

SMART CLASSROOMS FOR ENHANCING LIFELONG LEARNING AMONG ADULTS LEARNERS IN EKET LGA, AKWA-IBOM STATE

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Abstract

The study determined the extent to which smart classrooms enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State. The study was guided by two research questions. The study adopted descriptive survey research design. The population of the study comprised 1,014 adult learners in the 18 adult literacy centres in Eket LGA, Akwa Ibom State. Proportionate stratified random sampling technique was used to sample 203 adult learners. The instrument for data collection was a 15-item researchers' self-developed questionnaire titled Smart Classrooms for Enhancing Lifelong Learning (SCLLL). The instrument was face validated by three experts, with overall reliability coefficient values of 0.85 calculated using Cronbach Alpha Statistical tool. Data collected were analysed using mean and standard deviation. The findings of the study showed that the extent to which interactive tools can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State was high. Again, the extent to which personalised learning can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State was high. Based on the findings of the study, it was recommended among others that the government and educational stakeholders should make provision for the use of interactive tools in all adult education centres by equipping them with adequate ICT facilities such as interactive boards, multimedia devices, and reliable internet access to improve learner engagement and learning outcomes.

Keywords: Smart classrooms; lifelong learning; adults learners

Introduction

Lifelong learning is an essential pillar for personal development, social inclusion, and economic advancement in the 21st century. Lifelong learning is an issue of serious global concern because international organisations such as United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Organisation have particular interest in it. Hence, it was captured in goal four, as one of the 17 sustainable development goals (United Nations, 2015). Lifelong learning enables individuals to continuously update their knowledge and skills in response to rapid technological advancements, globalization, and changing labour market demands. In Africa, lifelong learning is important because of its demographic realities, socio-economic challenges, and the urgent need for human capital development. Aitchison (2021) noted that lifelong learning in Africa supports empowerment, civic participation, and employability, particularly among adult in rural communities.

In Nigeria, lifelong learning programmes provide second-chance opportunities for individuals who did not complete formal schooling, while also equipping citizens with vocational and entrepreneurial skills. According to Federal Ministry of Education Nigeria (2020), lifelong learning enhances workforce productivity and supports national

development by aligning human capital with labour market needs. More so, Eze and Okeke (2022); and Akinyemi (2021) emphasize that lifelong learning is crucial for digital inclusion and economic empowerment, particularly in the face of increasing technological change. Lifelong learning in Akwa-Ibom state contribute to skill acquisition, entrepreneurship development, and poverty alleviation. According to Udo (2021), lifelong learning programmes in Akwa Ibom State have significantly improved socio-economic participation and community development activities. Moreover, integrating innovative approaches such as smart classrooms into adult education can further enhance access to education and life long learning.

Lifelong learning is conceptualised in several ways. Akinpelu (2019) viewed lifelong learning as a continuous process of education that enables individuals to develop their abilities, enrich their knowledge, and improve their socio-economic conditions throughout their lives. Here lifelong learning is linked to adult education, literacy programmes, and skill acquisition programmes aimed at empowering individuals and promoting national development. Eze and Okeke (2022) further explain that lifelong learning involves the continuous acquisition of digital, vocational, and entrepreneurial skills necessary for individuals to adapt to changing technological and socio-economic environments. This reflects modern realities, particularly the integration of technology into learning processes. Contextually, lifelong learning is the continuous and flexible acquisition of literacy, digital, vocational, and entrepreneurial skills by adult learners through formal, informal and non-formal educational programmes.

Adult learners are mature men and women who are interested in upgrading their knowledge and competencies through adult education programmes. Nwankwo (2022), describes adult learners as mature individuals who return to educational settings with accumulated life experiences, self-direction, and goal-oriented motivations aimed at solving real-life problems. The main point raised here is that adult learners differ from younger learners because they are more autonomous, experience-driven, and practically oriented in their learning process. Similarly, Ofoegbu (2020) explains that adult learners are individuals who are beyond compulsory school age and who participate in continuing education programmes such as literacy classes, vocational training, and digital skill acquisition to improve their socio-economic status. This means that adult education is largely aimed at empowerment and poverty reduction. In this study, adult learners are individuals aged 18 years and above who are enrolled in adult literacy, vocational, or continuing education programmes to acquire relevant knowledge and skills for improved livelihood and lifelong learning. The characteristics of adult learners make them different from children.

