
**ARTIFICIAL INTELLIGENCE AND TRANSFORMATIVE COUNSELLING SERVICES IN
NIGERIA**

Ifeoma Elizabeth Ohachenu
ie.ohachenu@unizik.edu.ng

Ngozi Chinenye Okeke
ngozionwudiwe2005@gmail.com

Department of Sociology
Nnamdi Azikiwe University, Awka, Anambra state

Abstract

The increasing demand for mental health services in Nigeria, coupled with limited available resources, has created significant gaps in the accessibility and affordability of professional counselling support. This paper examines the potential role of Artificial Intelligence (AI) in augmenting traditional counselling approaches and enhancing service delivery within the Nigerian context. Counselling, as a human relations profession, addresses multifaceted personal, social, psychological, and emotional challenges; yet, the ratio of counsellors to those in need remains disproportionately low. AI technology, defined as the capability of machines to perform tasks associated with human intelligence, which includes learning, reasoning, and decision-making, offers promising avenues for bridging this gap through automation, data analytics, and 24/7 availability. However, existing literature on AI in Nigerian counselling remains largely confined to awareness and acceptance studies, with minimal exploration of practical application and utilization. Drawing on a conceptual review of existing scholarship and a critical assessment of Nigeria's infrastructural and socio-cultural realities, this paper evaluates both the transformative potential and the inherent challenges of integrating AI into counselling services. Key considerations include ethical concerns regarding privacy, algorithmic bias, digital literacy requirements, and the irreplaceable human elements of the therapeutic relationship. The paper argues that while AI cannot supplant the core humanistic foundations of counselling, it can significantly enhance counsellors' capacity to reach underserved populations, streamline administrative tasks, and provide data-informed interventions. Recommendations are offered for policy development, infrastructure investment, and training frameworks necessary for the responsible adoption of AI in Nigerian counselling practice.

Keywords: Artificial Intelligence, counselling services, mental health, Nigeria, digitalization, human-centred technology, therapeutic relationship

INTRODUCTION

Artificial intelligence (AI) is not a new concept. The question posed by Alan Turing in 1950 is, “can machines think”? His study of logic led directly to his theory_of_computation, which suggested that a machine, by shuffling symbols as simple as "0" and "1", could simulate any conceivable form of mathematical reasoning. The development of computers after the Second World War, with the Dartmouth Conference in 1956, brought together researchers from multiple fields to explore “thinking machines”. That was where John McCarthy coined the term "artificial intelligence". It is a transformative technology that has gained prowess after nearly a century of research. (Russell & Norvig, 2021, p. 18, McCorduck, 2004, pp. 111–136). According to Wartman & Combs (2018) Artificial intelligence (AI), as the ability of machines or computers to think and act as humans do, represents the efforts towards computerized systems to imitate the human mind and actions. Its basic definition can be expressed as the skillful imitation of human behaviour or mind by tools or programs (Mohammed & Watson, 2019). It involves the use of algorithms that analyze data, identify patterns, and make predictions (Khan et al, 2022; Harry, A., 2023). AI consists of core knowledge, the ability to reason, and autonomous capabilities, and is capable of outperforming humans at very complex tasks, and thus has the potential to lead to the mass replacement of human jobs. AI is an important tool for processing and integrating big data.

Despite the loss of privacy engendered by AI's ability to process and combine vast amounts of data (potentially leading to individual activities being constantly monitored and analyzed without adequate safeguards or transparency and which, to the vast majority, is clearly unethical and a violation of the right of people to privacy), Artificial intelligence possesses the ability to make a resounding input in counseling. Uwaifo and Uddin (2009) aptly argue that scientific and technological revolution (AI inclusive) is the foundation of advancements and improvements in national financial, educational, and health systems.

However, the use of AI in counseling in Nigeria is a subject yet to be fully actualized. Ofem, U. et al (2024) think that limited research exists on the awareness, acceptability, and application of AI-driven counseling interventions tailored to the socio-cultural and infrastructural realities of Nigeria. Most researchers have acknowledged the fact that although most counsellors may be aware of the potential of AI in counselling, their non-application of these tools may be due to ethical concerns, privacy issues, and potential bias in AI algorithms, which, of course, may require the counsellor to possess strong digital literacy skills (ibid).

This paper aims to provide an on-the-spot review, assessment, and critique of the place of AI in counseling in Nigeria. The methodology to adopt here is an informative approach, highlighting results from previous studies and a critical review of Nigerian environmental circumstances, to substantiate our argument.

