

The Effects of Information Technology on the Achievements of Senior Secondary School Students in Essay Writing

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Abstract: The study investigated the Effects of Information Technology on the Achievement of Senior Secondary School Students in Essay Writing in English language. The research design is a pre and post test study, which involved 3 experimental groups and a control group. The subjects were 200 senior secondary school students, who were computer literate. They were taught by graduate English language teachers, who were computer literate. The students were taught with 3 methods of teaching namely, lecture, discussion and discussion with internet exploration. The student's achievements in special skills of essay writing specifically in expression, organization of ideas, contents and mechanical accuracy were determined. The study revealed that students, who were taught with discussion method combined with internet exploration performed better in expression, organization, contents and mechanical accuracy all which were regarded as overall performance. It was also discovered that students taught with discussion method performed better than those taught with lecture methods. It was recommended that language teachers should use discussion method with internet exploration to teach essay writing.

Key words: Information technology, achievement, expression, internet exploration, essay, writing, teaching methods

INTRODUCTION

The expansion of learning opportunities in the world today has brought about the need for information technology in learning. The incorporation of information technology into the education system in Nigeria is a new development. It is a very recent development and the government is struggling to integrate it into teaching and learning programme. The quintessence of the strategy is to transform school education from largely teacher-centred approach to a more interactive and learner-centred approach. The paradigm shift is at least being promoted gradually under the curriculum reform. Very recently, the Ekiti State Ministry of Education and State Universal Basic Education Board SUBEB directed all head teachers in the primary school to acquire a compulsory basic computer literacy. Although, this was not seriously enforced for many obvious reasons. Some of these reasons include lack of basic facilities such as electricity and inadequate computers and (even these primary schools were not equipped with computers).

In Ekiti State Nigeria, only a very few number of teachers at primary and secondary schools are computer literate. It is very difficult to ascertain, whether 40% of these teachers own a set of computer. In this situation,

computer literacy seems to be a very difficult task. The government is making efforts and giving promises to make sure that computer literacy is encouraged in our primary and secondary schools. In an attempt to promote this, a few numbers of secondary schools were provided with sets of computers. The government is planning to develop the necessary culture for the use of information technology in education therefore, it is organizing promotion activities and providing resources.

The use of information technology is very important because it can be a useful tool for students to explore and collect information, especially in the area of project-based learning. It can also facilitate communication among schools, parents and students. In addition, multimedia learning resources can help explain abstract phenomena and arouse students interest to learning. Personal observation have shown that where the teachers have a clear focus on valuing student-centered, inquiry oriented learning and the use of information technology as a means to curriculum innovation, exciting pedagogical practices can emerge.

As a result of the observation above, it is believed that information technology can raise language learning standards especially English Language, which is a global language. English Language is learnt in Nigeria as a

second language. An average Nigerian child must have acquired a Nigerian language to express his ideas, feelings and making requests. English language is very important in Nigeria because of the many functions it performs. It is the medium of instruction in Nigerian schools therefore, students must acquire a credit pass at the ordinary level examinations before such a student can gain admission into any tertiary institution in the country. This means that at secondary school level, Nigerian students must be able to communicate effectively in English Language both in speaking and writing forms. This study therefore, wants to investigate the effect of information technology on the acquisition of writing skills by senior secondary school students.

The purpose of the study is to investigate the effect of information technology on achievements of the senior secondary school students in essay writing. Specifically, the study investigated the effects of lecture methods, discussion methods and discussion methods with internet exploration by students on their achievements in essay writing. The study investigated, the achievements in the area of expression, generation of contents that is main ideas and supporting ideas, others are organization of the ideas generated and students' proficiency in the use of mechanical accuracy.

Statement of the problem: Writing is an integral aspect of language skills, which the students learn at school. Writing is very important in academics because it is through it that the students will express what they have learnt when answering questions during examinations. Scholars like Ubahakwe (1919) and Kolawole (1998) have found that many students failed examinations because of their low achievements in writing skills. They failed because they were deficient in the area of generating main ideas, supporting ideas, organization of ideas and ability to express their ideas in convincing manner. In addition, it has been reported by the West African Examinations Council. WAEC (2006) that many students are failing English Language and other subjects in the examinations conducted by the council as a result of their inability to generate enough contents. This has come to a worrisome situation. Therefore, this study investigated whether the introduction of a new method of teaching based on discussion with internet exploration will improve the performance of students in essay writing.

Research questions: As a result of the statement of the problem above, the following research questions were generated.

