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EFFECT OF ASYNCHRONOUS INSTRUCTIONAL STRATEGY ON LEARNING MOTIVATION AND SCORES OF POSTGRADUATE STUDENTS IN ADVANCED EDUCATIONAL RESEARCH IN AKWA IBOM STATE, NIGERIA

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ABSTRACT*: This research investigated the effect of asynchronous instructional strategy on learning motivation and scores of postgraduate students in Advanced Educational Research in Akwa Ibom State, Nigeria. The research sample comprised 120 postgraduate students drawn through convenience sampling technique from a population of 204 master degree students in the Faculty of Education in the 2018/2019 academic session. A pretest-posttest non-randomized quasi-experimental research design was used. Two research questions and two hypotheses guided the study. A 50-item ''Advanced Educational Research Test'' and a 10-item ''Learning Motivation Questionnaire'' were developed by the researchers for data collection. The research questions were answered using mean and analysis of covariance was employed to test the hypotheses at .05 alpha level. The reliability indices of the two instruments were estimated using Kuder-Richardson and Cronbach alpha methods respectively and the reliability indices for the instruments were 0.74 and 0.78 respectively. The findings of the study revealed that students who learnt through the asynchronous instructional strategy were better motivated and scored higher in Advanced Educational Research than students who learnt through lecture method. It was concluded that the asynchronous instructional strategy was very effective in motivating and improving advanced educational research scores of postgraduate students compared to the lecture method. It was recommended that the National Universities Commission should set up modalities necessary for adopting e-learning technologies like the asynchronous instructional strategy in Nigerian universities for the teaching and learning of all courses because it improves motivation and achievement of students.*

KEY WORDS: asynchronous instructional strategy, learning motivation, scores, Advanced Educational Research

INTRODUCTION

The rapid global transformation in information communication technology has led to diverse approaches of accomplishing the necessity of everyday life including the educational system. Jesse (2016) found that the top trend in the transformation of the teaching and learning process is the use of e-learning, which could be in line with this claim. The way teachers teach and students learn is increasingly influenced by information and communication technology (ICT). The most popular way of delivering e-learning instruction is through the use of the asynchronous methods of instruction (Simonson, Smaldino, Albright & Zvacek, 2012). Asynchronous instruction is a modern way of providing instruction that teachers can use through ICT in the classroom.

Asynchronous teaching is an e-learning platform that enables teachers to communicate with their students outside of the four walls of the traditional classroom. According to Higley (2013), Sandercock and Shaw (2019) asynchronous instruction is a student-centered teaching method that uses e-learning resources to facilitate information sharing outside the constraints of time and place among a network of people. Asynchronous training, according to Higley (2013), Sandercock and Shaw (2019), is a student-centered teaching method that employs e-learning tools to enable knowledge sharing through a network of people outside of the constraints of time and place. As a result, asynchronous teaching is normally administered without the learners being physically present at the same time (teacher-student presence). As a consequence, this approach does not use real-time instructions. As a result, instructional delivery is not necessarily simultaneous since it can occur at any time and from any place. For example, a teacher can choose to deliver a lesson via videotape, youtube, digital video disk, or podcast, with students responding via communication modes such as e-mail.

There are a number of advantages to using an asynchronous learning framework. According to Hrastinski (2018), an asynchronous learning platform increases cognitive engagement by enhancing learners' ability to focus on and process course information provided by the teacher, as well as providing maximum incentive on the part of students to research, due to its versatility and self-pace characteristic. Students have more opportunities to explore both perspectives of a problem in an asynchronous learning setting before giving their own opinions (Higley, 2013). Other important advantages of asynchronous teaching, as summarized by (Mayadas, 2017) include students' ability to access course and other instructional materials at any time and from any location with an internet link. This promotes access for a wide variety of student groups, including typical on-campus students, instructors, and foreign students studying from other countries.