2. LITERATURE REVIEW

2.1 Conceptual Framework

2.1. Counselling

Counseling services are collaborative, professional relationships where a trained counselor helps individuals explore their concerns, develop self-awareness, and work towards positive change

They mean any service provided by a counsellor to a client, including, but not limited to, counselling activities, professional activities, professional practice, research practice, supervision, and teaching (British Association for Counselling and Psychotherapy (BACP), 2007). Counselling can help clients cope with:

- a mental health condition, such as depression
- an upsetting physical health condition, such as infertility
- a difficult life event, such as a bereavement, a relationship breakdown, or work-related stress
- difficult emotions – for example, low self-esteem or anger
- other issues, such as sexual identity (Miller, G. 2011; Kolski, Berghuis, & Myer, 2015)

2.1.b Counselling Process/Stages

Hackney and Cormier (2005) propose a five-stage model for defining the counseling process through which both counselor and client move. They include,

Stage one: (Initial disclosure) Relationship building

The counseling process begins with relationship building. This stage focuses on the counselor engaging with the client to explore the issues that directly affect them.

The vital first interview can set the scene for what is to come, with the client reading the counselor's verbal and nonverbal signals to draw inferences about the counselor and the process. The counselor focuses on using good listening skills and building a positive relationship. When successful, it ensures a strong foundation for future dialogue and the continuing counseling process.

Stage two: (In-depth exploration) Problem assessment

While the counselor and client continue to build a beneficial, collaborative relationship, another process is underway: *problem assessment*. The counselor carefully listens and draws out information regarding the client's situation (life, work, home, education, etc.) and the reason they have engaged in counseling.

Information crucial to subsequent stages of counseling includes identifying triggers, timing, environmental factors, stress levels, and other contributing factors.

Stage three: (Commitment to action) Goal setting

Effective counseling relies on setting appropriate and realistic goals, building on the previous stages. The goals must be identified and developed collaboratively, with the client committing to a set of steps leading to a particular outcome.

Stage four: Counseling intervention

This stage varies depending on the counselor and the theories they are familiar with, as well as the situation the client faces. For example, a *behavioral approach* may suggest engaging in activities designed to help the client alter their behavior. In comparison, a *person-centered approach* seeks to engage the client's self-actualizing tendency.

Stage five: Evaluation, termination, or referral

Termination may not seem like a stage, but the art of ending the counseling is critical.

Drawing counseling to a close must be planned well in advance to ensure a positive conclusion is reached while avoiding anger, sadness, or anxiety. Part of the process is to reach an early agreement on how the therapy will end and what success looks like. This may lead to a referral if required. (Fragkiadaki & Strauss, 2012). Counselling is a human relations profession, and its services do not include the following: providing advice, being judgmental, pushing the counsellor's values to the client, and emotional attachment between the counsellor and the client.

2.2 Artificial Intelligence (AI)

Artificial intelligence (AI) is the capability of computational systems to perform tasks typically associated with human intelligence, such as learning, reasoning, problem-solving, perception, and decision-making. It is a field of research in computer science that develops and studies methods and software that enable machines to perceive their environment and use learning and intelligence to take actions that maximize their chances of achieving defined goals (Russell, Norvig, 2022).

Copeland (2025) argues that Artificial Intelligence (AI) is the ability of a digital computer or computer-controlled robot to perform tasks such as reasoning, learning, and problem solving commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from experience. Artificial intelligence (AI) is a set of technologies that enable computers to perform a variety of advanced functions, including the ability to see, understand, and translate spoken and written language, analyze data, make recommendations, and more. It is a technology that enables machines to imitate various complex human skills (Sheik, 2023).

Applications and devices equipped with AI can see and identify objects. They can understand and respond to human language. They can learn from new information and experience. They can make detailed recommendations to users and experts. They can act independently, replacing the need for human intelligence or intervention (a classic example being a self-driving car). High-profile applications of AI include advanced web search engines (e.g., Google Search); recommendation systems (used by YouTube, Amazon, and Netflix); virtual assistants (e.g., Google Assistant, Siri, and Alexa); autonomous vehicles (e.g., Waymo); generative and creative tools (e.g., ChatGPT and AI art); and superhuman play and analysis in strategy games (e.g., chess and Go) (Stryker & Kavlakoglu, 2024).

