Global Journal of Education, Humanities and Management Sciences (GOJEHMS);
Vol.5 No.1, March 2025, pg.50 – 56; ISSN(Print): 2705-2494; ISSN(Online):2705-2486

WORK AND INCLUSIVE EDUCATION IN THE AGE OF AI AND DIGITAL TRANSFORMATION IN SECONDARY SCHOOLS IN AWKA CAPITAL CITY

LYDIA UDEH OPARA,
Department of Business Education.
Faculty of Technology and Vocational Education.
Nnamdi Azikiwe University, Awka.

Abstract
This study aimed at examining the work and inclusive education in the age of AI and digital transformation in secondary schools in Awka Capital City, of Anambra State. Descriptive research design was adopted in the study. The population of the study consisted of 189 teachers. The total sample was 40 teachers randomly selected from five public secondary schools in Awka Capital City. Questionnaire was used for data collection, Descriptive statistics of mean and standard deviation was employed to analyze the data. The findings of the study showed that teachers have very low level of using AI to implement inclusive education. The study concluded that in order to fully harness AI potentials and effectively achieve inclusive education for all required teachers, professional development training in the area of AI operations and application is needed since it was discovered that teachers in Nigeria and Anambra state; Awka capital city precisely have very low level knowledge and skills to use AI to personalize learning, offer adaptive instruction and measuring the extent of students' progress on the lessons. The study recommended that staff development training should be organized for teachers to acquire knowledge and skills on AI operation and application in education. Development and implementation of national AI education policy should include a plan for developing AI-related curriculum for schools and institutions with a specific focus on special needs education. It should also consider incorporating AI in teacher training institutions.

Keywords: *work, inclusive, education, age, AI, digital, transformation, secondary, schools.*

Introduction

In every society education is the bedrock of development. Education inculcates knowledge and skills to those that pass through it. The knowledge and skills acquired by people through education are the instruments for growth and development of the nation. Education is expected to be the top priority of governments, because the global technological revolution is driving rapid and irreversible changes in every area of human lives. The new types of knowledge, new forms of communication, new workplace skills are embedded on the education. Therefore, harnessing these changes, making the revolution work for everyone requires inclusive education. Tony (2021) asserted that effective work and inclusive education delivery out rightly anchored on selecting and integrating appropriate technology to support implementation process. The United Nations Sustainable Development Goal 4 clearly asserts that: quality education and lifelong learning opportunities for all are central to ensuring a full and productive life to all individuals and to the realization of sustainable development (United Nations Statistics Division, 2024).

However, inclusive education is defined as "an on-going process aimed at offering quality education for all while respecting diversity, different needs, abilities, characteristics and learning expectations of the students and communities, eliminating all forms of discrimination (UNESCO, 2009). This definition identified an ethos of inclusion and communities of learners, which does not only involve an individual dimension but also a communal one. Cesaroni, Galletti, Pasqua and Nardi (2024) maintained that inclusive education aims to respond to all students needs beyond school attendance and achievement while improving all students well-being and participation. Inclusive education emphasized equal education opportunities to all

citizens or non education discrimination opportunities and work irrespective of gender, abilities and disabilities.

The pace and speed of transformation and advancement in digital technology result to the emergency of Artificial Intelligence (AI). Artificial Intelligence (AI) is defined as the intelligence exhibited by machines, in contrast to the natural intelligence displayed by humans and animals. OECD (2023) defined AI as "a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. AI is "a set of sciences, theories and techniques whose purpose is to reproduce by a machine the cognitive abilities of a human being" (Council of Europe, 2024). There are various types of AI, each with its own capabilities, applicability, and limitations. Some of the most common forms as highlighted by (Kamruzzaman, Alanazi, Alruwaili, Alshammari, Elaiwat, Abu-Zanona & Ahmed, 2023 are as follow: machine learning, deep learning, expert systems software, natural language processing (NLP) and Robotics. As AI technology continues to develop, the future holds even more innovative and effective ways to use AI in education.

