection. It varies from simple attention to complex but internally-consistent qualities of character and conscience. A large number of such objectives in the literature are expressed as interests, attitudes, appreciations, values, and emotional sets or biases. The psychomotor domain includes those objectives that emphasize muscular or motor skills: that is, some manipulation or act which requires a neuromuscular coordination. These objectives are more related to skill outcomes such as handwriting, speaking, typing, swimming and operating machinery. These features are dominant in commercial subjects, health science, home economics, industrial education, music, physical education and technical education.

Existing literature offer several definitions of teaching effectiveness. Specifically, Pagani and Seghieri (2002) describe teaching effectiveness as an aspect of teaching that is influenced by a combination of teacher characteristics such as clarity, capacity to motivate the students and to help them in the study of topics, ability to organize lessons with exercises and handouts, teacher's gender, age, previous experiences, physical

aspects of the classroom or laboratory (such as crowded classrooms or insufficient number of computers). Students' characteristics such as age, gender, high school origin, mark obtained at the end of high school, faculty attended by student, or class size also influence teaching effectiveness. In the view of Monahan (2005), teaching effectiveness or teaching excellence can result from many diverse activities. Hence, there is no single definition of excellent teaching in terms of what the teacher does. Teachers employ teaching activities that are dependent partly on the personality of the teacher and because what works for one may not work for the other, styles of teaching can be said to be divergent.

It is obvious from the above explanation that one may not be able to attribute a single definition to the concept of teaching effectiveness in terms of what the teacher does because teachers employ teaching activities that are dependent partly on the personality of the teacher. However, literature is replete with dimensions of teaching effectiveness (Kemp & O'keefe, 2003; Novak, 2002) but those that could be said to have a relationship with lecturers' use of information resources include teachers' subject knowledge (or mastery of subject matter), good communication skills: that is, clear speech in the language of the discipline. Also recommending valuable reading texts that add to course understanding of students, careful preparation of course materials or lecture notes, teachers' engagement in elaborate conversation with learners, discussing current developments in the field, contrasting implications of various theories, and giving exercises that involve critical thinking (Popoola & Haliso, 2009; Abdul Razak, Ahmad & Shah, 2007; Bell & Robinson, 2004; Kemp & O'keefe, 2003;; Buskist, 2002; Novak, 2002).

In view of the foregoing, it is obvious that information resources play a major role in teaching vis a vis teaching effectiveness. For instance, it has been established that the teacher is no longer the sole dispense of knowledge. So also, textbooks are not the only source of recorded information. The multimedia resources, which also enables teachers to use many different formats and modes to teach the subject matter of a lesson through a combination of lecture, text and hands-on laboratory for conveying information have all made it possible to impart knowledge and enhance teaching and learning (Zimmer, 2003). This implies that availability and accessibility of resources are central to teaching and research. Akinwumi and Ogunsola (2007) in their study affirm that to achieve any form of effective teaching of vocational subjects in Nigerian secondary schools, the needed educational resources must be available. Not only that, it must also be made accessible. After all, resources may be available and a user may even identify it bibliographically as relevant to his needs but find it difficult to access (Aguolu & Aguolu, 2002), thereby rendering such resources useless.

By implication, teachers, regardless of their level of teaching and the caliber of their students need to have access to relevant information resources in order to enhance their teaching abilities and performances for knowledge impartation and teaching effectiveness.

Objectives of the Study

The following objectives are proposed to guide the study:

1. identify the various information resources available for teaching and learning;

2. ascertain the accessibility level of lecturers to these information resources;

3. determine if lecturers in are effective in their teaching as a result of access to available information resources.

Research Questions

To achieve the objectives of the study, the following research questions are proposed:

1. What are the various information resources available for teaching and learning in federal polytechnics in Nigeria?

2. What is the level of lecturers' accessibility to these resources?

3. What is the level of polytechnic lecturers' teaching effectiveness?

Research Hypotheses

One research hypothesis has been formulated for the study at $\propto < 0.05$ and this is:

H_1: Availability and accessibility of information resources in Polytechnics will not contribute significantly to teaching effectiveness.

