

ASSESSMENT OF THE UTILIZATION OF EDUCATIONAL TECHNOLOGY FOR INCLUSIVE LEARNING IN SECONDARY SCHOOLS IN UMUAHIA EDUCATION ZONE, ABIA STATE

By

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Abstract

This study examined the assessment of the utilization of educational technology for inclusive learning in secondary schools in Umuahia Education Zone, Abia State. Specifically, the study investigated the extent of educational technology utilization for inclusive learning and the perceived influence of such utilization on inclusive learning effectiveness. Two research questions guided the study, and two null hypotheses were tested at a 0.05 level of significance. The study adopted a descriptive survey research design. The population consisted of 1,133 respondents comprising 54 principals and 1,079 teachers in public secondary schools, while a sample of 173 respondents (15 principals and 158 teachers) was selected using proportionate stratified random sampling technique. Data were collected using a structured questionnaire titled; Educational Technology Utilization for Inclusive Learning Environments Questionnaire (ETUILEQ), which was validated by experts and yielded a reliability coefficient of 0.81 using Cronbach Alpha. Mean and standard deviation were used to answer the research questions, while independent samples t-test was used to test the hypotheses. The findings revealed that educational technology is utilized to a low extent for promoting inclusive learning environments in secondary schools in the study area (grand mean = 1.82). However, educational technology was perceived to have a high positive influence on inclusive learning effectiveness, as it enhances access to learning materials, student participation, collaboration, and accommodation of diverse learning needs (grand mean = 3.92). The hypotheses tested revealed no significant difference in the mean ratings of principals and teachers on both the extent of utilization ($t(171) = 0.471, p = 0.638$) and perceived influence ($t(171) = -0.330, p = 0.742$) of educational technology. The study concluded that although the utilization of educational technology is low, its perceived impact on inclusive learning effectiveness is very high. It was recommended that government and educational stakeholders should provide adequate ICT infrastructure and organize regular professional development programs for

teachers to enhance effective integration of educational technology in inclusive classroom instruction.

Keywords: Assessmen, Educational Technology, Inclusive Learning, Secondary Schools, Utilization

Introduction

Education is universally acknowledged as a fundamental human right and a critical instrument for social, economic, political, and technological development (UNESCO, 2015; World Bank, 2018). It is regarded as the foundation for sustainable development, human capital formation, national integration, and societal transformation. Through education, individuals acquire the knowledge, values, competencies, and skills required for productive living and active participation in national development. Consequently, nations across the world continue to strive toward the provision of equitable and inclusive education systems capable of accommodating the diverse needs, interests, and abilities of learners within the context of the ongoing digital transformation in education.

Inclusive education is anchored on the principle that all learners, irrespective of their physical, cognitive, emotional, social, linguistic, or economic differences, should have equal access to quality education within the same educational environment rather than being segregated into separate institutions (United Nations, 2016). Inclusive education emphasizes equity, participation, social justice, equal learning opportunities, and the removal of barriers that may hinder effective learning and participation among learners. It seeks to ensure that every learner is recognized, respected, supported, and given the opportunity to maximize his or her potential within the school system. In line with this global educational agenda, the United Nations Sustainable Development Goal 4 (SDG 4) emphasizes the need to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all by the year 2030 (UNESCO, 2023). The global commitment toward inclusive education has intensified the need for educational institutions to adopt practices and strategies capable of addressing learner diversity and improving access to quality education. Consequently, inclusive learning environments are increasingly recognized as essential for fostering equity, participation, academic achievement, social inclusion, and sustainable development in contemporary societies.