One of the characteristics of adult learners is self-direction. According to United Nations Educational, Scientific and Cultural Organization [UNESCO] (2020), adult learners are more effective when they are allowed to participate actively in planning and managing their learning experiences rather than being passive recipients of instruction. Another important characteristic is experience-based learning. Merriam and Bailey (2021) noted that adult learning becomes more meaningful when new knowledge is connected to prior experiences, making learning more practical and relevant. Adult learners are also goal-oriented, meaning they engage in learning activities with clear objectives such as improving job opportunities, acquiring vocational skills, or achieving personal development. Oviawe (2022) emphasizes that adults are motivated when learning outcomes are directly linked to real-life goals. In addition, adult learners are problem-centred rather than content-centred. Akinyemi (2022) observed that adult learners are more engaged when instructional methods focus on practical application, such as vocational and

digital skills training. Adult learners often face multiple responsibilities, including work, family, and social obligations, which affect their learning participation. Ofoegbu (2020) notes that these competing demands require flexible learning approaches such as part-time classes and technology-supported learning systems like smart classrooms.

Lifelong learning among adult learners in Eket LGA Akwa Ibom State is confronted with several interrelated challenges that have continued to limit effective participation and outcomes in adult education programmes. One of the challenges is the inadequacy of infrastructure and learning facilities. Many adult education centres operate with poorly equipped classrooms, insufficient instructional materials, and outdated teaching methods, which reduce the quality of learning and discourage sustained participation. Studies by Ekpo et. al (2024) found that weak infrastructural support significantly hampers programme effectiveness and learner engagement. In addition, adult education programmes in Eket is affected by inadequate funding and a shortage of trained facilitators. Insufficient financial support limits the provision of teaching materials, learning technologies, and staff development opportunities, thereby weakening programme delivery. The scarcity of qualified facilitators further affects instructional quality and learner support, making adult education less impactful than intended (Ekpo et al., 2024). These constraints highlight the importance of adopting technological solutions that can complement limited human and material resources. Another important challenge is the persistent digital divide and limited ICT competence among adult learners. Ofoegbu (2020) found that a significant proportion of adult learners in Eket lack basic digital literacy skills, making it difficult for them to benefit from technology-driven instructional methods. This situation is compounded by unequal access to digital tools and resources, particularly in rural and low-income communities. Also, Chukwuemerie, et al (2024) found that without adequate support, adult learners struggle to adapt to technology-based instructional methods, thereby widening the learning gap. This situation strengthens the argument for the introduction of smart classrooms, which provide structured, interactive, and supportive digital learning environments.

Smart classrooms are technology-enhanced learning environments designed to improve the quality and accessibility of teaching and learning processes. Kumar and Bansal (2021) described smart classrooms as learning environments that integrate digital technologies such as interactive whiteboards, internet-enabled devices, projectors, and multimedia systems to support interactive and learner-centred instruction. Accordingly, smart classrooms shift teaching from traditional teacher-dominated approaches to more engaging and participatory methods where learners actively interact with digital content and instructional tools. Dimitriadou and Lanitis (2023) view smart classrooms as advanced educational spaces that combine information and communication technologies (ICT), artificial intelligence applications, and digital platforms to enhance teaching effectiveness and learning. The emphasis is that smart classrooms are not only about the presence of technology but also about the intelligent use of data, interactive tools that personalize instruction and improve learning. Contextually, smart classrooms are ICT-integrated learning environments in adult education centres that utilize digital tools such as computers, projectors, internet connectivity, and interactive learning platforms to facilitate flexible, engaging, and effective lifelong learning among adult learners.