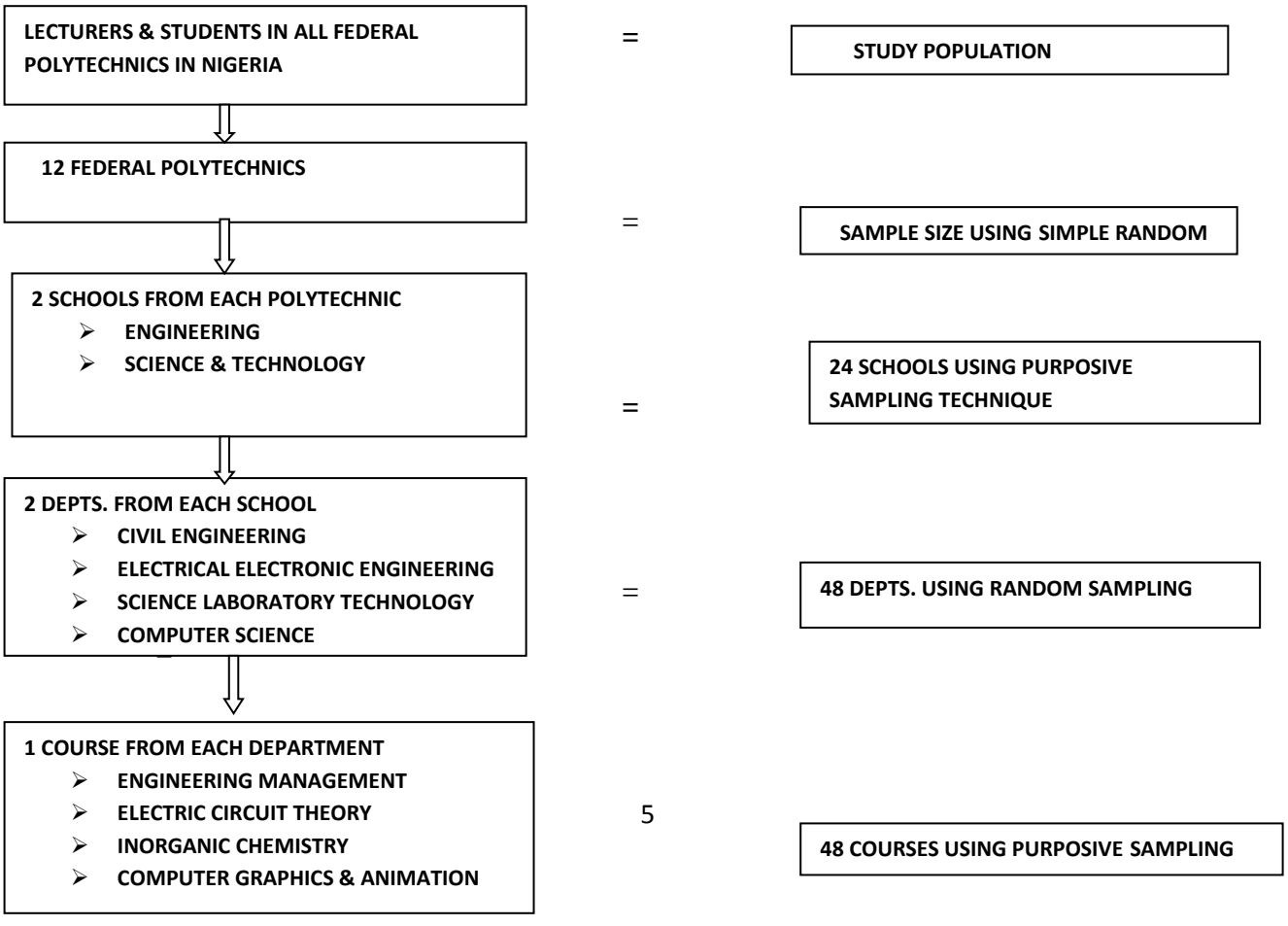
Scope of the study

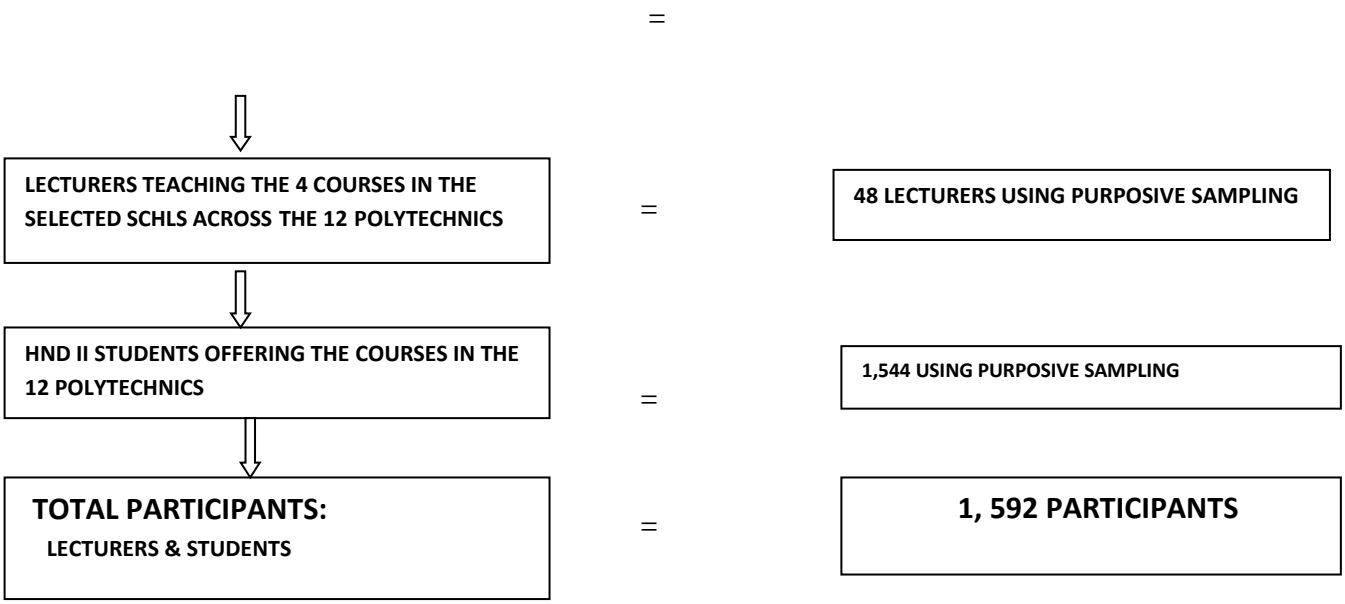
The scope of the study is Federal Polytechnics in Nigeria. This is because previous studies in this subject area especially in Nigeria concentrated on universities and secondary schools. Secondly, government-owned institutions, especially, at the federal level, most of the times have more advantage when it comes to funding and availability of human resources. So, Federal Polytechnics will serve as a good reference point for the matter under study. The study concentrates on the engineering and science and technology disciplines because these two fields are at the centre of technological education. Any breakthrough in the two fields can pass for a breakthrough in all other courses offered in polytechnics. The subject scope consists of lecturers who have spent one year and above in the polytechnic system.

Methodology

The research design adopted for this study is survey. The study population comprised lecturers and students in Federal Polytechnics in Nigeria. Multistage sampling technique was employed to sample the participants for the study and the instrument of data gathering was questionnaire. The sampling technique is presented in the diagram below.

MULTI STAGE SAMPLING TECHNIQUE





Out of the 1, 592 copies of the administered questionnaire, 1, 411 were found analyzable representing 88.6% response rate. Data were analyzed using descriptive statistics, simple correlation and multiple regressions.

Results and Discussion of Findings

Availability of Information Resources in the Institutions

Respondents were requested to confirm the availability of a list of 17 various information resources by indicating "yes" or "no". Findings revealed that though respondents indicated that all the identified information resources were available, 6 out of the 17 resources which were textbooks, journals, newspaper and magazines, encyclopedia, computer and internet/www were rated above average in availability