2.2.a Types of Artificial Intelligence

Artificial intelligence can be organized in several ways, depending on stages of development or actions being performed, as highlighted by Marr & Co. (2024). They recognized four stages of AI development as follows:

1. **Reactive machines:** Limited AI that only reacts to different kinds of stimuli based on preprogrammed rules. Does not use memory and thus cannot learn with new data. IBM's Deep Blue, which beat chess champion Garry Kasparov in 1997, was an example of a reactive machine.
2. **Limited memory:** Most modern AI is considered to be limited memory. It can use memory to improve over time by being trained with new data, typically through an artificial neural network or other training model. Deep learning, a subset of machine learning, is considered limited-memory artificial intelligence.
3. **Theory of mind:** Theory of mind AI does not currently exist, but research is ongoing into its possibilities. It describes AI that can emulate the human mind and has decision-making capabilities equal to those of a human, including recognizing and remembering emotions and reacting in social situations as a human would.
4. **Self-aware:** A step above theory of mind AI, self-aware AI describes a mythical machine that is aware of its own existence and has the intellectual and emotional capabilities of a human. Like theory of mind AI, self-aware AI does not currently exist.

A more useful way of broadly categorizing types of artificial intelligence is by what the machine can do. All of what we currently call artificial intelligence is considered artificial "narrow" intelligence, in that it can perform only narrow sets of actions based on its programming and training. For instance, an AI algorithm that is used for object classification won't be able to perform natural language processing. Google Search is a form of narrow AI, as is predictive analytics, or virtual assistants (Arend Hintze, 2016; AI and Regent University, 2024)

2.2.b Common types of artificial neural networks

A neural network is a machine learning (ML) model designed to process data in a way that mimics the function and structure of the human brain. Neural networks are intricate networks of interconnected nodes, or artificial neurons that collaborate to tackle complicated problems, Awati, R. Yasar K. (2025), and these loosely model the neurons in a biological brain. It is trained to recognize patterns; once trained, it can recognize those patterns in

fresh data. The data is fed into the first layer of a neural network, with each perceptron making a decision, then passing that information onto multiple nodes in the next layer. Training models with more than three layers is referred to as “deep neural networks” or “deep learning.” Some modern neural networks have hundreds or thousands of layers. Some of the most common types of artificial neural networks, as highlighted by Coursera staff (2026) and Pan (2024) include:

Feedforward neural networks (FF) are one of the oldest forms of neural networks, with data flowing one way through layers of artificial neurons until the output is achieved. In modern days, most feedforward neural networks are considered “deep feedforward” with several layers (and more than one “hidden” layer). Feedforward neural networks are typically paired with an error-correction algorithm called “backpropagation” that, in simple terms, starts with the result of the neural network and works back through to the beginning, finding errors to improve the accuracy of the neural network. Many simple but powerful neural networks are deep feedforward.

Recurrent neural networks (RNNs) differ from feedforward neural networks in that they typically use time series data or data that involves sequences. Unlike feedforward neural networks, which use weights in each node of the network, recurrent neural networks have “memory” of what happened in the previous layer contingent on the output of the current layer. For instance, when performing natural language processing, RNNs can “keep in mind” other words used in a sentence. RNNs are often used for speech recognition, translation, and to caption images. Long/short-term memory (LSTM) is an advanced form of RNN that can use memory to “remember” what happened in previous layers. The difference between RNNs and LSTMs is that LSTMs can remember what happened several layers ago, through the use of “memory cells.” LSTM is often used in speech recognition and for making predictions.

Convolutional neural networks (CNNs) include some of the most common neural networks in modern artificial intelligence. Most often used in image recognition, CNNs use several distinct layers (a convolutional layer, then a pooling layer) that filter different parts of an image before putting it back together (in the fully connected layer). The earlier convolutional layers may look for simple features of an image, such as colors and edges, before looking for more complex features in additional layers.

Generative adversarial networks (GANs) involve two neural networks competing against each other in a game that ultimately improves the accuracy of the output. One network (the generator) creates examples that the other network (the discriminator) attempts to prove true or false. GANs have been used to create realistic images and even make art.

2.2.c Benefits of Artificial Intelligence

Stryker and Kavlakoglu (2024) outline the benefits of Artificial Intelligence

Automation of repetitive tasks.

- More and faster insight from data.
- Enhanced decision-making.
- Fewer human errors.
- 24x7 availability.
- Reduced physical risks.

Automation

AI can automate workflows and processes or work independently and autonomously from a human team. For example, AI can help automate aspects of cybersecurity by continuously monitoring and analyzing network traffic. Similarly, a smart factory may have dozens of different kinds of AI in use, such as robots using computer vision to navigate the factory floor or to inspect products for defects, create digital twins, or use real-time analytics to measure efficiency and output. Reduce human error

AI can eliminate manual errors in data processing, analytics, assembly in manufacturing, and other tasks through automation and algorithms that follow the same processes every single time.