An inclusive learning environment refers to a learning setting where all learners feel valued, respected, supported, and actively engaged in the teaching-learning process irrespective of their individual differences (Florian, 2014). It is an educational environment in which barriers to learning and participation are minimized while the diverse learning needs of students are recognized and adequately addressed (Ainscow, 2020). Inclusive learning environments are particularly important for learners with disabilities, gifted learners, slow learners, learners from disadvantaged socio-economic backgrounds, and learners in remote areas because they promote equal participation, collaboration, learner engagement, and academic success for all categories of learners. In an attempt to effectively address learner diversity and promote inclusive learning, educational systems across the world have increasingly integrated digital technologies into teaching and learning processes. The integration of digital technologies into education involves the use of technological tools to improve instructional delivery, learning

experiences, communication, collaboration, and educational management (UNESCO, 2023). This development has created opportunities for schools to adopt innovative approaches that enhance access to education, learner participation, flexibility, and inclusion.

Closely related to this development is the growing emphasis on the utilization of educational technology in classroom instruction. Educational technology refers to the systematic use of digital tools, platforms, and resources to enhance teaching and learning processes (Roblyer & Hughes, 2022). It includes computers, projectors, internet facilities, learning management systems, virtual classrooms, mobile learning applications, assistive technologies, and other digital resources that support instructional delivery and learner engagement. These tools have significantly transformed instructional practices and learner interaction in contemporary educational settings.

Advancements in information and communication technologies have further expanded the role of educational technology in education globally. Tools such as multimedia resources, online learning platforms, and assistive technologies have enhanced instructional flexibility and created opportunities for personalized and learner-centered learning experiences (Reiser & Dempsey, 2017). These developments are particularly relevant to inclusive education, as they support learners with diverse abilities, learning styles, and educational needs. In the context of inclusive education, educational technology plays a critical role in ensuring equitable participation and access to learning opportunities for all learners. Inclusive learning environments require instructional strategies that reduce barriers to learning and provide appropriate support for diverse learners. Consequently, the effective utilization of educational technology becomes essential in promoting accessibility, participation, collaboration, and improved learning outcomes in secondary schools.

Beyond availability, the utilization of educational technology is a key determinant of its effectiveness in achieving inclusive learning goals. When effectively utilized, educational technology enables teachers to adopt multiple instructional approaches, simplify complex concepts, provide individualized instruction, and create flexible learning opportunities that accommodate learners' differences. It also allows students to access digital learning resources, engage in collaborative activities, and receive immediate feedback, thereby enhancing engagement and participation. Educational technology also supports learners with special educational needs through assistive tools such as screen readers, speech-to-text applications, captioning tools, audio-based resources, and adaptive software (UNESCO, 2023). Similarly, online learning platforms provide flexible access to instruction for learners who may face barriers in traditional classroom settings (Means et al., 2014). In this way, educational technology contributes to improved learner participation, engagement, collaboration, and inclusive learning outcomes.

Despite these benefits, the effective utilization of educational technology in secondary schools remains a challenge in many educational systems, particularly in developing contexts. Factors such as inadequate infrastructure, insufficient funding, poor internet connectivity, unstable electricity supply, and limited teacher ICT competence continue to hinder effective integration of technology in teaching and learning (UNESCO, 2020; World Bank, 2020).

In the Nigerian context, particularly in secondary schools in Umuahia Education Zone of Abia State, concerns have been raised regarding the extent to which educational technology is utilized to promote inclusive learning. While educational technology is expected to enhance access to instruction, participation, and collaboration among learners, there is uncertainty about the level of its actual utilization in secondary schools in the study area. There is also concern regarding the perceived influence of educational technology utilization on inclusive learning effectiveness.

Furthermore, cursory observations suggest that many schools may lack adequate ICT infrastructure, while some teachers may not possess sufficient digital competence required for effective integration of educational technology into instruction. These challenges may hinder the realization of inclusive learning environments and limit the effectiveness of educational technology in secondary schools. It is against this background that this study seeks to assess the extent of utilization of educational technology for inclusive learning in the study area. In the era of digital transformation, secondary schools are expected to utilize educational technology to promote inclusive learning environments that enhance learner participation, collaboration, access to instructional resources, and academic achievement for all categories of learners. Educational technology is also expected to support learners with diverse needs through flexible and adaptive instructional strategies that reduce barriers to learning.