with percentages that ranged between 52.2 and 82.6. Another 4 of the resources, that is, directories and handbooks, abstracts and indexes, conference proceedings, technical reports and manuals were rated to be available averagely between 41 to 47.8% while 4 others – workshop reports, online databases, CD-Rom databases and audio visuals were rated below average. This means that 10 out of the 17 information resources were at least available. This was in agreement with a recent report on "Information resources availability and utilisation in the legislative process by lawmakers in Edo State" conducted by Iwhiwhu (2011) where it was discovered that there were available information resources from which legislators carried out the legislative process, using information available for different purposes.

It is noteworthy that while most resources in print format were highly rated as available, other resources that appeared in electronic format (online databases, CD – Rom databases and audio visuals) were rated low except computer and internet/www. What this implies is that apart from computer and internet/www, other electronic resources such as online database, CD – Rom database and audio visuals were barely available in federal polytechnics. Observations during visits to polytechnics under study also revealed that only a few of the institutions actually had provisions of electronic information resources on ground for lecturers' use. In

cases where such were available, they were only computers and internet/World Wide Web facilities. This confirmed that use of resources such as CD-ROMs to obtain information and full-text articles was very low because of its non availability (Gatero, 2010). One could deduce from these reports that though print information resources were adequately provided, availability of electronic information resources in developing countries is still low and this could inadvertently affect its use in this part of the world. Details of the findings are presented in table 1.