- Will students taught with discussion, lecture methods, discussion with internet exploration method perform well in essay writing?
- Will gender influence the performance of the students taught with discussion, lecture discussion with internet exploration in essay writing?

Research hypotheses: Based on the research questions stated above, the following hypotheses were generated and tested at 0.05 level of significance.

- There is no significant difference between the pre and post test scores in the achievement of students taught with lecture, discussion, discussion with internet exploration and the control group in essay writing.
- There is no significant difference in the performance of male and female students taught with discussion, lecture and discussion with internet exploration.

Literature review: Information technology in education is an innovation, which both teachers and learners are willing to adopt in order to enhance maximum learning. Those who are interested in the adoption of information place value on creativity and learning. Information technology in this regards serves as a sort of external motivation to learners. This factor is very important because technology skills have been identified as an essential increment in the labour market. It is very difficult now to imagine a field or occupation in which information technology does not play a significant role. In this sense, colleges and universities would be doing a major havoc to their students if they failed to provide appropriate opportunities to develop and enhance information technology skills as part of the school experience. The above is related to the assertion of Green and Gilbert (1995), who say that it would be a great disservice to students if Universities and Colleges failed to allow their students to acquire information technology skills, which can enhance their communication skills.

Technology has now become an essential aspect of human life as it has changed the way we live while, everything seems to be modernized by technology. As the world is changing, technologically teachers who are by profession agents of change should not only embrace changes appropriate to their particular circumstances, but should actually advance these changes by being "agents of changes. It is against this background, that this study investigated the effects of 3 methods of teaching composition namely: lecture, discussion and discussion with internet exploration methods.

The language educators should not be left behind in the adoption of information technology for the acquisition of language courses. Language teachers are aspiring to give quality education to their students. It is common to hear arguments that instructional technology will provide and promote quality education.

In developing countries like Nigeria, the adoption of information technology especially electronic learning via internet has a serious set back because of inadequate social amenities such as power supply, inadequate computers and its accessories and manpower in the area of computer literacy. Cardens (1998) observes that some of the problems associated with information technology in the classrooms are related to poor functioning equipment, over-promotion of technology-based learning to students and lack of quality in courses delivered by technology. This assertion is true of developed nations. The developing nations are battling with teething problems and most of these nations are still finding their feet in the promotion of technology-based learning. These nations are facing problems of inadequate or even non-availability of equipment that will make technology-based learning possible, some of such problems are lack of power outage, trained personnel to operate the equipment and problem of poverty, which hinders the purchasing or acquisition of the relevant equipment.

In Nigeria for example, internet facilities are restricted to urban areas such as state capitals, local government headquarters and fairly large towns where there is electricity supply even though one cannot boast of constant power supply in some of these towns. Those who are computer literate are found in the urban towns and fairly large towns. The use of internet facilities is now common in the universities, colleges and polytechnics but only very few secondary schools have internet facilities within their premises.

The secondary school students have access to private commercial cyber café located outside the school premises in cities and towns. Some centers also operate computer services, which include basic computer literacy training programme because only very few secondary schools and primary schools offer basic computer literacy training. This does not mean the absence of a sizable computer literate secondary and primary school students. There are many secondary school students who took the advantage of the existing private cyber café and computer training centers to acquire skills in computer literacy and internet exploration.

The government is striving to promote at least basic computer literacy education because it realizes that new pedagogic opportunities must be exploited and tested just

as new forms of communication opportunities must be established among pupils, students, teachers and the education sector as a whole.

Teachers in Nigeria have realized that information technology opens up opportunities for a more individualized form of teaching in which students can control the learning process when the teacher is not necessarily present. Information technology can assist in organizing teaching in such a way that learners can be helped to learn effectively and accept responsibilities for their own education. In addition, education courses can be designed to be information technology based, which will cater for both the weak and endowed learners in more effective ways especially in the learning of basic skills such as reading, writing and mathematics. Information technology is capable of creating opportunities for everyone to participate in educational activities, if conducive environment is provided. It is only in this regards that the overall goal of the educational system, which is to qualify the individual for work and for life in general can be achieved.