However, despite these expectations, the utilization of educational technology in many secondary schools in Umuahia Education Zone of Abia State appears to be inadequate and inconsistent. Evidence suggests that some schools lack essential digital resources, while many teachers may not possess the required digital competence to effectively integrate and utilize educational technology for inclusive instruction. Challenges such as poor infrastructure, inadequate funding, unstable power supply, and limited professional development opportunities may further constrain effective utilization. As a result, there is uncertainty regarding the extent of educational technology utilization for promoting inclusive learning environments and the perceived influence of such utilization on inclusive learning outcomes in secondary schools in the study area. This creates a gap between expected practice and actual implementation, which this study seeks to address.

The purpose of this study is to examine the utilization of educational technology for inclusive learning in secondary schools in Umuahia Education Zone, Abia State. Specifically, the study examined;

1. the extent of utilization of educational technology on inclusive learning in the era of digital transformation in secondary schools
2. influence of educational technology on inclusive learning in the era of digital transformation in secondary schools
 - iii. To what extent is educational technology utilized for promoting inclusive learning environments in secondary schools in Umuahia Education Zone of Abia State?
 - iv. What is the perceived influence of educational technology utilization on inclusive learning effectiveness in secondary schools in Umuahia Education Zone of Abia State?

H₀₁: There is no significant difference in the mean responses of principals and teachers on the extent of educational technology utilization for inclusive learning environments in secondary schools in Umuahia Education Zone of Abia State.

H₀₂: There is no significant difference in the mean responses of principals and teachers on the perceived influence of educational technology utilization on inclusive learning effectiveness in secondary schools.

Methodology

This study adopted a descriptive survey research design. The design was considered appropriate because it enabled the researcher to collect data from respondents and describe the current status of educational technology utilization for inclusive learning environments in secondary schools in Umuahia Education Zone of Abia State. The study was carried out in Umuahia Education Zone of Abia State, Nigeria. The population of the study was 1,133 respondents comprising 54 principals and 1,079 teachers in public secondary schools in the area. The sample size for the study was 173 respondents, drawn from the population of 1,133 using proportionate stratified random sampling technique. The population was first stratified into two groups: principals and teachers. Thereafter, 15 principals were selected from the 54 principals, while 158 teachers were selected from the 1,079 teachers, giving a total of 173 respondents. Simple random sampling technique was used within each stratum to ensure equal chance of selection. The instrument for data collection was a structured questionnaire titled Assessment of the Utilization of Educational Technology for Inclusive Learning Questionnaire (AUETILQ). The questionnaire was divided into two sections: Section A elicited demographic information of respondents, while Section B contained 15 items structured on a 4-point Likert scale of Very High Extent of Utilization, High Extent of Utilization, Low Extent of Utilization and Very low extent of Utilization. With corresponding grading of 4, 3, 2 and 1. While Cluster 2 (8 items) addressed research question two with rating scale of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. The questionnaire was validated by three experts, Two in Educational technology, and one expert from Measurement and Evaluation, all from Michael Okpara University of Agriculture, Umudike validated the instrument. They offered relevant suggestions after examining the instrument. The instruments were pilot tested using 25 respondents in three schools in Abia State which were outside the study area but with similar characteristics. The data gathered were analyzed using Cronbach Alpha method and reliability index of 0.81. A total of 242 copies of questionnaires were administered by the researchers with the aid of three research assistants which were retrieved upon completion. Data collected were analyzed using mean and standard deviation to answer the research questions, while independent samples t-test was used to test the hypotheses at 0.05 level of significance. The null hypothesis was rejected where the probability value (p -value) was less than 0.05 ($p < 0.05$); otherwise, it was not rejected where the probability value was greater than or equal to 0.05 ($p \geq 0.05$).

Results

Research Question 1

To what extent is educational technology utilized for inclusive learning environments in secondary schools in Umuahia Education Zone of Abia State?