Smart classrooms are characterized by several key features that distinguish them from traditional learning environments. One of the features of smart classroom is ICT integration, which involves the use of computers, tablets, projectors, and other digital devices to support instruction and learning delivery (Kumar & Bansal, 2021). Smart classrooms also make use of interactive whiteboards and digital displays, which promote

visual, tactile, and collaborative learning experiences. In addition, they incorporate multimedia resources such as videos, animations, and simulations to make abstract concepts easier to understand and more engaging for learners (Dimitriadou & Lanitis, 2023). Other notable features include cloud-based storage systems, which allow learners to access learning materials anytime and anywhere, and enhanced teacher–learner interaction tools, which facilitate communication through learning management systems and digital platforms. Although there are many features of smart classroom, this study focused on interactive tools and personalised learning.

Interactive tool is a significant feature of smart classrooms that facilitate engagement and collaboration among learners. Oviawe (2021) described interactive tools as digital or technological resources such as interactive whiteboards, mobile applications, learning management systems, and multimedia platforms that enable two-way communication and active participation between learners and instructors. This emphasizes the role of interaction in improving understanding and retention of knowledge. Eze and Okeke (2022) define interactive tools as ICT-based applications and devices that promote learner engagement through activities such as real-time feedback, collaboration, problem-solving, and self-assessment. Their definition highlights the importance of interactivity in fostering meaningful learning experiences, especially in adult education contexts. Contextually, interactive tools are ICT-based devices and applications used in smart classrooms such as interactive whiteboards, mobile learning apps, and digital platforms, which facilitate active participation, collaboration, and real-time feedback among adult learners to enhance lifelong learning outcomes.

Interactive tools can enhance lifelong learning among adult learners by making learning more engaging, flexible, and relevant to real-life situations. First, they promote active participation, as adult learners are able to interact directly with learning content rather than passively receiving information. This aligns with the experiential nature of adult learning, where learners prefer to be involved in the learning process (Oviawe, 2021). Second, interactive tools provide immediate feedback, which helps learners assess their understanding and make necessary improvements. According to Eze and Okeke (2022), real-time feedback enhances motivation and supports self-directed learning, which is a key characteristic of adult learners. Third, these tools support collaborative learning, allowing adult learners to share ideas, work in groups, and learn from each other through digital platforms. This is particularly important in adult education, where peer learning and shared experiences contribute significantly to knowledge acquisition. Furthermore, interactive tools enhance flexibility and accessibility by enabling learners to access educational content anytime and anywhere through mobile devices and online platforms. This is crucial for adult learners who often combine education with work and family responsibilities (Akinyemi, 2022). Finally, interactive tools help in developing digital literacy skills, which are essential for personalised learning.

Personalised learning is a learning approach that tailor instruction to meet the unique needs, abilities, and goals of individual learners. Holmes et al. (2021), stated that personalised learning is an instructional approach that adapts content, pace, and learning pathways to suit individual learners' preferences, prior knowledge, and learning goals through the use of digital technologies and data analytics. The emphasis here is on the role of technology in enabling adaptive learning experiences that respond to learners' differences. Pane et al. (2020), asserted that personalised learning is a learner-centred approach in which instruction is customized based on learners' strengths, needs, and interests, which allows them to progress at their own pace while receiving targeted support. In this study, personalised learning is seen as a learner-centred instructional

approach implemented through smart classrooms where adult learners receive customized learning experiences based on their individual needs, pace, prior knowledge, and goals using ICT tools and digital platforms.

Personalised learning enhances lifelong learning among adult learners in several important ways. It promotes self-paced learning which allows adult learners to progress according to their individual schedules and abilities. This is particularly beneficial for adults who combine learning with work and family responsibilities. Studies have shown that flexible pacing improves retention and completion rates among adult learners (Pane et al., 2020). Personalised learning supports relevance and goal-oriented learning by aligning instructional content with learners' personal, professional, and socio-economic needs. Adult learners are more motivated when learning is directly applicable to real-life situations, and personalised approaches ensure that learning remains meaningful and practical (Holmes et al., 2021). Another key benefit is the provision of targeted feedback and support. Through digital tools and analytics, instructors can monitor learners' progress and provide individualized feedback, helping learners identify their strengths and areas for improvement. This enhances understanding and encourages continuous learning. More so, personalised learning contributes to the development of digital and lifelong learning competencies by engaging with technology-driven learning environments. Therefore, based on the challenges affecting lifelong learning among adult learners in Eket local government area, Akwa Ibom state, this study seeks to determine the extent to which smart classrooms can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State.

