

ENHANCING ATTENTION SPAN AND ACADEMIC ACHIEVEMENT OF STUDENTS THROUGH DIGITAL INSTRUCTIONS AMONG SECONDARY SCHOOL STUDENTS IN OWERRI EDUCATION ZONE 1 OF IMO STATE

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Abstract

This study investigated, Enhancing the Attention Span and Academic Achievement of students through Digital instructions among secondary school student in Owerri Education Zone 1 of Imo state. The researcher raised two research questions and formulated two null hypotheses. The design of the study was a quasi-experimental design. The sample of the study was eighty students who were randomly selected. The instruments for the collection of data were: Students Attention/concentration rating scale (SARS) and SS1Profoma on academic achievement for 2022/2023 academic year. The instruments were validated by specialists from Faculty of Education, Alvan Ikoku Federal University of Education owerri Imo State. The co-efficient of SARS was determined to be 0.74. Data collected was analyzed using descriptive statistics and t-test of mean difference. The findings of the study revealed that digital instruction improved the academic achievement of students at post-test assessment. Also, there was a significant difference in the pre-test and post-test achievement scores of students in English Language exercise. The implication of the findings was that for students to pay apt attention in English Studies classroom instruction, digital facilities should be employed in teaching. The researcher recommended the employment of computer literate teachers in English Language for improved academic achievement.

Keywords: attention spans, digital Instruction, academic achievement, secondary education, students, English Language.

Introduction

In practices, classroom instruction consists of a teacher who gives instructions to the students. The success of this interaction in obtaining educational outcomes is a matter of many factors. The achievement of students is dependent on the amount of knowledge acquired and the trace of it is stored in one's memory. In order of learning to take place, the teacher makes use of methods of focusing the attention of learner on the target. Focus is interpreted as alighting the learner's attention on a specific pre-chosen target. The intention of the teacher is for the learner to conceptualize the target through attention and subsequent concentration. If the teacher successfully gets the attention of the learner, with sustained target, concentration is achieved.

Attention in learning has been defined by different authors based on its implications for effective learning. Williams in Bester and Brand (2019) opined that attention is "the taking possession of the mind in clear and intense form. It implies withdrawal from some things in order to deal effectively with others".

Attention in learning according to Neisser (2020) refers to as a cognitive process of selectively, focusing on relevant information, while ignoring irrelevant stimuli. It is a critical aspect of learning process, as it enables learners to filter out distractions process information more efficiently and retain knowledge more effectively. Focal attention is when attention is oriented towards a particular focus in space. It may also be called spatial attention. When attention is oriented on an object, by means of the use of one or other sensory organs, including visual, auditory, smell, or taste, it is called object- oriented attention. The focus of attention can be controlled in goal oriented or a stimulus-driven manner for both spatial and object- oriented attention. When attention, as a faculty of the intellect focuses single mindedly on one object without interruption it becomes concentration. Concentration aligns the mind on one static point. The art of concentration is to focus on the task at hand and eliminate distraction. Concentration according to Nwosu. Ebenebe and Unachukwu (2019) is the skill needed by a learner to focus on the lesson for a period of time without allowing one's thought to be distracted. Concentration isolate irrelevant stimulus in learning process.

Attention is a critical factor in teaching and learning process. The attention of the learner is necessary to be captured for optimal learning to take place. Irrespective of students learning style or information processing formats, attention is essential. When learner's attentions wanders away, while instructions are on, teachers may consider introducing any form of stimulation to regain their attention or call for recreation or break time out. Artificial stimulation such as introducing educational computer website rekindles student's attention.

The attention of learners may wander because of certain factors such as tiredness, distractions from noise, boredom created by the teacher's methods of teaching and personal reasons coming from loss in interest (Uzoike, 2023). As a form of stimulation, it is very important to determine what may capture the interest of students and in the context of this study the use of technology would certainly be an option to consider in the 21st century education. Studies have revealed in many findings the enthusiasm displayed by students when teachers introduce technology driven instructions such as internet educational websites (goggle scholar, edunit.org). The psychology of learning is such that the emotional attachment of learner's must be captivated, thus encouraging social affliction which is expressed in collective attention to a particular content structure.