Multimedia, the internet and video conference systems are useful tools for the gaining of knowledge especially in the area of reading, writing calculation and problem solving. There is the need to train teachers in the latest research in instructional technology and electronic communication. This is necessary because knowledge is not static but dynamic and moves with lightning speed in the information society. Knowledge is being changed constantly or is so quickly made obsolete that the disseminators of knowledge that is teachers cannot always be up to date. This may happen because of the rate at which the amount of knowledge growing on a global basis is making new demands on present and future teachers and even students. Therefore, it is pertinent that the role of the teachers as planner, mediators of teaching must be developed concurrently with the integration of information technology into education because this will enhance the growing demand for the sorting of information into usable knowledge. The teacher must be equipped with skills that will enable him to guide and work as sparring partner for students. The teachers will be more effective if they were trained to handle teaching machines for instance, Tiemann and Mark (2006) assert that the potentials of the computer as teaching machine promises increasing design because computers can be programmed to judge students' input and to tailor lessons to each individual's level of mastery.

Arno (2006) says that information that helps to teach or encourages interaction can be presented on computers in the form of text or in multimedia formats, which includes

photographs, videos, animation, speech and music. He concludes by saying that computer aided instruction increase students access to information because numerous studies have reported that computer aided instruction is successful in raising examination scores, improving students attitudes and lowering the amount of time required to master certain material and that there are evidence that computer aided instruction can enhance learning at all educational levels. Jarson (1997) observes that with the introduction of educational technology, in teaching the skills of reading, writing and arithmetic will continue to have high priority and good quality. It will also assist, the individuals to carry out independent use of computers, networks and software, which are now available for both teachers and students. The creation of the information technology society will provide new opportunities for the strengthening of the quality of the teaching offered, within reasonable financial limits. Experience in other sectors of society shows that information technology makes possible more efficient and labour-saving methods of working. It is pertinent that these opportunities for improvement of quality and efficiency should also be utilized in the education sector.

In order to compare the efficiency of the information technology, it is important to analyze with a view to assessing whether traditional methods are still to be preferred to information technology. It is also important to determine where information technology might contribute to education.

This study investigated the effects of lecture and discussion method on students academic achievements in essay writing. Discussion method has been described by Obanya (1983) as student centered method of teaching. It is a method, which gives room for free flow of information or communication from the teacher to the student and from student to another therefore, it is a multiple-way communication channel. Discussion can be in a round table mode, where there is a leader who moderates the discussion. The participants are allowed to air their views on the subject matter, while a conclusion is reached at the end of the discussion. In teaching and learning situation, discussion provides avenue for students to share their ideas, develop oral communication skills and develop the skills of thinking and listening.

Ogunyemi (2003) found that discussion method enhances students' performance in speaking and writing skills than lecture method. Iyagba (1993) found that most students instructed with discussion method could not write good sentences like those instructed with reading writing methods.

Afe (1996) describes lecture method as a talk and some other forms of verbal presentation to a group of

students by a teacher or speaker. Obanya (1983) says that a lecture may contain any combination of quoting what well known authors said on the topic of the lecture, expressing the lecturer's own opinions, demonstrating how something works and stating the arguments in favour and against a particular proposition.

Adedoyin (2004) and Akinwale (2003) found that students instructed with lecture method performed better in essay writing than those instructed with discussion method. Kolawole (1998) found that lecture method was not as effective as activity method and discussion method on the achievement of students in essay writing. Ohiri-Anche (1988) found that gender influences the general behaviour of students in learning.

In summary, the need to compare teaching through information technology with existing forms of methods of teaching is emphasized in the literature review. It becomes clearer that information technology is relatively new in Nigeria and it is very important to introduce it in our educational system if our students are to catch up with their counterparts in other parts of the world.

MATERIALS AND METHODS

The study is a quasi-experimental, which involves pre and post tests of the students' achievement in essay writing. The design involves experimental groups and control group. There are 3 experimental group, which were treated each with different teaching methods namely lecture, discussion and discussion with internet exploration that will enhance students ability to express and organize their ideas. In addition, they will be able to use mechanical accuracy correctly when writing.

Population: The population of the study is all the senior secondary school students in class 2 in Ekiti State in Nigeria.

Samples and sampling technique: The sample of the study comprised 200 students, 100 male and 100 females drawn from four randomly selected secondary schools in Ekiti State. Fifty students out of the 200 were computer literate while, 150 were not.

Research instruments: Two research instruments were designed for the study. They are:

- Achievement tests in composition writing
- Instructional Package linguistic input

The achievement test aims at measuring the students' achievement in essay writing after instruction with the methods under investigation namely: lecture, discussion and discussion with internet exploration. The instruments

were based on essay questions in area of politics and agriculture in Nigeria and some other parts of the world. The students in each of the 3 groups were exposed to lecture, discussion and discussion with internet exploration, respectively. Those who were taught with discussion with internet exploration were allowed to explore the internet for additional reading materials.