The integration of AI technologies into curriculum development and implementation for learners with special needs has the potential to significantly improve their educational outcomes. There is no gain saying that not every learner is equally able. One group of learners who are often disadvantaged are those with disabilities as well as the gifted and talented. Irrespective of their abilities, all learners have the inalienable right to equitable quality education. Special needs education in Nigeria is fraught with numerous challenges, including inequitable access, limited resources, inadequate infrastructure, low enrolment, bureaucratic net, policy implementation, shortage of trained professionals, attitudinal and cultural barriers, legal and ethical issues, etc (Adebisi, Jerry, Rasaki, & Igwe, 2014; Odirin, 2014). However, the emergence of Artificial Intelligence (AI) offers new possibilities for addressing some of these challenges and promote inclusive educational practices. AI technologies have the potential to personalize learning experiences, adapt curricula, and facilitate inclusive education for students with special needs (Okunlaya, Syed-Abdullah, & Alias , 2022; Tapalova & Zhiyenbayeva, 2022).

AI in education promotes fairness and equity in students' access to digital technologies, skills, uses and attitudes. As such, digital tools for equity in education provide additional learning resources for students in need and help them participate fully in education (Gottschalk & Weise, 2023). Digital inclusion, in turn, overcomes barriers to participation based on students' differences. Digital technologies for inclusion are then adapted to acknowledge, accept and respect students' differences. They also ensure that students feel included, promote their well-being and sense of belonging, and ensure non-discrimination (ibid.).

In the special education, Zhang and Aslan (2021) opined that AI-driven technologies are primarily employed by teachers in the following areas; adaptive learning, personalization of learning, deep learning, machine learning algorithms in online educational platforms, educational human-AI interaction (chatbots or virtual tutors), use of assistive technology, identification and track of students' progress and provision of real-time feedback. Thus, for the purpose of this study, this paper will focus on these areas such as personalize learning plan, provision of adaptive instruction by the teachers using AI in the classroom and identification and tracking of students' progress.

In personalize learning**,** teachers can use AI to record, analyze students' data and create personalized learning plans that are tailored to each student's individual needs and abilities (Escotet, 2023). This can help learners with special needs stay on track and avoid falling behind.

In terms of offering adaptive instruction, teachers in secondary schools can use AI to adjust the difficulty level of instruction based on each student's progress. This can help ensure that all students are challenged appropriately, and no one is left behind (Tan & Cheah, 2021; Zia, 2023). Also, in the aspect of identifying and tracking students' progress, teachers in secondary schools can employ AI to measure students' progress over time and identify areas where they need additional support. This information can be used to adjust the curriculum or provide additional interventions as needed (Delgado, de Azevedo, Sebastiany, & Silva, 2020;

Zia, 2023). Hence, this paper aimed at examining work and inclusive education in the age of AI and digital transformation in Awka Capital City.

Statement of the problem

AI is very important in promoting inclusive education as it personalizes learning, providing real-time feedback to students, offer adaptive instruction to easy difficulties in the areas students found difficult to understand. But notwithstanding these benefits, the use of AI to achieve inclusive educated is affected by high cost of AI technologies, lack of skilled teachers to effectively integrate and implement AI curriculum (Adeparusi, 2023; Zawacki-Richter, Marín, Bond & Gouverneur, 2019). Also, Adeparusi, (2023) and Zia (2023) opined that the use of AI in education raises a number of ethical concerns, such as the potential for bias and discrimination. Moreover, in some education institutions in Nigeria, teachers reported a much higher need for professional development in schools with relatively high shares of students with special education needs and disadvantaged students. Furthermore, Marino, (2023[128]) emphasized the difficulties in equipping teachers with AI knowledge and skills in special needs education. Disparities in training opportunities also contribute to widening the gap in the effective use of AI technologies inclusive education, potentially exacerbating inequalities. Students in disadvantaged schools are at risk of being left behind in the rapidly advancing digital landscape due to their teachers' unmet needs in regard to high-quality training. These problems affected the realization of Anambra state objective on AI in education.

Purpose of the Study

The major purpose of this study is to examine work and inclusive education in the age of AI and digital transformation in secondary schools in Awka Capital City. Specially, this study aimed at;

1. Examining the extent to which teachers use AI personalized learning plan for students in secondary schools in Awka Capital City.
2. Identifying the extent to which teachers use AI to offer adaptive instruction to students in secondary schools in Awka Capital City.
3. Examining the extent to which teachers use AI to measure students' academic progress in secondary schools in Awka Capital City.