The current rise in the global use of asynchronous instructional strategy, according to Higley (2013) is as a result of its several benefits, which are found to be effective in improving students' performance in the technologically advanced nations. However, this assertion has not been verified for postgraduate students who study advanced educational research in universities in Nigeria. Advanced Educational Research was designed to equip postgraduate students with the required research skills for them to be research literates, thereby helping to solve educational problems. Postgraduate students need research knowledge in order to provide solutions to institutions and educational issues. In order to ensure effective training of postgraduate students in various courses including Advanced Educational Research, there may be need to incorporate e-learning innovative teaching and learning methodologies such as asynchronous instruction because the use of ICT in human activities leads to effectiveness, efficiency and better performance. However, despite the unique features and benefits of this innovative method of instruction, it has been observed over the years that the current methods of instruction used in teaching postgraduate students in Nigerian universities is mostly the lecture method which does not seem to be adequate in preparing them to adequately contribute meaningfully to the advancement of the nation.

This research is based on the connectivism learning theory, which is a theory of learning. Constructivism, cognitivism, and stimulus-response (behaviorism) theories of learning are all

supported by the connectivism theory. In December of 2004, George Siemens at the University of Manitoba propounded the connectivism learning theory. It is dubbed "Learning Theory for the Modern Age" (Darrow, 2016). Siemens (2014) established the connectivism learning theory in response to his concern in how e-learning platforms could change the teaching and learning environment. Siemens (2014) saw a need to improve connectivist learning theory because conventional theories did not adequately fit today's interactive learning environments. Learning, he said, is messy, chaotic, social, collaborative, and intertwined with other activities and interests. As a result, connectivism is viewed as a synthesis of pedagogical issues described by disorder, network, uncertainty, and self-organization theories. Within the connectivism theory, learning is considered to be a process in which the role of informal information exchange, organized into networks and supported with electronic tools, becomes more and more significant learning evolves into a lifelong network of experiences that are woven into certain activities (Bessenyei, 2014). Siemens (2014) stated that current learning theories cannot account for the dynamic nature of learning and learners as a result of technological changes, based on his research and experience. He summarized the concepts of connectivism, stating that learning and information focused on a range of perspectives; learning can occur through non-human devices; the capacity to know more is more relevant than what is currently known; and the aim of all connectivist learning practices is to promote continuous, accurate and up-to-date knowledge learning.

By promoting the formation of active connections, using intelligent social networking, and supporting student-generated curricula, connectivism aids in keeping students informed. Prensky (2014) is another advocate of reviving education through the successful use of technology and connectivism activities. Prensky is an education and learning author and analyst who has concentrated on interactive game-based learning as a solution to the problem of decreasing student participation. Today's learners are no longer interested in or capable of learning in settings that do not reflect their real-world experiences, according to Prensky (2014) in his article "Engage Me or Enrage Me." Students nowadays carry a range of wired devices to study, including mobile phones, laptops and iPads. They are still in contact, inspired by and adapting to their dynamic environment through sharing of information. In this digital age, instructors who teach using the traditional, old-fashioned “chalk and talk” method will have trouble reaching their target students, according to (Prensky, 2014). He went on to say that outside the school, learners' activities are full of media, communication and creative opportunities.

The impacts of the connectivism principle, which are relevant to asynchronous teaching as an e-learning medium and of considerable concern to this research, can be summarized as follows; e-learning contents published on the internet should be categorized to promote retention and enhance students' interest and motivation to learn; to promote transition to long-term memory, the method of arrangement of e-learning contents published on the internet should be in various types. Teachers should have breaks between presentations on every e-learning platform to encourage active participation; students should be given enough opportunities to revisit topics to improve retention. Teachers can utilize specific words in lecture materials posted on the internet as memory cues, and they should avoid overloading short-term memory by delivering so much information at once on an asynchronous platform (Azimzadeh, 2014). As a result, these features were

incorporated in the e-learning instructional package prepared for students in this research.

A student-centred learning environment is viewed as a significant enabling factor in constructivism theory. People learn better when they can translate what they have learned into practice for meaningful use and personal and societal use. According to Aderson and Kanuka (2014), the learner's function has shifted from that of an information receiver to that of a knowledge constructor, an independent learner with meta-cognitive ability for managing his or her mental functions; the instructor serves as a guide who helps students to explore values for themselves and build knowledge by focusing on real-world problems. Irrespective of the variation, Thomas (2010) stated that constructivist teaching and learning places the student at the centre of the instruction and views the instructor as offering encouragement and guidance while also encouraging students to explore freely within a given context. This viewpoint is consistent with the asynchronous platform of instruction's self-paced and individualized characteristics; therefore, the constructivist theory of learning is emphasized in this study.