Statement of the Problem

Lifelong learning is expected to provide continuous, flexible, and inclusive learning opportunities that enable adult learners to acquire relevant literacy, digital, vocational, and entrepreneurial skills needed for personal development and socio-economic advancement. In line with global expectations such as Sustainable Development Goal 4, adult learners should have access to technology-enhanced learning environments, including smart classrooms, where interactive tools and personalised learning approaches can support self-directed, problem-centred, and flexible learning. Adult learners in Eket LGA ought to benefit from well-equipped learning centres, skilled facilitators, and digital platforms that promote engagement, accessibility, and lifelong learning. However, in Eket LGA adult education centres are still largely characterized by inadequate infrastructure, limited instructional materials, and reliance on traditional teaching methods that do not align with the learning needs of modern adult learners. In addition, there exists a significant digital divide, as many adult learners lack access to ICT tools and possess low digital literacy skills, thereby limiting their participation in technology-driven learning. The situation is further compounded by poor funding, shortage of trained facilitators, and irregular attendance due to learners' work and family responsibilities. These challenges hinder effective participation, reduce learner motivation, and ultimately limit the achievement of lifelong learning goals among adult learners in the area. Despite the growing global emphasis on smart classrooms as innovative solutions for enhancing learning, there is limited evidence on the extent to which smart classroom components such as interactive tools and personalised learning can effectively enhance lifelong learning among adult learners in Eket LGA. Therefore, the study sought to determine the extent to which smart classrooms can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State.

Purpose of the Study

The general purpose of the study was to determine the extent to which smart classrooms enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State. Specifically, the study sought to determine the:

1. extent to which interactive tools can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State
2. extent to which personalised learning can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State

Research Questions

The study answered the following research questions

1. To what extent can interactive tools enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State.
2. To what extent can personalised learning enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State.

Methods

The study adopted descriptive survey research design. Descriptive survey aims at collecting data on, and describing in a systematic manner the characteristics, features or facts about a given population (Nworgu, 2015). The study was carried out in Eket local government area of Akwa-Ibom State. This area was chosen because of the challenges of lifelong learning faced by adult learners in the area and the quest to enhance lifelong learning through smart classroom. The population of the study comprised 1,014 adult learners in the 18 adult literacy centres in the area. Proportionate stratified random sampling technique was used to sample 203 adult learners. The instrument for data collection was the 15-item researchers' self-developed questionnaire titled Smart Classrooms for Enhancing Lifelong Learning (SCLLL). The instrument was face validated by three experts. The overall reliability coefficient values of 0.85 was obtained using Cronbach Alpha Statistical tool. This showed that the instrument was reliable and therefore, was used for data collection. Data was collected by the researchers along side two other research assistants who were briefed on the modalities for administering the instrument. On the spot delivery and retrieval method was adopted to ensure high return rate. Data were analysed using mean and standard deviation.

Results

Table 1: Mean Responses on the Extent to which Interactive Tools can Enhance Lifelong Learning among Adult Learners

S/N	Item Statement	Mean	SD	Decision
1	Improving understanding of learning content.	2.88	.61	HE
2	Increasing interest in participating in learning activities.	2.98	.53	HE
3	Making learning more practical and relevant to daily life.	2.77	.66	HE
4	Improving learning through receiving immediate feedback	2.79	.60	HE
5		3.73	.44	VHE
6	Enabling the sharing ideas among the learners	3.89	.31	VHE
7	Enhancing the ability to retain what was learnt	3.53	.66	VHE

8	Increasing motivation to participate in learning activities.	3.45	.66	HE
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Cluster Mean 3.25 0.55 HE

Key: VHE = Very High Extent; HE = High extent

Table 1 presented the mean responses on the extent to which interactive tools can enhance lifelong learning among adult learners. The table showed that items 1, 2, 3, 4 and 8 fall within the mean range of 2.50 – 3.49 indicating high extent. While items 5, 6, and 7 fall within the mean range of 3.50 – 4.0 indicating very high extent. Therefore, the cluster mean of 3.25 with the corresponding SD of 0.55 showed that to a high extent interactive tools when adopted in literacy centres in Eket LGA can enhance lifelong learning among adult learners.