Table 1: Availability of Information Resources in the Institutions

S/N	Resources	Yes (%)	No (%)
1	Textbooks	38 (82.6)*	8 (17.4)
2	Journals	36 (78.3)*	10 (21.7)
3	Thesis and Dissertations	18 (39.1)	28 (60.9)
4	Conference Proceedings	22 (47.8)	24 (52.2)
5	Technical reports and manuals	22 (47.8)	24 (52.2)
6	Abstracts and Indexes	20 (43.5)	26 (56.5)
7	Newspapers and Magazines	34 (73.9) *	12 (26.1)
8	Government Publications	12 (26.1)	34 (73.9)
9	Monographs/Standards	7 (15.2)	39 (84.8)
10	Workshop reports	18 (39.1)	28 (60.9)
11	Directories and Handbooks	19 (41.3)	27 (58.7)
12	Encyclopedia	24 (52.2) *	22 (47.8)
13	Computer	32 (69.6) *	14 (30.4)
14	Internet / WorldWideWeb	30 (65.2) *	16 (34.8)
15	Online Database	16 (34.8)	30 (65.2)
16	CD-ROM Database	8 (17.4)	38 (82.6)
17	Audio-Visuals	12 (26.1)	34 (73.9)

*Highly available information resources

Accessibility of Information Resources

To determine the level of resource accessibility, a likert scale of four options were presented and these were: Highly Accessible = 4, Accessible = 3, Barely Accessible = 2, Not Accessible = 1. Findings showed that more than half (58.8%) of the information resources were rated 50% and above in their accessibility level. These include textbooks, journals, abstracts and indexes, newspapers and magazines, computer, internet/WWW, encyclopedia, workshop reports, directories and handbooks and technical reports.

Other resources like theses and dissertations, conference proceedings, government publications, monographs/standards, online databases, CD-ROM databases, and audio-visuals were below average in their accessibility ratings. However, government publication was the least rated of all the resources. This is worrisome and it further confirms Ajidahun (2004), and Ola & Osagie (2011) who differently reported that there was a dearth or inaccessibility of government publications in Nigeria. From this, one could conclude that either government publications are not available, after all, whatever resource that is not available could not be accessible; or Polytechnic lecturers did not see the relevance of information contained in this type of resources to their professional upliftment.

Also, 3 out of the 7 resources (online databases, CD-Rom databases and audio visuals) rated below average in accessibility fell under the category of electronic resources. This conforms with previous studies which discovered that access to electronic information resources in this part of the world could be a challenge; and some of these challenges were found to be lack of online access, absence of in-depth ICT skills and information searching skills, absence of adequate infrastructures (ICT), electricity problem and poor internet connectivity(Watts & Ibegbulam, 2006). One recurring fact so far is that textbooks, journals, internet/www and computer had been tops of all the ratings while CD-Rom databases, online databases and audio visuals had continually been below average. In some of the institutions visited, lecturers were actually using personal computers/modems to access the internet and online databases. The implication of the findings for the present study is that most information resources were found to be accessible. Out of those that were accessible, print resources were more in number. Most electronic resources (online resources, CD-Rom databases, and audio visuals) were not accessible to lecturers. Table 2 presents the data as discussed.

Table 2: Level of Resources Accessibility

S/N	Resources	Not Accessible	Barely Accessible	Accessible	Highly Accessible	Means	Std. Dev.
1	Textbooks	2 (4.3)	4 (8.7)	10 (21.7)*	30 (65.2)*	3.48	.836
2	Journals	4 (8.7)	9 (19.6)	21 (45.7)*	12 (26.1)*	2.89	.900
3	Thesis and Dissertations	10 (21.7)	15 (32.6)	16 (34.8)	5 (10.9)	2.35	.979
4	Conference Proceedings	9 (19.6)	16 (34.8)	14 (30.4)	7 (15.2)	2.41	.949
5	Technical reports& manuals	8 (17.4)	15 (32.6)	15 (32.6)*	8 (17.4)*	2.50	.983
6	Abstracts and Indexes	7 (15.2)	10 (21.7)	23 (50)*	6 (13)*	2.61	.867
7	Newspapers &Magazines	3 (6.5)	4 (8.7)	19 (41.3)*	20 (43.5)*	3.22	.906
8	Government Publications	22 (47.8)	11 (23.9)	12 (26.1)	1 (2.2)	1.83	.902