Cognitivists claimed that reactions to external factors or behavioural changes are manifestations of latent cognitive functions involving memory, motivation and thought; therefore, learning is a mental process involving thinking, according to them. The majority of existing ideas to improve learning depend on being mindful of these cognitive processes (Aderson & Kanuka, 2014). As a consequence, cognitive methods focus on logical reasoning and are becoming more widely used as a problem-solving technique in specialized fields like Advanced Educational Research. When comparing the human memory to a machine, it is common to use a computer information processing model in which learning is seen as a series of inputs that are handled in short-term memory and then processed for long-term recall.

Stimulus-response approach does not fully exploit the full potential of the evolving e-learning framework, many of its features, particularly in areas of adaptive responses, such as feedback through e-learning evaluation tools, delivery of contents, and utilization of various media platforms to convey knowledge, can still be adopted for digital technology. The implications of this study is that educational policy makers, school administrators, lecturers, postgraduate students and other stakeholders in the education sector can reform the sector for the betterment of the society as a result of this study; would challenge lecturers and students to be ICT compliance and employ such in the course of their teaching in order to enhance effective and active teaching/learning processes; would be useful to students, as the outcome is expected to help them equip themselves with the knowledge of e-learning for easier and effective learning and would also arm school administrators and education stakeholders with enough facts on why they should provide ICT facilities to universities so that they can efficiently carry out their responsibilities. It is clear from the discussions that connectivism theory has an impact on the learning process, particularly in the implementation and provision of e-learning instruction using the asynchronous learning environments and the attainment of required instructional objectives.

Hence, to achieve the objectives of training reliable professionals for Nigeria’s development for the much needed up-to-speed rapid advancement of Nigeria, thus, it is imperative for academicians to explore and adopt online instructional strategies such as asynchronous instructional strategy.

This is due to the fact that various researches including that of Khalil and Ebner (2013), Wegner, Holloway and Garton (2019) showed that online teaching/learning platforms have the capacity to provide and enhanced meaningful learning experience for postgraduate students, but also improve their learning motivation, academic achievement and enhance their interest in learning. Other studies from Jaffe (2017) as well as Cheng, Lehman and Armstrong (2018) also reported that e-learning self-paced, self-timed, motivates students learning and make them score high marks. This has not been empirically verified for postgraduate students in Nigerian universities, hence, the need for this research to investigate the effects of asynchronous instructional strategy on learning motivation and scores of postgraduate students in Advanced Educational Research in Akwa Ibom State, Nigeria.

Purpose of the Study

The research investigated the effects of asynchronous instructional strategy on learning motivation and scores of postgraduate students in Advanced Educational Research in Akwa Ibom State, Nigeria. Specific objectives of the study were:

1. To examine the difference in learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method.
2. To ascertain the difference in scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method.

Research Questions

The following research questions were raised for this study:

1. What is the difference in learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method?
2. What is the difference in scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method?

Hypotheses

The following two null hypotheses were formulated to guide this study:

1. There is no significant difference in learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method.
2. There is no significant difference in scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method.

METHODOLOGY

Pretest-posttest non-randomized quasi experimental design was adopted for the study. This design was adopted because it enables a researcher to have an experimental group which he/she can administer a treatment on and a control group in order to comfortably compare the difference in the variable of interest at hand. The study was conducted in Akwa Ibom State, Nigeria where the University of Uyo is located. The State is among those classified as educationally advantaged states in the country as a lot of her citizens are exposed to all levels of education with literacy rate

of 78.84% (National Bureau of Statistics, 2017). The population of this study was made up of all the 204 postgraduate (master degree) students in Faculty of Education, University of Uyo for the 2018/2019 academic session. The choice of these postgraduate students is based on the fact that they all offered Advanced Educational Research as a course. But a convenience sampling technique was used in selecting 120 postgraduate students for the study. From the 120 postgraduate students sampled, 55 of them were in the experimental group, that is, they were exposed to asynchronous instructional strategy while 65 of them were in the control group, that is, they learnt through lecture method. The asynchronous instructional strategy comprised e-learning instructions on Advanced Educational Research which the 55 postgraduate students learnt through the facilitation of the course lecturers and at their own pace and time.