Research Questions

1. To what extent do teachers use AI personalized learning plan for students' in secondary schools in Awka Capital City?
2. To what extent do teachers use AI to offers adaptive instruction to students in secondary schools in Awka Capital City?
3. To what extent teachers use AI to measure students academic progress in secondary schools in Awka Capital City?

Methodology

This study employed descriptive research design to study work and inclusive education in the age of AI and digital transformation in Awka Capital City. The population of the study consisted of all the teachers in public secondary schools in Awka Capital City. The total population of the study was 389 teachers. Random sampling technique was adopted to selected a sample of 8 teachers in 5 selected public secondary schools in the study area based on the knowledge and ability to operate digital technology as an inclusive criterion. The total sample for the study was 40 teachers. Questionnaire was used as an instrument for data collection. Descriptive statistics of mean and standard deviation was used to analyze the data collected. The scale for responding to the research questions were very high extent (VHE), high extent (HE), low extent (LE) and very low extent (VLE). 2.5 was set as point for accepting the mean, otherwise reject the mean at less than 2.5. Correlation statistics was employed to test hypothesis at 0.05 level of significance.

Results and Discussion

Research question 1. To what extent teachers use AI to personalize learning plan for students in secondary schools in Awka Capital City?

Table 1: Rating the extent to which teachers use AI to personalize learning plan for students in secondary schools in Awka Capital City.

S/N	Items	VHE	HE	LE	VLE
1	I used AI to record students' data.	5	4	13	18
2	I used AI to analyze students' data.	0	0	10	35
3	I used Al to create personalized learning plans that are tailored to each student's individual needs and abilities.	3	1	8	28
4	I used AI to track students with special needs.	2	1	15	22
5	I used AI to appropriately avoid students falling behind in lesson.	4	3	13	20

Table 2 : Descriptive Statistics

	N	Mean	Std. Deviation
Very High Extent	5	2.8000	1.92354
High Extent	5	1.8000	1.64317
Low Extent	5	11.8000	2.77489
Very Low Extent	5	24.6000	6.91375
Valid N (listwise)	5		

Table 2 above, analyzed data on the extent to which teachers use AI to personalize learning plan for students in secondary schools in Awka Capital City. The result showed that those that said very high extent have a mean of 2.8 with a stand deviation of 1.92. Those that he high extent score 1.8 with a stand deviation of 1.64, the respondents that said low extent scored 11.8 with a stand deviation of 2.77 while those that said very low extent scored 24.6 with a stand deviation of 6.91. With result, it proved that the extent to which teachers use AI to personalize learning plan for students in secondary schools in Awka Capital City is very low. This may be because they lack knowledge and skills of using AI to record students' data, analyze students' data,

create personalized learning plans that are tailored to each student's individual needs and abilities, use AI to track students with special needs and use AI appropriately to avoid students falling behind in lessons.

Research question 2: To what extent teachers use AI to offer adaptive instruction to students in secondary schools in Awka Capital City?

Table 3: Rating the extent teachers use AI to offer adaptive instruction to students in secondary schools in Awka Capital City.

S/N	Items	VHE	HE	LE	VLE
1	I used to employ AI to make lesson delivery easy.	3	2	15	20
2	I use AI to create charts that will help students understand the lessons.	0	0	0	40
3	I used Al to create an improvise devises that will drive home the lesson.	0	0	5	35
4	I used AI to adjust to the difficulty level of instruction based on each student's progress	2	1	12	25

Table 4: Descriptive Statistics

	N	Mean	Std. Deviation
Very High Extent	4	1.2500	1.50000
High Extent	4	.7500	.95743
Low Extent	4	8.0000	6.78233
Very Low Extent	4	30.0000	9.12871
Valid N (listwise)	4		