Table 1: Mean Scores of Principals and Teachers on the Extent of Educational Technology Utilization for Inclusive Learning Environments

S/N	Item	Principals $\bar{x}$	SD	Teachers $\bar{x}$	SD	Overall $\bar{x}$	SD	Decision
1	Educational technology is utilized by teachers to support learners with diverse needs.	1.90	0.61	1.73	0.65	1.87	0.61	LL
2	Digital learning tools are used to improve students' participation in class.	2.04	0.66	1.64	0.50	1.98	0.65	LL
3	Assistive technologies are used to support learners with disabilities.	1.86	0.72	1.55	0.52	1.81	0.70	LL
4	Internet resources are utilized to provide access to learning materials.	1.69	0.73	1.55	0.52	1.67	0.70	LL
5	Adequate educational technologies are available for inclusive instruction.	1.78	0.76	1.91	0.83	1.80	0.77	LL
6	Teachers use digital tools to adapt instruction to learners' abilities.	1.78	0.86	1.73	0.65	1.77	0.83	LL
7	School administrators support the provision of educational technologies.	1.82	0.84	2.00	1.10	1.85	0.88	LL
Cluster Mean		1.84	0.74	1.73	0.68	1.82	0.73	Low Level

The results in Table 1 show that the cluster mean for principals was 1.84, while that of teachers was 1.73, with an overall cluster mean of 1.82. Since the overall cluster mean (1.82) is below the criterion mean of 2.50, it indicates that educational technology is utilized to a low extent. This indicates that there is no significant difference in the mean ratings of principals and teachers on the extent of educational technology utilization for inclusive learning environments

in secondary schools in Umuahia Education Zone of Abia State. The standard deviations (principals = 0.74; teachers = 0.68; overall = 0.73) indicate that responses were closely clustered around the mean, showing consistency in responses.

Hypothesis 1

H₀₁: There is no significant difference in the mean ratings of principals and teachers on the extent of educational technology utilization for inclusive learning environments in secondary schools in Umuahia Education Zone of Abia State.

Table 2: t-test Analysis of Principals and Teachers on Utilization of Educational Technology

Group	N	$\bar{x}$	SD	df	t-cal	p-value	Decision
Principals	15	1.84	0.74	171	0.471	0.638	Not Significant
Teachers	158	1.73	0.68				

Data in Table 2 indicate that the $t(171) = 0.471$, $p = 0.638$, and the since p-value (0.638) is greater than 0.05, the null hypothesis was not rejected. This indicates that there is no significant difference in the mean ratings of principals and teachers on the extent of educational technology utilization for inclusive learning environments in secondary schools in Umuahia Education Zone of Abia State.

Research Question 2

What is the perceived influence of perceived influence of educational technology utilization on inclusive learning effectiveness in secondary schools in Umuahia Education Zone of Abia State?

Table 3: Mean Ratings of Scores of Principals and Teachers on the Perceived Influence of utilization of Educational Technology on Inclusive Learning effectiveness

S/N	Item	Principals $\bar{x}$	SD	Teachers $\bar{x}$	SD	Overall $\bar{x}$	SD	Decision
8	Educational technology improves access to learning materials.	3.93	0.26	3.94	0.23	3.94	0.24	SA
9	It enhances students' participation in classroom activities.	3.98	0.14	3.93	0.26	3.95	0.22	SA
10	It promotes collaboration among students.	3.82	0.39	3.94	0.23	3.89	0.31	SA

11	It accommodates learners with diverse abilities.	3.91	0.29	3.96	0.20	3.94	0.24	SA
12	It increases students' interest in Business Education.	3.97	0.17	3.98	0.17	3.97	0.17	SA
13	It improves understanding of Business Education concepts.	4.00	0.00	3.96	0.20	3.97	0.16	SA
14	It supports interactive and learner-centered instruction.	3.76	0.43	3.75	0.44	3.75	0.43	SA
15	It enhances overall inclusive learning outcomes.	3.87	0.34	3.86	0.35	3.86	0.34	SA
Cluster Mean		3.91	0.11	3.92	0.11	3.92	0.11	Strongly Agreed

The results show that respondents agreed that educational technology has a positive influence on inclusive learning effectiveness, as indicated by an overall cluster mean of 3.92, which is above the benchmark mean of 2.50 on a 4-point scale. This implies that educational technology utilization enhances access to learning materials, promotes student participation, encourages collaboration, supports learners with diverse abilities, and improves overall inclusive learning effectiveness in secondary schools in Umuahia Education Zone of Abia State.