Linguistic input used for the study is an instructional package, which was adopted from the current secondary school English syllabus and scheme of work for the senior secondary class 2 on essay writing. Specifically the package contains, grammar, lexis and use of dictionary, idioms and collocations, level of usage, syntax, sentence varieties, phrase and stylistic problems.

Validation and reliability of the instrument: The instruments were validated by language specialists at the University of Ado-Ekiti. The face and content validity were established by these experts.

The reliability, of the instrument was established by administering the instrument on the students who were not taking part in the main study after they have received instructions for 3 weeks. The scores of the students were subjected to Pearson product moment correlation. A correlation coefficient of 0.65 was obtained, which was considered well enough for the study.

Administration of the instrument: The students were taught in their various groups, namely discussion, lecture and discussion with internet exploration. These were the experimental groups. The students were taught by graduate teachers, who were specialist in English Language and were computer literate. The control group was allowed to go on with their normal class work, which was similar to what the experimental group was doing. The main difference being that they had no access to the linguistic input and the teaching method as well as the internet exploration. The teaching sessions lasted 5 weeks.

Data collection: An achievement test in essay writing was administered on the students before the commencement of the teaching to serve as pre-test. Similar achievement test was administered on the students at the expiration of the experimental sessions. The scores were collated and subjected to statistical analyses using specifically ANCOVA statistic.

RESULTS AND DISCUSSION

The first hypotheses states that there is no significant difference between the pre and post-test

Table 1: Descriptive statistics, dependent variable post-test scores of students' achievement in essay writing

Nature of instruction	No	Mean	Std.
Lecture	50	11.22	2.38
Discussion method	50	11.98	2.30
Discussion with internet exploration	50	13.06	2.77
Control	50	8.20	1.98
Total	200	11.11	2.97

scores of students taught with lecture, discussion, discussion with internet exploration and the control group.

ANCOVA Summary for Effects of Methods of Instruction, Lecture, Discussion, Discussion with Internet Exploration and Control Group on Students Achievement in Essay Writing.

Table 1 shows that the post test state means score of students in each group.

Lecture method is 11.22, discussion method 11.98, discussion with internet exploration 13.06 and the control group 8.20. All the experimental groups have means that are greater than the total mean score 11.11. The group taught with discussion method with internet exploration seems to have the best result, followed by discussion method and lecture method group. The table seems to show that the entire experimental groups performed better than the control group judging by their post test mean scores.

Table 2 shows the ANCOVA summary of the effects of the methods of teaching on the experimental groups and the control group. The table shows that there is a significant difference between the effects of the methods of teaching tested as well as the control group. The table shows F. calculated 37.39 significant at 0.000.

Table 3 shows the pair wise comparison between each of the experimental groups and the control group. The table shows that there is significant difference between the lecture method, discussion with internet exploration with a mean of difference of 1.88 and control group, mean of difference 2.91. The table also shows that there is significant difference between discussion method and discussion method with internet exploration mean of difference -1.10 and the control group mean of difference 3.69.

The table shows that there is significant difference between the discussion method with internet exploration and other groups as follows discussion method with internet exploration means of difference are; lecture method, 1.88, discussion method 1.10, control 4.80.

The implication of this is that, discussion method with internet exploration group shows significant difference with all other groups and seems to be the best group that enhance students' achievement in essay writing.

Table 2: Dependent variable: post test scores

Source	Type III sum of squares	df	Means square	F	Sig.
Corrected model	666.013a	4	166.503	29.778	0.000
Intercept	741.042	1	741.042	132.530	0.000
Pretest	14.038	1	14.038	2.511	0.115
Group	627.353	3	209.118	37.399	0.000
Error	1090.342	195	5.591		
Total	26465.000	200			
Corrected total	1756.355	199			

Table 3: Post hoc tests of multiple comparison of pre and post-test mean scores of the experimental and control group achievement scores

(I) Nature of instruction	(J) Natur of instruction	Mean difference (I-J)	S.D.error	Sig.
Lecture method	Discussion method	-780.000	0.473	0.101
	Discussion with internet	-1.886*	0.474	0.000
	Control	2.918*	0.477	
Discussion method	Lecture method	0.780	0.473	0.101
	Discussion method	-1.105	0.473	0.021
	Control	3.699*	0.476	0.000
Discussion with internet	Lecture method	1.886*	0.474	0.000
	Discussion method	1.105*	0.473	0.021
	Control	4.804*	0.474	0.000
Control	Lecture method	-2.918*	0.477	0.000
	Discussion method	-3.699*	0.476	0.000
	Discussion with internet	-4.804*	0.474	0.000