In table 4 above, data was analyzed on the teachers use of AI to offer adaptive instructions to students in secondary schools in Awka Capital City. The result indicated that those that said very high extent have a mean of 1.25 with a stand deviation of .50. Those that indicated high extent scored 0.75 with a stand deviation of 0.95, the respondents that said low extent scored 8.00 with a stand deviation of 6.78 while those that said very low extent scored 30.0 with a stand deviation of 9.12. With this result, it was discovered that the extent to which teachers use AI to offer adaptive instruction to students in secondary schools in Awka Capital City is very poor. The issue is that they possess very low level knowledge and understanding of

how to use Al to make lesson delivery easy, create charts that can help students understand the lesson, create an improvise devises that will drive home the lesson and adjust to the difficulty level of instruction based on each student's progress.

Research question 3: To what extent teachers use AI to offer adaptive instructions to students in secondary schools in Awka Capital City?

Table 5: Rating the extent teachers use AI to offer adaptive instruction to students in secondary schools in Awka Capital City.

S/N	Items	VHE	HE	LE	VLE
1	I employ AI to measure students' progress over time.	5	3	11	21
2	I use AI to identify areas where students need additional support.	3	3	10	24
3	I used Al information to adjust the curriculum.	2	1	9	28
4	I used AI to carry my students along.	2	1	14	23
5	I used AI to appropriately avoid students falling behind in lesson.	4	4	11	21

Table 6: Descriptive Statistics

	N	Mean	Std. Deviation
Very High Extent	5	3.2000	1.30384
High Extent	5	2.4000	1.34164
Low Extent	5	11.0000	1.87083
Very Low Extent	5	23.4000	2.88097
Valid N (listwise)	5		

Table 6 above, analyzed data on the extent to which teachers use AI to offer adaptive instruction to students in secondary schools in Awka Capital City. The result indicated that those that said very high extent scored 3.2 with a stand deviation of 1.30. Those that said high extent score 2.4 points with a stand deviation of 1.34, the respondents that responded low extent scored 11.0 with a stand deviation of 1.87. Those that responded very low extent has a mean score 23.4, with a stand deviation of 2.88. With this result, it was discovered that few respondents in the study area have idea of using AI in the study area to offer adaptive instruction to students. But majority of the respondents possessed very low level knowledge and idea of using AI to offer adaptive instruction such as measuring students progress over time, identifying areas where students need additional support, adjust the curriculum and carry students along to avoid them falling behind in lesson.

Discussion of Findings

The findings of this study was discussed based on the analysis of the research questions of this study. The study discovered that teachers in secondary schools in Awka Capital City do not effectively utilize AI inclusive education. This is because they have very low level of knowledge and skill of using AI to personalize learning plans such as recording students data, analyze students data, create personalized learning plans that are tailored to each student's individual needs and abilities, track students with special needs and use AI appropriately to avoid students falling behind in lesson. Also, they have very low idea of using AI to offer adaptive instruction to students, lack good knowledge of using Al to make lesson delivery easy, create charts that can help students understand the lesson, create an improvise devises that will drive home the lesson and adjust the difficulty level of instruction based on each student's progress. However, few respondents in the study area have idea of using AI in the study area to offer adaptive instruction to students. But majority of them possessed very low level knowledge and idea of using AI to offer adaptive instruction in the areas like measuring students progress over time, identifying areas where students need additional support, adjust the curriculum and carry students along to avoid them falling behind in lesson. This affected the effective utilization of AI in achieving inclusive education in the study area.

Conclusions

This study examined work and inclusive education in the age of AI and digital transformation in Awka Capital City. AI is very important in achieving inclusive education in this age of digital transformation in which computer can be used to perform human activities. The Artificial intelligent has the potential to transform the way pedagogy is carried out in classroom, personalization learning plans by the teachers, offering of adaptive instruction and

measuring of students' academic progress. Hence, this study concluded that in order to fully harness AI potentials and effectively achieve inclusive education for all required teachers professional development training in the area of AI operations and application since it was discovered that teachers in Nigeria and Anambra state; Awka capital city precisely have very low level knowledge and skills to use AI to personalize learning, offer adaptive instruction and measuring the extent of students' progress on the lessons.