Attention span refers to a length of time an individual can maintain focus and concentration on a particular task, activity, or stimulus without becoming distracted or losing interest. It is a measure of cognitive control and the ability to sustain attention over time. Some key aspects of attention span; duration, selection attention, divided attention sustained attention. Some factors that influence attention span; task complexity: more complex tasks may require shorter period of focused attention. Interest level: tasks that are engaging or interesting can hold attention longer. Environmental factors: noise, distraction, and comfort can affect attention span. Cognitive load: the mental effort required for a task can impact attention span. Fatigue: physical or mental exhaustion can reduce attention span.

Digital according to Oxford English Dictionary refers to data, information, or system that represented in a digital format, typically using binary code (0s and 1s) that computer and other digital devices can process. Digital technology has revolutionized various aspects of life, including communication, entertainment, education and business. In stating the relevance of Digital instruction in learning, Lopez (2024) refers digital/ computer instructions as complex,

integrated process involving people, procedures and devices in situation in which learning is purposive and controlled. Purposive learning according to Bester and Brand (2019) is learning in which someone else has determined that learning is to occur within a learner and the purpose of such learning has been specified in advance. Controlled learning is a learning in which the learner's behavior is determined and managed by someone else. An aspect of the management process may be the introduction of technology. Technology is introduced to facilitate human learning through the systematic identification, development, organization and utilization of full range of learning recourse and through the management of these recourses to the benefit of the learners.

Digital instructions according to Katz (2019) are the use of digital technology to support teaching and learning, this can include a wide range of approached such as: **Online Learning:** courses or training programs delivered entirely online, often through learning management systems (LMS) or online platforms. **Blended Learning:** A combination of tradition face-to-face instruction and online learning. **Flipped Classroom:** A model where learners learn content online before coming to class, and class time is used for discussion, activities, and hands-on learning. **Gamification:** the use of game design elements and mechanics to enhance engagement and motivation in learning. **Stimulation-Based Learning:** The use of digital simulation to mimic real-world scenarios, allowing learners to practice and learning in a safe and controlled environment. The best practices for digital instruction according to Means, B. Toyama, Y., Murphy., Bakaia., & Jones, K. (2010). **Clear Learning Objectives:** clearly define learning objectives and outcomes for digital instruction. **Engage Content:** use engaging and interactive content to capture learner's attention and promote learning. **Regular Feedback:** provide regular feedback to learners to help them track their progress and stay motivated. The use of digital instructions to grasp the emotional attachment of students has undergone a systematic evolutionary process. Visual devices such as overhauled projectors and slides were used to explain difficult materials as precise as possible constituting broader integration. Introduction of audio-visual devices such as films and videos to enhance the curiosity of learners may foster higher attention span resulting in better retention of content. The introduction of computers has further improved learning and attention according to (Asian, (2019). Computer facilities both visual and auditing reception and help in apt retention of content and context. The use technology to grasp the emotional attachment of learners has undergone a systematic evolutionary process. Castro (2020) formulated a taxonomy related to the use of digital. These activities are divided into: knowledge building activities and knowledge expression activities. Knowledge building activities are: to read view or listen to an informative presentation using CD-ROM, Web browser, CD players, MP3 players, power point presentations, etc. conducting interviews or debate issues using audio-visual conference facilities, e-mail, skype, etc, belong to knowledge expressing activities. Computer instruction does not only appeal to the learner's processing skill. It also relieves the teacher from excessive emphasis because learners may be directed to educational website for further practice. According to Mgboji (2019), the stress levels of teachers are lowered ensuring mental stability and psychological wellbeing when teachers blend their teaching methods with internet instructions.

Managing the psychological state of learners are inclusive in classroom professional competence of the teacher. Stimulating attention through audio visual elaboration may foster ease of processing information, encouraging expression and academic achievement of the

students. Expanding knowledge through broadened access to the outside world which the internet facilities will make student global citizen and intellectually proficient. When learning is made fun, social attachment of teachers and educational outcomes improved. Psychological relevance of computer instructions is such that it fits into rural learning where students who were alienated to the outside world are brought closer to internet manipulations. Digital instructions also foster mobile learning environment anywhere, anyhow and anytime, inspiring students to seek collaboration with classmates (Murch, 2019). A digital instruction by captivating the attention of learners aligns to National Policy on Education (PRN, 2004) dictates that encouraged government to provide facilities and necessary infrastructures for the promotion of ICT and e-learning.