Table 4: Descriptive statistics, dependent variable posts-test

Nature of instruction	Gender	No.	Mean	S.D.
Lecture method	Male	25	11.28	2.15
	Female	25	11.16	2.62
	Total	50	11.22	2.38
Discussion method	Male	25	12.24	2.55
	Female	25	11.72	2.03
	Total	50	11.98	2.30
Discussion with internet exploration	Male	25	13.36	2.66
	Female	25	12.76	2.91
	Total	50	13.06	2.77
Control	Male	25	8.24	2.11
	Female	25	8.16	1.89
	Total	50	8.26	1.98
Total	Male	25	11.28	3.03
	Female	25	10.95	2.92
	Total	50	11.11	2.97

Table 5: ANCOVA summary of students' achievement according to gender

Source	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	674.625a	8	84.328	14.890	0.000
Intercept	724.481	1	724.481	127.921	0.000
Pretest	14.510	1	14.510	2.562	0.111
Group	626.805	3	208.935	36.891	0.000
Sex	6.235	1	6.235	1.101	0.295
Group * sex	2.373	3	0.791	0.140	0.936
Error	1081.730	191	5.664		
Total	26465.000	200			
Corrected total	1756.355	199			

The second hypothesis states that there is no significant difference in the performance of male and female students taught with lecture, discussion method and discussion methods with internet exploration and the control group.

Table 4 shows the mean of the post test scores of male and female students according to methods of instruction and the control group. The difference between the mean of both male and female students is not wide in the lecture method and discussion method but the

difference seems to be noticeable between females and males in the discussion method with internet exploration. The males have mean of 13.36, while the females have mean of 12.76.

Table 5 shows that there is no significant difference between the performance of males and females as reflected by F. calculated, which is 0.140 significant at 0.936, the implication is that gender has no influence on the achievement of the students in each of the methods of instruction.

The study sets out to investigate the effects of information technology on the achievements of secondary school students in essay writing. The findings of this study show that the achievement of students instructed with discussion method with internet exploration was higher than those taught with the discussion and lecture methods and the control group. This finding supported the claim of Green and Gilbert (1995) that information technology skills will enhance student's communication skills. It also buttresses the assertion of Jarson (1997), all who believe that information technology will improve the quality of education offered to students as well as student's communication skills in writing and speaking.

The finding of the study also shows that discussion method alone is better than lecture method because students in the discussion method performed significantly better than those instructed with lecture method and the control group. The finding on the discussion method corroborates the findings of Ogunyemi (2003) that discussion method enhances students performance in speaking and writing skills, Ogunyemi (2003) also found that students instructed with discussion method were able to write better essays than those instructed with lecture method.

The study revealed that the students exposed to internet exploration were able to find many relevant materials that serve as supplementary reading materials than students who were instructed with discussion without access to internet and lecture method group. In addition, the students in the discussion group with internet facility were able to discuss the materials collected from the internet. They were asked to summarize some of the materials collected from the internet identifying main and supporting ideas.

These materials also exposed the students to various forms of expressions, sentence varieties and organization of ideas. The students instructed with other methods had little experience about written materials that are relevant to the topics treated during the experimental sessions. The access to information through internet formed added advantage to the students' communication skill.

The findings of the study show that gender has no influence on the performance of students in essay writing. This contradicts the submission of Ohiri-Anche (1998) that gender influences general behaviour of pupils. Gender may influence the achievements of students but the 3 experimental groups did not reflect any significant influence of gender on essay writing.

The implication of this is that these methods of teaching especially discussion with internet exploration are good for teaching both males and females.

CONCLUSION

This study has shown that the problems of mass failure in English Language can be solved by teaching the students with good teaching methods and instructional materials. The study has demonstrated that information technology, specifically internet exploration, can improve students' performance in essay writing. As a result of the findings of the study, it was concluded that discussion method, with internet exploration will enhance students' performance in essay writing

RECOMMENDATIONS

As a result of the findings of the study, it is recommended that language teachers should embrace discussion method with internet exploration. The teachers must acquire the necessary skills that will make them computer literate in order to be able to explore the advantages of using the internet. This will also assist them to encourage their students to be computer literate in order to explore the internet. The study revealed that many secondary schools were neither teaching computer literacy nor encouraging their students to explore the internet. The problem is linked with inadequate computer and internet facilities therefore, the government should make computer literacy compulsory in all senior secondary schools in Ekiti State.

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