9	Monographs/Standards	24 (52.2)	8 (17.4)	10 (21.7.)	4 (8.7)	1.93	.845
10	Workshop reports	8 (17.4)	11 (23.9)	18 (39.1)*	9 (19.6)*	2.61	.971
11	Directories & Handbooks	10 (21.8)	8 (17.4)	14 (30.4)*	14 (30.4)*	2.70	1.043
12	Encyclopedia	7 (15.2)	8 (17.4)	17 (37)*	14 (30.4)*	2.83	1.085
13	Computer	2 (4.3)	5 (10.9)	15 (32.6)*	24 (52.2)*	3.33	1.000
14	Internet / WorldWideWeb	5 (10.9)	9 (19.6)	18 (39.1)*	14 (30.4)*	2.89	1.039
15	Online Database	20 (43.5)	9 (19.6)	13 (28.3)	4 (8.7)	2.02	1.133
16	CD-ROM Database	21 (45.70	8 (17.4)	12 (26.1)	5 (10.9)	2.02	.855
17	Audio-Visuals	21 (45.7)	11 (23.9)	10 (21.7)	4 (8.7)	1.93	1.020

*Information resources that is accessible to users.

Dimensions of Polytechnic Lecturers Teaching Effectiveness

To ascertain if polytechnic lecturers in Nigeria were effective in their teaching, respondents were asked to rate themselves on a likert scale of 23 dimensions of teaching effectiveness. The options were: Very True of Me = 4, True of Me = 3, Occasionally True of Me = 2, Not True of me =1. In analysing the data gathered, frequency counts, percentages, and mean levels of each of the dimensions were calculated. The result reveals a high level self rating of teaching effectiveness by respondents as 18 out of the 23 dimensions had the mean levels of between 3.02 and 3.41. It is not surprising to see dimensions such as 'discuss current developments in the field & relating it to life situations' rated high. This is because the present study had revealed earlier that newspapers and magazines were available in the institutions. Apart from that, it was found to be accessible and also, one of the resources mostly used by respondents. Since no barrier was associated with the use of newspapers and magazines, it was expected that respondents could not but be up-to-date on current developments in their fields. After all, these newspapers and magazines are those that were related to their professions (that is, newspapers and magazines produced by their professional bodies).

Also, 'recommending valuable reading texts that add to course contents, carefully preparing course materials and presenting them in an interesting way, and giving assignments that require the use of both electronic and print information resources' were found to be dimensions of teaching effectiveness that has direct relationships with use of information resources by lecturers, hence, it is not surprising that they were rated high by respondents. Only 5 dimensions were averagely rated and their mean levels ranged between 2.72 and 2.96. However, ratings for 2 out of these 5 negated earlier findings of the present study. These 2 were: 'use of multimedia resources like the computer, projector, electronic board, CD-Rom and audio visuals to teach' and 'doing and submitting assignments electronically'. Earlier discoveries in the present study show that multimedia resources especially CD-Rom databases and audio visuals) were consistently rated low (availability and accessibility). Only computer was highly rated in availability and accessibility.

Generally, the rating in table 3 shows that respondents believed they employed almost all the dimensions in their course of teaching. However, exiting literature on teaching effectiveness maintains that students' evaluation of teaching effectiveness could have a significant impact on an instructor's career (Sprinkle 2008), and could actually give greater weight in obtaining a more comprehensive assessment of teaching effectiveness (Arthur, Tubre, Paul & Edens, 2003). Again, see table 3 for the details.

Table 3: Dimensions of Teaching Effectiveness Self Rating by Polytechnic Lecturers