Psychological implication of digital instruction to educational outcome of students includes motivation to aspire for better grades (Simoos, Oliverira and Nunes, 2022). Studies have found that students express joy and happiness when instructions are given in computer (Faire, 2012). A digital instruction encourages students to study for a longer period of time because computer or digital instructions make learning fun without isolation or boredom (Ng and Pegg, 2020). Knowledge is extracted from different educational websites creating wider sources of information and frontiers of skill acquisition. Collaboration with colleagues also fostered through creation of platform on social Medias necessitating interaction between studies after school hours. Psychologically students are fortified through digital instructions to confront challenges of learning.

Computer or digital instructions are known to capture a wider range of students, adults, as well as the aged. Its impact is known all over the world digital instructions include; audio, image animation and streaming video. This digital instruction can occur in or out of the classroom, it could be suited to distance learning and flexible learning, but it can also be used in conjunction with face to face teaching in which case the term blended learning is commonly used. Many names are associated to digital or computer instructions: Multimedia learning, Technology-enhanced learning (TEL), Computer based instruction (CBL), Computer managed instructions, Computer based training (CBT), Computer- assisted instruction or Computer-aided instruction (CAI), Internet-based training (IBT), Flexible learning, web-based training (WBT), online education, virtual education, virtual learning environment (VLE) it is also called platforms, E-learning and digital education. These alternatives individually emphasize a particular digitization approach, components, or delivery method, but conflate to the broad domain of e-learning (Wikipedia, 2013).

Computers or digital instruction is applicable to any field of learning; sciences, arts, languages, and more. It may serve as a practical presentation, demonstration, or used in conventional class to back teacher's instructional strategy for better understanding and knowledge generation. Current scenario and observation shows that utilization of e-learning in the educational instructions clearly seems to be at its infancy stage as a result of some challenges. Apart from unavailability of digital facilities, staff strength in accessing computer literate, teachers are clearly inadequate. Teachers certified as effective and competent in online instructions are very inadequate, therefore, negating the prospects of stimulating and developing attention of learners in most secondary schools. Most school both tertiary and secondary, in their attempt to have wider catchment area, are involved in online learning. Some teachers employ teleconferencing to pass instruction thus, the need to have computer

complaint teachers seem to be very important if digital instructions are to be effectively employed in capturing the attention of students in the 21st century learning. Against this backdrop, the researcher investigated the imperatives of enhancing the attention of students in English language through digital learning teaching process. Digital revolution has transformed the way we live, work, and interacts with each other, and its impact continues to grow as technology advances.

Academic achievement refers to the extent to which a student has accomplished their educational goals and demonstrated their knowledge, skills, and competencies in various subjects or areas of study. It is often measured through assessments, grade and other evaluations. Some factors that influence academic achievement, Motivation: a learner's motivation and interest in learning can significantly influence their academic achievement. Learning environment: The quality of the learning environment, including the classroom, teacher, and resources, can influence academic achievement. Study habits and time management: Effective and efficient study habits and time management skills are essential for academic success.

Statement of the Problem

The problem of stimulating students' attention in classrooms instructions are not considered very important as very few studies have made findings on what stimulates students' attention in the classes in this part of the world. Conventional teaching and the need for innovations should occupy the Centre stage in research to promote higher levels of knowledge acquisition among students. Apt attention translates to deeper acquisition of knowledge, generating good study habits and higher academic achievements in schools. Boredom, poor teaching methods, un-stimulating learning environment may be the cause of poor academic achievement by students in recent years (Nwana, 2012). The present study sought to determine how to enhance the attention span of secondary students by using digital instructions in classrooms. The significance of the study is however important to school administrators, stakeholders, parents and the students who stand to benefits more on the study, because stimulating students' attention will yield to better academic achievement in examinations. Boosting learners' academic achievements promoting teaching-learning process through effective utilization of digital learning may be of paramount importance to educational growth in Nigeria

Purpose of the Study

The main purpose of the study was to enhance the attention span and academic achievement of students in English language through digital instructions among secondary school students in Owerri Education Zone 1 of Imo State. Specifically, the study sought to:

- Determine the extent to which attention of students was enhanced by computer digital instructions.
- Ascertain the extent to which academic achievement of students was improved through enhanced attention during computer digital instructions.

Research Questions

The following research questions guided the study:

- What extent was the attention of students enhanced by computer digital instructions?