Recommendations

Based on the result of the data analysis of this study, the following recommendations are made;

1. Staff development training should be organized for teachers to acquire knowledge and skill on AI operation application in education.
2) Development and implementation of national AI education policy should include a plan for developing AI-related curriculum for schools and institutions with a specific focus on special needs education. It should also consider incorporating AI in teacher training institutions.
3. Government should increase fund allocation to procure AI facilities in schools since the expensiveness of AI infrastructure affects it's integration and application to achieve inclusive education.

References

Adebisi, R. O., Jerry, J. E., Rasaki, S. A. & Igwe, E. N. (2014). Barriers to special needs education in Nigeria. International Journal of Education and Research, 2(11), 451-462.

Adeparusi, T. (2023). *New age of artificial intelligence and Nigerias preparedness*. The Punch.

Cesaroni V., Galletti M, Pasqua E., and Nardi D. (2024). Towards Trustworthy AI in Inclusive Education: A Co-Creation Approach Rooted in Ecological Frameworks, in *Ital-Ia, CEUR Workshop Proceedings*, Napoli.

Council of Europe (2024), *Artificial Intelligence: Glossary*, https://www.coe.int/en/web/artificial intelligence/glossary. Accessed 15 April, 2025.

Delgado, H. O. K., de Azevedo, F. A., Sebastiany, M. J. & Silva, A. D. C. (2020). Artificial intelligence adaptive learning tools: The teaching of English in focus. *Brazilian English Language Teaching Journal*, *11*(2), e38749.

Escotet, M. A. (2023). *The optimistic future of artificial intelligence in higher education*. *Prospects*, page 1-10.

Gottschalk, F. and C. Weise (2023), "Digital equity and inclusion in education: An overview of practice and policy in OECD countries", *OECD Education Working Papers*, No. 299, OECD Publishing, Paris.

Kamruzzaman, M. M., Alanazi, S., Alruwaili, M., Alshammari, N., Elaiwat, S., Abu-Zanona, M. & Ahmed, A. B. (2023). AI-and IoT-Assisted Sustainable Education Systems during Pandemics, such as COVID-19, for Smart Cities. *Sustainability*, *15*(10), 8354.

Marino, M. et al. (2023), "The Future of Artificial Intelligence in Special Education Technology", *Journal of Special Education Technology*, Vol. 38/3, pp. 404-416.

Odirin, O. (2014). Legal and ethical issues of persons with special needs in Nigeria. *Educational Research and Reviews*, *9*(15), 516-522.

OECD (2023), *Equity and Inclusion in Education: Finding Strength through Diversity*, OECD Publishing, Paris, https://doi.org/10.1787/e9072e21-en.

Okunlaya, R. O., Syed-Abdullah, N., & Alias, R. A. (2022). Artificial intelligence (AI) library services innovative conceptual framework for the digital transformation of university education. *Library Hi Tech*, *40*(6), 1869-1892.

Tan, D. Y., & Cheah, C. W. (2021). Developing a gamified AI-enabled online learning application to improve students perception of university physics. *Computers and Education: Artificial Intelligence*, *2*, 100032.

Tapalova, O., & Zhiyenbayeva, N. (2022). Artificial intelligence in education: AIEd for personalised learning pathways. *Electronic Journal of E-Learning*, *20*(5), 639-653.

Tony, B. (2021) Tech-Inclusive Education: A world classes system for every child. Paper 7th December 2021 KI By multiple experts (8).

UNESCO (2009). *Policy Guidelines on Inclusion in Education*. Paris, France: Page 126.

United Nations Statistics Division (2024), *Sustainable Development Goal 4 (SDG 4*). unstats.un.org/sdgs/report/2017/goal-04.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education — Where are the educators? *International Journal of Educational Technology in Higher Education, 16*(39), 1-27.

Zhang, Z., Xu, Y., Wang, Y., Yao, B., Ritchie, D., Wu, T., Yu, M., Wang, D. & Li, T. J. J. (2022). Storybuddy: A human-AI collaborative chatbot for parent-child interactive storytelling with flexible parental involvement. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems* (pp. 1-21).

Zia, T. (2023, July 19). *Transforming education: AI-powered personalized learning revolution.* Techopedia.