A 50-item achievement test developed by the researchers titled "Advanced Educational Research Test" (AERT) was used in collecting data on the scores of the postgraduate students on Advanced Educational Research. The items were multiple choice items with five response options of A-E having one correct answer and four distracters. Also, a 10-item ''Learning Motivation Questionnaire'' (LMQ) was developed by the researchers which measured learning motivation of the postgraduate students. The items were declarative statements structured in a 4-point format of strongly agree, agree, disagree and strongly disagree. The AERT and LMQ were subjected to content and construct validity respectively by three experts in Educational Research and Psychology. They were further subjected to empirical content validity using Lawshe content validity ratio and the content validity ratio were 0.74 and 0.71 respectively. The AERT and LMQ were also trial-tested on 40 postgraduate students who were not part of the main study in order to assess their reliability indices. The internal consistency reliability of the AERT and LMQ were established using Kuder-Richardson formula and Cronbach alpha method respectively and the reliability indices obtained were 0.74 and 0.78 respectively. These estimates indicated that the instruments were reliable and appropriate for use in conducting the study. The pretest AERT and LMQ were administered to the postgraduate students in the experimental group before they were exposed to the asynchronous instructional strategy and the posttest AERT and LMQ were administered to them after a week interval from the treatment. For those in the control group, the posttest AERT and LMQ were administered to them after a week from which the pretest AERT and LMQ were administered. Mean was utilized in answering the research questions while the hypotheses raised for the study were tested with analysis of covariance at 0.05 alpha level. The analyses were done through the use of Statistical Package for Social Sciences (version 20.0).

RESULTS

Research Question 1

What is the difference in learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method? Mean was used to answer research question 1 as presented in Table 1.

Table I: Pretest and posttest means of learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method

Group	n	Pretest $\overline{X}$	posttest $\overline{X}$	Mean Gain
Asynchronous instructional strategy	55	23.24	38.57	15.33
Lecture method	65	21.76	23.88	2.12

The result presented in Table 1 shows the mean difference in learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method. Postgraduate students who learnt through asynchronous instructional strategy had a mean of 23.24 in the pretest and a posttest mean of 38.57, thus giving a mean gain of 15.33. On the other hand, postgraduate students who learnt through lecture method had a mean of 21.76 in the pretest and a mean of 23.88 in the posttest; hence a mean gain of 2.12. Consequently, this result indicates that postgraduate students who learnt through asynchronous instructional strategy were better motivated than those of lecture method in Advanced Educational Research.

Research Question 2

What is the difference in scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method? Mean was used to answer research question 2 as shown in Table 2.

Table 2: Pretest and posttest means of scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method

Group	N	Pretest $\overline{X}$	posttest $\overline{X}$	Mean Gain
Asynchronous instructional strategy	55	27.17	37.46	10.29
Lecture method	65	26.83	28.94	2.11

The result presented in Table 2 shows the difference in the means of scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and

lecture method. Postgraduate students who learnt through asynchronous instructional strategy had a mean of 27.17 in the pretest and a posttest mean of 37.46, thus giving a mean gain of 10.29. On the other hand, postgraduate students who learnt through lecture method had a mean of 26.83 in the pretest and a mean of 28.94 in the posttest, hence a mean gain of 2.11. Consequently, this result shows that postgraduate students who learnt through asynchronous instructional strategy scored higher than those of lecture method in Advanced Educational Research.

Hypothesis 1

There is no significant difference in learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method. Analysis of covariance was employed in testing hypothesis 1 as presented in Table 3.

Table 3: Analysis of covariance of the difference in learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	54178.164	2	27089.1	611.037	.000
Intercept	4101.48	1	4101.48	92.5153	.000
PRETEST	21995	1	21995	496.133	.000
Asynchronous I S	23373.3	1	611.037	13.7829	.000
Error	28417.5	118	44.333		
Total	2690149	119			
Corrected Total	82595.6	120			

*Significant at P < .05 alpha level, n = 120, df = 1, 119

The result in Table 3 indicates that there is a significant difference in learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method (F-cal = 13.7829, P = .000, P < .05) with degree of freedom of 1 and 119 at 0.05 alpha level. The null hypothesis is therefore rejected which means that there is a significant difference in learning motivation of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method.