- What extent was the academic achievement of students improved through computer digital instructions?

Hypotheses

The following hypotheses guided the study:

- The attention span of students was not significantly enhanced by computer digital instructions.
- The academic achievement of students was not significantly improved through computer digital instructions.

Methodology

The study employed quasi experimental research design with pre-test, post-test and control group arrangement. The justification for the choice of this design for the study was informed by the fact that it is valuable in ascertaining cost-effect influence of using digital instruction in enhancing student's attention and academic achievement in English Language. The population of the study consist of 1150 SS11 students in the 53 secondary school in Owerri Educational Zone 1. The sample of the study was 80 students randomly selected using multistage stratified random sampling method. Multistage process involved selection of Owerri Education Zone 1 from six education zones in Imo State, the selection of 15 secondary school from 53 in Owerri Education Zone and the selection of SS11 from SS1 and SS111 in the senior secondary school cadre. Instruments used in data collection included Student Attention/concentration Rating Scale (SARS) and SS11 academic cumulative mean for three terms in 2022/2023 academic session. The first term, second term and third term examination ratings were added together and divided by three terms to obtain their average mean cumulative score for 2022/2023 academic session. PROFOMA was therefore used. SARS, has fifteen item statements bordering on the determining factors allocated to attention and concentration processes in classroom instruction. Illustrations: I hardly listen to my teachers' instructions in the afternoon classes, I am among few students who ask questions after instructions; I prefer coping notes than listening my teachers' explanations, figures are hard to understand during Mathematics classes. The response pattern adopted was Strongly Agree SA (+4), Agree A (+3), Disagree D (+2), and Strongly Disagree SD (+1). Face validity of the instruments were established. The instrument was further subjected to reliability test using Cronbach Alpha analysis. The reliability coefficient value yielded 0.74 for students' attention rating scale (SARS).

A pre-test score of students' academic achievement was obtained through their result for 2021/2022 academic session. Participants were taught using digital instructions for seven weeks representing a term. Rehearsals were done and post-test assessments carried out, results were recorded, for analysis. The post test-test determined the effect of digital instructions on their academic achievement in English Language for the academic session. Records scores were analyzed. Research questions were answered using descriptive statistics whereas hypotheses were tested using t-test of mean difference.

Results

Table 1: Mean, standard deviation scores of participants on attention span for 2021/2022 and 2022/2023 after been taught using computer digital instructions.

Period	N	Pre-test Academic Achievement		Post-test Academic Achievement		Gain
		X	Std. Dev.	X	Std. Dev.	
		2021/2022		2021/2022		
2021/2022	80					
2022/2023	80	36.03	2.31	68.02	2.01	31.96

In table 1, the attention span of students at pre-test was 36.03 and standard deviation of 2.31. After the 8weeks instruction, the attention span increased to 68.02 and standard deviation of 2.01. The difference between the pre-test and post-test scores on attention of students was 31.96. This increase would have been as a result of the computer digital instructions against the conventional method at pre-test.

Table 2: Mean standard deviation and gain scores of participants on academic achievement of students before and after the computer digital instructions.

Period	N	Pre-test Academic Achievement		Post-test Academic Achievement		Gain
		X	Std. Dev.	X	Std. Dev.	
2021/2022	80					
2022/2023	80	42.06	2.12	69.21	2.18	27.15

In table 2, the academic achievement of students at pre-test was 42.06 and standard deviation of 2.31. After the 8th weeks training tagged post-test, the academic achievement mean scores improve to 69.21 and standard deviation of 2.18. The difference in pre-test and post –test mean scores on academic achievement was 27.15. The difference would have been because of the computer digital instructions.

Table 3: t-test analysis on the significance of the attention span of students taught using computer digital instructions at post-test.

Variable	N	Pre-Test	Post-test	df	L.S	tcal	terit	Remarks
Attention span	80	36.03	68.02	78	0.05	8.41	1.960	Significant

In table 3, pre-test attention mean score was 36.03 and 68.02 at post-test. The degree of freedom (df) was 78 whereas the level of confidence was 0.05. The calculated mean difference was 8.41 whereas the corresponding table value was 1.96. The calculated mean difference tcal was 8.41bthan the corresponding table value tcrit which was 1.960. This leads to the rejection of the hypothesis of no mean significance hence, there is a significance difference in the pre-test and post-test attention mean scores of participants exposed to computer digital instructions for 8weeks.