Teaching Effectiveness	Not true of me (%)	Occasionally true of me (%)	True of me (%)	Very true of me (%)	Means	Std. Dev.
Use teaching styles that hold students' interest	2 (4.3)	3 (6.5)	15 (32.6)	26 (56.5)	3.41	.805
Recommend valuable reading texts that add to course content	3 (6.5)	6 (13)	24 (52.2)	13 (28.3)	3.02	.830
Enhance presentation of lesson with humour & clarity	4 (8.7)	4 (8.7)	22 (47.8)	16 (34.8)	3.09	.890
Discuss current developments in the field & relating it to life situations	5 (10.9)	1 (2.2)	22 (47.8)	18 (39.1)	3.15	.918
Carefully prepare course materials and present them in an interesting way	2 (4.3)	1 (2.2)	27 (58.7)	16 (34.8)	3.24	.705
Motivate students for maximum understanding	2 (4.3)	4 (8.7)	19 (41.3)	21 (45.7)	3.28	.807
Use fair and appropriate evaluation methods	3 (6.5)	3 (6.5)	27 (58.3)	13 (28.3)	3.09	.784
Emphasize course content in tests/examinations	4 (8.7)	8 (17.4)	17 (37)	17 (37)	3.02	.954
Accomplish course objectives	2 (4.3)	3 (6.5)	21 (45.7)	20 (43.5)	3.28	.779
Friendly towards individual students	3 (6.5)	3 (6.5)	17 (37)	23 (50)	3.30	.866
Encourage students' question and answers	3 (6.5)	4 (8.7)	11 (23.9)	28 (60.9)	3.39	.906
Make students feel welcomed in seeking help	4 (8.7)	1 (2.2)	12 (26.1)	29 (63)	3.43	.910
Encourage class discussion & after class consultation	2 (4.3)	7 (15.2)	13 (28.3)	24 (52.2)	3.28	.886
Promptness in return of graded assignments, quizzes	2 (4.3)	3 (6.5)	21	20	3.28	.886

and examinations			(45.7)	(43.5)		
Encourage use of quizzes, tests, assignments, & projects as part of continuous assessment	8 (17.4)	12 (26.1)	21 (45.7)	5 (10.9)	2.50	.913
Utilize inputs from student teaching	5 (10.9)	5 (10.9)	23 (50)	12 (28.3)	2.96	.918
Summarize major points of course	3 (6.5)	4 (8.7)	15 (32.6)	24 (52.2)	3.30	.891
Facilitate note-taking by students	6 (13)	4 (8.7)	17 (37)	19 (41.3)	3.07	1.020
Provide valuable feedback on examinations	8 (17.4)	7 (15.2)	21 (45.7)	10 (21.7)	2.72	.1.004
Demonstration of integrity in moral conduct and speech	2 (4.3)	3 (6.5)	15 (32.6)	26 (56.5)	3.41	.809
Use of multimedia resources like the computer, projector, electronic board,CD-Rom & audio visuals to teach.	8 (17.4)	7 (15.2)	21 (45.7)	10 (21.7)	2.72	1.006
Give assignments that require the use of both electronic and print information resources	2 (4.3)	3 (6.5)	15 (32.6)	26 (56.5)	3.41	.815
Encourage doing and submitting assignments electronically.	5 (10.9)	5 (10.9)	23 (50)	12 (28.3)	2.96	1.001

Students Rating of Lecturers Teaching Effectiveness

Furtherance to Polytechnic lecturers' self rating in table 3, students were also asked to rate the lecturers on individual bases using the same dimensions as lecturers. This is to provide a balanced and accurate rating judging from both the lecturers and students perspective. The statistics as presented in table
revealed that the mean levels of almost all the dimensions (19 rated by students ranked between 3.10 – 3.94 while the standard deviation was between 1.180 – 1.407. Again, a few, specifically 4 of the dimensions were rated averagely with mean levels that ranged between 2.43 – 2.64 and 0.43 – 0.51standard deviation. 3 out of these 4 dimensions which were: teacher's use of multimedia resources like the computer, projector, electronic board, CD-Rom and audio visuals to teach, teacher encourages doing and submitting assignments

electronically, and teacher recommends valuable reading texts that add to course content, actually fell under information resources and its application to teaching.

Nonetheless, students rated lecturers highly in the application of other dimensions. This indicates a high level agreement between the two responses. Inference drawn from the two tables (12 &13) is that 78.3% (18) of the dimensions of teaching effectiveness are employed by Polytechnic lecturers in their teaching. Some of the dimensions that had to do with information resources had ratings that negated their availability and accessibility levels as indicated in earlier part of the present study.

Table 4: Descriptive statistics of students' ratings of lecturers.