Hypothesis Two

There is no significant difference in scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method. Analysis of covariance was adopted in testing hypothesis 2 as indicated in Table 4.

Table 4: Analysis of covariance of the difference in scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	54123.773	2	27061.886	585.331	.000

Intercept	4642.860	1	4642.860	100.422	.000
PRETEST	21150.980	1	21150.980	457.482	.000
Asynchronous I S	24361.589	1	24361.589	526.926	.000
Error	29589.412	118	46.233		
Total	2696746.000	119			
Corrected Total	83713.185	120			

*Significant at P < .05 alpha level, n = 120, df = 1, 119

The result on Table 4 shows that there is a significant difference in scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method (F-cal = 526.926, P = .000, P < .05) with degree of freedom of 1 and 119 at 0.05 alpha level. The null hypothesis is therefore rejected which means that there is a significant difference in scores of postgraduate students in Advanced Educational Research based on asynchronous instructional strategy and lecture method.

DISCUSSION OF FINDINGS

The result of hypothesis one indicated that there is a significant difference in learning motivation of postgraduate students who learned through asynchronous instructional strategy and lecture method in Advanced Educational Research. The result showed that the learning motivation of postgraduate students who learnt through asynchronous instructional strategy was better than those of lecture method. The result of hypothesis two indicated that there is a significant difference in the scores of postgraduate students who learned through asynchronous instructional strategy and lecture method in Advanced Educational Research. The result showed that advanced educational research scores of postgraduate students who learnt through asynchronous instructional strategy was better than those of lecture method. Thus, the implication of these findings is that the asynchronous instructional strategy enhances and improves learning motivation and academic achievement among students. The fact that asynchronous instructional strategy is more effective in motivating students as well as enhancing academic achievement of students is connected with the fact that the asynchronous instruction is a student-centered instructional method that uses e-learning resources to facilitate information sharing outside the constraints of time and place among a network of people.

One of the major elements of asynchronous instructional strategy is that teaching and learning processes can take place at different times and at different places, thus it allows students to schedule their learning activity at their own time, place and pace. This finding concurs with the finding of Khalil and Ebner (2013) as they found out in their study that asynchronous instructional strategy motivates and improves academic performance of students as students indicated that the use of the e-learning instructional strategy had helped them gain new skills as compared to the traditional classroom setting. The finding also agrees with the finding of Jaffe (2017) because he reported in his study that students had a relatively high favorable response when comparing their ability to learn the material in the online computer course to their ability to learn the material in the traditional classroom setting. Similarly, this finding is in line with the finding of Cheng *et al*., (2018) as they reported that students had more positive attitudes about their learning in an online course because responses related to students' motivation to learn in the online computer course

also were convincingly positive. In asynchronous instructional strategy, these learning outcomes involve active learning as compared to a more common use of passive learning in the lecture method. Since active learning involves more time, energy and self-reliance, these situations seem to equip students with the ability to learn effectively.

CONCLUSION

This research investigated the effects of asynchronous instructional strategy on learning motivation and scores of postgraduate students in Advanced Educational Research scores in Akwa Ibom State, Nigeria. The study found out that asynchronous instructional strategy was more effective than the conventional lecture method because it gave a very high rate of learning motivation and academic achievement among students. Therefore based on the findings the study, it was concluded that the use of innovative e-learning platforms such as asynchronous instructional strategy is a viable strategy of lesson delivery which is not only capable of enhancing and improving academic achievement, but it is also capable of stimulating their interest and motivates them during teaching and learning processes.

Recommendations

From the findings of this study, the following recommendations were made:

1. The management and lecturers of Nigerian universities should mount capacity-building programs for the training of their lecturers and students on the use of innovative e-learning teaching methods such as the asynchronous instruction since it improves learning motivation and academic achievement of students.
2. The National Universities Commission should develop the appropriate frameworks necessary for encouraging the adoption of innovative e-learning platforms such as that of the asynchronous instruction in Nigerian universities for the teaching and learning of all courses.
3. Lecturers and postgraduate students should acquire necessary training on e-learning facilities so that they can comfortably use the facilities in the teaching-learning process for better learning.

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