Hypothesis 2

H₀₂: There is no significant difference in the mean ratings of principals and teachers on the perceived influence of educational technology utilization on inclusive learning effectiveness

Table 4: t-test Analysis of Principals and Teachers on the Perceived Influence of Educational Technology on Inclusive Learning effectiveness

Group	N	$\bar{x}$	SD	Df	t-cal	p-value	Decision
Principals	15	3.91	0.11	171	-0.330	0.742	Not Significant
Teachers	158	3.92	0.11				

Data in Table 2 indicate that the $t(171) = -0.330$, $p = 0.742$ and the since p-value (0.330). Since the p-value (0.742) is greater than 0.05, the null hypothesis was not rejected. This indicates that there is no significant difference in the mean ratings of principals and teachers on the perceived influence of educational technology utilization on inclusive learning effectiveness in secondary schools in Umuahia Education Zone of Abia State.

Summary of Findings

1. Educational technology is utilized to a low extent utilization for promoting inclusive learning environments in secondary schools in Umuahia Education Zone of Abia State, as indicated by an overall mean score of 1.82.
2. Educational technology has a high positive perceived influence on inclusive learning effectiveness, as it enhances access to learning materials, student participation, collaboration, accommodation of diverse learning needs, and classroom engagement.

Discussion of Findings

The finding indicates weak integration of educational technology in supporting inclusive learning practices such as differentiated instruction, learner participation, and accessibility of digital resources.

This finding contrasts with Reiser and Dempsey (2017), who argued that in well-supported educational systems, educational technology is widely utilized to enhance instructional delivery, promote learner engagement, and support inclusive classroom practices through multimedia and digital learning platforms. More so, this finding is supported by UNESCO (2020), which reported that many schools in developing countries still experience low utilization of educational technology due to inadequate infrastructure, limited ICT facilities, and insufficient teacher preparedness. In the same vein, World Bank (2020) observed that despite global digital transformation efforts, many secondary schools in Sub-Saharan Africa struggle with poor funding, weak internet connectivity, and limited access to functional ICT tools, which significantly reduces effective utilization of educational technology in teaching and learning.

The study further revealed that educational technology has a high positive perceived influence on inclusive learning effectiveness. It enhances access to learning materials, participation, collaboration, accommodation of diverse learners, and classroom engagement. This finding is consistent with Florian (2014), who emphasized that inclusive education is strengthened when teachers use flexible instructional tools such as digital technologies to accommodate learner diversity and promote participation. Similarly, UNESCO (2023) affirmed that educational technologies such as assistive devices, online learning platforms, and multimedia tools significantly improve inclusion by removing barriers to learning and supporting learners with diverse abilities.

On the contrary, Ainscow (2020) cautioned that although educational technology has strong potential to enhance inclusion, its impact depends heavily on teacher competence, accessibility of resources, and institutional support systems. Without these conditions, the perceived benefits may not translate fully into actual classroom practice.

Conclusion

Based on the findings of the study, it is concluded that educational technology is currently utilized to a low extent in secondary schools in Umuahia Education Zone of Abia State for promoting inclusive learning environments. However, despite this low level of utilization, educational technology is perceived to have a strong positive influence on inclusive learning

effectiveness, particularly in enhancing learner participation, access to instructional materials, collaboration, and accommodation of diverse learning needs. This indicates a gap between the perceived potential of educational technology and its actual implementation in classroom practice.

Recommendations

Based on the findings, the following recommendations are made:

1. Government and educational stakeholders should provide adequate ICT infrastructure and digital learning tools to secondary schools to enhance effective utilization of educational technology for inclusive learning.
2. Regular professional development programs should be organized for teachers to improve their digital competence and ability to integrate educational technology into inclusive classroom instruction.

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