	N	Mean	Std. Deviation
	Statistic	Statistic	Statistic
Clarity of teacher's presentations	1365	3.73	1.234
Teacher's skill in relating course material to real life situations	1365	3.60	1.194
Clarity of the syllabus in stating course objectives, course outline and criteria for grades	1365	3.64	1.277
Extent to which interest in subject matter was generated in this course	1365	3.47	1.268
Clarity of teacher's explanation	1365	3.68	1.212
Mastery and understanding of topics and problems discussed by teacher	1365	3.48	1.283
Extent of student's involvement in the subject matter	1365	3.57	1.253
Teacher summarizes major points in the course	1365	3.44	1.375
Clarity of assessment criteria	1365	3.50	1.357
Fairness of question and scoring procedures	1365	3.45	1.294
Promptness in return of graded assignments, quizzes and examinations	1365	3.37	1.407
Usefulness of teacher's comments on tests, assignments and mid-semester examinations in correcting errors	1365	2.64	1.892
Teacher's use of quizzes, tests, assignments and projects as part of continuous assessment.	1365	3.49	1.637
Teacher's respect for students as individuals	1365	3.42	1.407
Teacher's management and control of class through questions and answers	1365	3.80	1.219
Teacher is friendly towards individual student.	1365	3.74	1.260
Availability of teacher for consultation and discussion.	1365	3.36	1.388
Teacher's demonstration of integrity in moral conduct and speech	1365	3.70	1.266

Teacher's facilitation of note-taking in his course.	1365	3.81	1.355
Usefulness of this course to your career aspirations	1365	3.94	1.211
Teacher's overall performance on this course compared with other courses by other teachers	1365	3.71	1.180
Teacher's overall performance on this course compared with other courses by the same teacher.	1365	3.59	1.373
Teacher's use of multimedia resources like the computer, projector, electronic board, CD-Rom & audio visuals to teach.	1365	2.43	1.643
Teacher gives assignments that require the use of both electronic and print information resources.	1365	3.10	1.606
Teacher recommends valuable reading texts that add to course content.	1365	2.49	1.653
Teacher encourages doing and submitting assignments electronically.	1365	2.44	1.668
Valid N (listwise)	1365		

Descriptive Statistics of Teaching Effectiveness Scale

For clear understanding, all the dimensions in table 4 were grouped under 5 major headings and table 5 presents the mean levels and standard deviation of the variables in the groupings. The findings revealed the mean level of 28.4 for teaching methodology, and standard deviation of 6.92, teachers' assessment procedures (16.34, 4.8), classroom management (21.81, 5.7), overall rating of course (11.29, 2.94), and use of information/instructional resources (10.82, 5.1). The result indicates that the mean levels of all ratings in students' response were above average. It also reveals that overall rating of course had the least standard deviation which indicates a more compact response while teaching methodology had the highest spread in response. Generally, the result of the two ratings (students' and lecturers') shows that lecturers were actually effective in their teaching as supported by previous studies (Adeoye & Popoola, 2011; Popoola & Haliso, 2009). An inference from this is that students found their lecturers to be effective in their teaching as clearly shown in table 5.

Table 5: Descriptive Statistics of Teaching Effectiveness Scale

	Mean	Std. Deviation	N
Teaching methodology	28.44	6.921	1364
Teachers assessment Procedures	16.34	4.765	1361
Classroom Management	21.81	5.676	1361

Overall rating of Course	11.29	2.941	1359
Use of information / instructional resources	10.82	5.101	1309

Hypotheses Testing

H_0: Availability and accessibility of information resources in Polytechnics will not contribute significantly to teaching effectiveness.

H_A: Availability and accessibility of information resources in Polytechnics will contribute significantly to teaching effectiveness.

In testing the hypothesis, tables 6, 7, 8 and present the results obtained. To determine the level of significance of the predictors (independent variables) in explaining teaching effectiveness, the variables were regressed and the result is presented in table 6. The significance of the p – values in the Regression Anova table shows that at least one of the predictors (predictor b) was significant (at $\alpha = 0.05$) in explaining teaching effectiveness, and that predictor is accessibility of information resources (.003). The H_0 was therefore rejected and it was concluded that availability and accessibility of information resources in Polytechnics significantly contributed to teaching effectiveness

Table 6: Regression Result for Significance of Independent Variables in Determining Teaching Effectiveness (Anova)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1279.400	2	639.700	5.974	.005[a]
	Residual	4604.426	43	107.080		
	Total	5883.826	45			
2	Regression	1068.717	1	1068.717	9.766	.003[b]
	Residual	4815.109	44	109.434		
	Total	5883.826	45			

a. Predictors: (Constant), Availability of Resources, Accessibility of Resources

b. Predictors: (Constant), Accessibility of Resources

c. Dependent Variable: Teaching Effectiveness

Model Summary of Regression Result of Independent Variables

Here, predictors 'a', which is availability of resources and accessibility of resources have (R) of 0.466[a], R-Square = .217, Adjusted R-Square = .181, and standard error of the estimate = 10.34793, and predictor 'b' which is accessibility of resources has (R) of 0.426[b], R-Square = .182, Adjusted R-Square = .163, and standard error of the estimate = 10.46109. This model shows that predictor 'b' which is accessibility of