Table 4: t-test analysis on the significance of the academic achievement of students taught using computer digital instructions at post-test.

Variable	N	Pre-Test	Post-test	df	L.S	tcal	tcrit	Remarks
Attention Span	80	42.06	2.12	78	0.05	9.30	1.960	Significant

In table 4, pre-test achievement mean scores were 32.06 and standard deviation of 2.12. at post-test, the achievement mean scores increased to 69.21 and standard deviation of 2.18. The calculated mean difference t-test value was 9.30 and a corresponding table value of 1.960, tcal of 9.30 is greater than tcrit of 1.960 hence, the rejection of the hypothesis of no significant difference. There is a significant difference on the pre-test and post-test scores of participants at pre-test and post-test assessment.

Discussion

The result of the study was that the attention span of participants increased from 36.03 to 68.02 at pre-test and post-test assessment. The result means that attention span of students using computer digital instructions improved at post-test. The reason for the result would have been the application of the computer digital instruction for a period of 8weeks; this would have improved the understanding of students on the content structure translation to improved performance at 2022/2023 academic session. The finding of the present study aligned to Nwosu et al (2015) and Franklin (2003) result on the effective us of computer digital instructions to enhance educational outcomes.

In table tw2, the academic achievement mean scores of participants increased from 42.06 at pre-test and 69.21 at post –test assessment period of 2021/2022 and 2022/2023 session. The result means that digital technology assisted instructions adopted in teaching English Language in 2022/2023 academic session improved the cumulative mean scores of students from 42.06 to 69.21. The reason for the result was because digital technology enhances the attention span of students during English Language instructions. Attention span is then translated to better understanding of content which also reflected in higher cumulative mean scores for 2022/2023 session. The result of these present study was similar to the findings of Ikechukwu-Ilomuanya, Eze and Eseadi (2015). The result agreed with the findings of Franklin (2003) which reflected an increase in adjustment mean achievement of students after treatment given for four weeks.

Conclusion

Conclusively, the author maintains that using computer digital instruction improved the attention span of students. Attention attracts concentration of students which may translate in better academic achievement among participants. Students learn better when the visualize instructions given to them. This attraction was provided by digital instructions in the present study hence improvement in academic achievement.

Recommendations

Based on the findings of the present study, the following recommendations are made:

- Digital instructions should be used in secondary schools for learners to imbibe in the process

- Teachers should endeavor to be computer compliant by attending workshops/seminars, so as to know what to inculcate to learners.

REFERENCES

- Amadi, P. (2023). Attention Span Difference among Secondary School Students. *Journal of social science* 14 (1): 380-380.
- Bester, G & Brand, L. (2019). Effect of technology on learners' attention and achievement in English Language. *South African journal of Education*, 33(2): 5-15.
- Faire. (2012). Adjustment disorder: Developmental Psychology perspectives on adjustment, risk and disorder. London: Cambridge University press.
- Ikechukwu – Ilomuanya, A.B., Eze, J.C. & Eseadi, C. (2015). Effect of time management Counseling on Academic Adjustment of Deviant in School Adolescent in Nsukka. *Journal of Nigeria council of Educational psychologists*, 9(1) 70-76.
- Lopez. (2024). Quasi-experimental research design in educational studies. A handbook of research on Education communications and technology (pg. 1-4). Springer.
- Neisser. (2020). Home related violence and psychological wellbeing of secondary school Students in Imo State. *Journal of the Nigerian council of educational psychologists*, 17(2):75-83.
- Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). Evaluation of evidence-based practices In online learning: A Meta -analysis and review of online learning studies. US Department of Education.
- Murch, C. (2015). 10 reasons why E-learning is essential for students. Retrieved 25th July, 2014, from <http://muriha.wordpress.com/2011/01/05/why-e-learning-is-essential-for-students>
- Nwosu, C.K., Ebenebe, F. & Unachukwu, G.C. (2019). Mediating critical thinking skills among Nigerian Students: What instructional practice and classroom learning environment can Enhance these skills? *A journal of Nigerian Council of Educational Psychologists*, 9 (1): 159-171.
- Wikipedia, the free Encyclopedia (2015) E-learning retrieved 25th June 2015, from <http://en.wikipedia.org/wiki/e-learning>.