Table 2: Mean Responses on the Extent Personalised Learning Can Enhance Lifelong Learning among Adult Learners

S/N	Item Statement	Mean	SD	Decision
9	Allowing self paced learning	2.95	.57	HE
10	Making the learning content more relevant to work life.	3.73	.44	VHE
11	Receiving learning support that matches learners' preference	3.89	.30	VHE
12	Increasing motivation to continue learning.	3.55	.65	VHE
13	Having greater control over learning activities.	3.48	.65	HE
14	Enabling the achievement of learning goals faster.	3.17	.53	HE
15	Making learning more engaging	3.65	.47	VHE
		Cluster Mean	3.49	0.52 HE

Key: VHE = Very High Extent; HE = High extent

Table 2 revealed the mean responses on the extent personalised learning can enhance lifelong learning among adult learners. The table showed that items 9, 13, and 14 fall within the mean range of 2.50 – 3.49 indicating high extent. While, items 10, 11, 12, and 15 fall within the mean range of 3.50 -4.0 indicating very high extent. Therefore, the cluster mean of 3.49 and SD of 0.52 showed that all the items in this cluster were accepted as the extent to which personalised learning can enhance lifelong learning among adult learners when adopted in Eket LGA, Akwa-Ibom State.

Discussion of Findings

The first finding of the study showed that the extent interactive tools can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State was high. This is to say that the learners who responded to the instrument agreed on the potency of interactive tools to enhance lifelong learning when adopted in their literacy centres. The respondents agreed that interactive tools have the ability of improving understanding of learning content, increasing interest in participating in learning activities, making learning more practical and relevant to daily life, and improving learning through receiving immediate feedback. This finding is in agreement with Eze and Okeke (2022) who found that real-time feedback enhances motivation and supports self-directed learning, which is a key

characteristic of lifelong learning. Interactive tools support collaborative learning because it allows adult learners to share ideas, work in groups, and learn from each other through digital platforms. Furthermore, interactive tools enhance flexibility and accessibility by enabling learners to access educational content anytime and anywhere through mobile devices and online platforms. This is crucial for adult learners who often combine education with work and family responsibilities (Akinyemi, 2022). Finally, interactive tools help in developing digital literacy skills, which are essential for personalised learning.

Finding further showed that the extent personalised learning can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State was high. This implies that the respondents agree to the fact that personalised learning when adopted in their literacy centre will allow self paced learning. Pane et al. (2020) found that that flexible pacing improves retention and completion rates among adult learners. The respondents agreed that personalised makes learning content more relevant to work life, increase motivation to continue learning, enable learners to have greater control over learning activities, enable the achievement of learning goals faster. Holmes et al. (2021) found that personalised learning supports relevance and goal-oriented learning by aligning instructional content with learners' personal, professional, and socio-economic needs. Adult learners are more motivated when learning is directly applicable to real-life situations, and personalised approaches ensure that learning remains meaningful and practical personalised learning also enhances understanding and encourages continuous learning. More so, personalised learning contributes to the development of digital and lifelong learning competencies by engaging with technology-driven learning environments.

Conclusion

The study determines the extent to which smart classrooms can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State. The study concentrated on two features of smart classrooms including interactive tools and personalised learning. Based on the findings of the study, the study concludes that the extent to which interactive tools can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State was high. The extent to which personalised learning can enhance lifelong learning among adult learners in Eket LGA, Akwa-Ibom State was high.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The government and educational stakeholders should make provision for the use of interactive tools in all adult education centres by equipping them with adequate ICT facilities such as interactive boards, multimedia devices, and reliable internet access to improve learner engagement and learning outcomes.
2. Adult education facilitators should be trained and supported to adopt personalised learning approaches by tailoring instruction to learners' individual needs, abilities, and pace, thereby sustaining motivation and improving lifelong learning effectiveness among adult learners.

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