resources singularly accounts for 18% of the variability in teaching effectiveness and so is the only variable that is significant from the coefficient table. This finding shows that there exists a high relationship between availability of information resources and its level of accessibility. However, the linear combination of information resources availability and accessibility significantly correlates with the teaching effectiveness of the respondents. But of the two, accessibility of information resources has the highest positive significance correlation with teaching effectiveness, that is, accessibility of information resources has a relatively high relationship with teaching effectiveness. By implication, if a resource is available but not accessible for use, teaching effectiveness may not be attained. Therefore, access is found to be central to information resources utilisation vis-a-vis Polytechnic lecturers' teaching effectiveness. The details are shown in table 7.

Table 7: Model Summary of Regression Result of Independent Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.466[a]	.217	.181	10.34793
2	.426[b]	.182	.163	10.46109

a. Predictors: (Constant), Availability of Resources, Accessibility of Resources

b. Predictors: (Constant), Accessibility of Resources

teaching effectiveness.

Result of the model coefficients of the independent variables on teaching effectiveness

Table 8 below is the model coefficients table. Results from the model show that: Teaching Effectiveness = 35.069 + 0.484 Accessibility.

This implied that when access to information resources was nil, teaching effectiveness was 35.069, meaning that teaching effectiveness would be 'occasionally true' of the lecturers. The value of 0.484 implies that every access to information resources would increase teaching effectiveness by 0.48 or 48% and the greater the access to information resources, the higher the effectiveness of teachers.

Table 8: Result of the model coefficients of the independent variables on teaching effectiveness

Model	Unstandardized Coefficients		Standardized Coefficients		T	Sig.
	B	Std. Error	Beta			
1	(Constant)	41.570	9.003		4.617	.000
	Accessibility of	.722	.235	.635	3.069	.004
	Resources	-.337	.260	-.263	-1.298	.201
	Availability of	-.044	.217	-.035	-.203	.840
	Resources					
	Usage of					

	Resources					
2	(Constant) Accessibility of Resources Availability of Resources	40.838 .707 -.350	8.154 .221 .249	 .622 -.272	5.008 3.204 -1.403	.000 .003 .168
3	(Constant) Accessibility of Resources	35.069 .484	7.117 .155	.426	4.927 3.125	.000 .003

a. Dependent Variable: Teaching Effectiveness

Conclusion and Recommendations

As mentioned earlier in this study, information materials are key aspects of instructional and learning resources. This fact can never be over emphasized especially in technological education where teachers are expected to employ various instructional and learning resources to enhance the effectiveness of their teaching and to promote students' learning outcomes and hands-on skills. This realization gingered the focus of the study towards ascertaining the level of availability as well as accessibility of information resources (print and electronic) in Nigerian Polytechnics and the impact on lecturers' teaching effectiveness.

Obviously, the study has established that though print resources were available for use in Nigerian polytechnics, electronic resources were on the contrary. In many polytechnics, electronic resources were not available. Most lecturers that had access to electronic resources got it either through commercial cybercafés or personal subscription to internet services. Even where there were institutional subscriptions and facilities (personal computers), access to online resources posed a challenge due to epileptic power supply and intermittent internet connection. Yet, access was central to resource utilisation vis-à-vis teaching effectiveness. It had also been established that polytechnic lecturers were lagging behind in the use of electronic resources/multimedia in teaching and learning even when their students were yearning for it.

On the basis of these findings, the following recommendations are therefore suggested:

- Deliberate efforts must be made in providing information resources (print and electronic) in Nigerian Polytechnic libraries. Polytechnic managements should see this as a priority in their attempts to equip their libraries by ensuring that library annual allocations are strictly expended on the library.

- Also, awareness on the availability of these resources must be created but importantly, access to the resources must be enhanced. This is because access to available information resources was found to be fundamental to lecturers' teaching effectiveness.

- Beyond this, a combination of other principles of teaching and learning such as teachers' knowledge of subject matter, ability to communicate in the language of the subject, preparation and presentation of course materials in an interesting way, using teaching styles that hold students interest, enhancing presentation of lessons with humour and clarity could increase Polytechnic lecturers' teaching effectiveness. These should be embraced by polytechnic lecturers.