Eliminate repetitive tasks

AI can be used to perform repetitive tasks, freeing human capital to work on higher-impact problems.

Fast and accurate

AI can process more information more quickly than a human, finding patterns and discovering relationships in data that a human may miss. Always Available and Consistent

AI is always available and not limited by time of day, the need for breaks, or other human exigencies, and maintains consistent work quality and output levels when used to complete repetitive or tedious tasks.

Accelerated research and development

The ability to analyze vast amounts of data quickly can lead to accelerated breakthroughs in research and development. For instance, AI has been used in predictive modeling of potential new pharmaceutical treatments or to quantify the human genome.

With artificial intelligence, paperwork is reduced, practical solutions to problems are produced, time loss is prevented, the quality of education is increased, and the needs of individuals are accurately determined. (Gocen & Aydemir, 2020).

2.3 Applications and use cases for artificial intelligence

Speech recognition

Automatically convert spoken speech into written text.

Image recognition

Identify and categorize various aspects of an image.

Translation

Translate written or spoken words from one language into another.

Predictive modeling

Mine data to forecast specific outcomes with high degrees of granularity.

Data analytics

Find patterns and relationships in data for business intelligence.

Cybersecurity

Autonomously scan networks for cyber-attacks and threats.

2.4 Challenges of Artificial Intelligence

Harry (2023) opines that there are challenges of AI in education. According to him, intelligent tutoring systems, chatbots, and automated grading and assessment can increase efficiency, save teachers' time, and provide more accurate and consistent feedback. However, there are also challenges associated with using AI in education. Privacy and security concerns, lack of trust, cost, and potential bias are some of the challenges that need to be addressed. Ethical considerations such as ensuring accessibility, transparency, and fairness in AI-based education systems also need to be taken into account (ibid)

Stryker and Kavlakoglu (2024) further maintain that Artificial Intelligence is risk-loaded. (a) Data risks

AI systems rely on data sets that might be vulnerable to data poisoning, data tampering, data bias, or cyberattacks that can lead to data breaches. Organizations can mitigate these risks by protecting data integrity and implementing security and availability throughout the entire AI lifecycle, from development to training and deployment, and post-deployment.

(b) Model risks

Threat actors can target AI models for theft, reverse engineering, or unauthorized manipulation. Attackers might compromise a model's integrity by tampering with its architecture, weights, or parameters; the core components that determine a model's behavior, accuracy, and performance.

(c) Operational risks

Like all technologies, models are susceptible to operational risks such as model drift, bias, and breakdowns in the governance structure. Left unaddressed, these risks can lead to system failures and cybersecurity vulnerabilities that threat actors can use. (d) Ethics and legal risks

If organizations don't prioritize safety and ethics when developing and deploying AI systems, they risk committing privacy violations and producing biased outcomes. For example, biased training data used for hiring decisions might reinforce gender or racial stereotypes and create AI models that favor certain demographic groups over others.

In April 2023, it was reported that 70% of the jobs for Chinese video game illustrators had been eliminated by generative artificial intelligence (Wikipedia)

Unlike previous waves of automation, many middle-class jobs may be eliminated by artificial intelligence; The Economist stated in 2015 that "the worry that AI could do to white-collar jobs what steam power did to blue-collar ones during the Industrial Revolution" is "worth taking seriously". Jobs at extreme risk range from paralegals to fast food cooks, while job demand is likely to increase for care-related professions, ranging from personal healthcare to the clergy (OECD)

2.5 Artificial Intelligence Guiding Frameworks

Artificial intelligence projects can be guided by ethical considerations during the design, development, and implementation of an AI system. An AI framework such as the Care and Act Framework, developed by the Alan Turing Institute and based on the SUM values, outlines four main ethical dimensions, defined as follows:

- Respect the dignity of individual people
- Connect with other people sincerely, openly, and inclusively
- Care for the well-being of everyone
- Protect social values, justice, and the public interest

3. Review of Empirical Literature on Acceptance and Application of Artificial Intelligence Generally

In a 2022 Ipsos survey, attitudes towards AI varied greatly by country; 78% of Chinese citizens, but only 35% of Americans, agreed that "products and services using AI have more benefits than drawbacks". A 2023 Reuters/Ipsos poll found that 61% of Americans agree, and 22% disagree, that AI poses risks to humanity. In a 2023 Fox News poll, 35% of Americans thought it "very important", and an additional 41% thought it "somewhat important", for the federal government to regulate AI, versus 13% responding "not very important" and 8% responding "not at all important" Also 39% of voters have a great deal or some confidence, while 59% have not much confidence in that government regulation of AI.

Some studies highlight that chatbots can effectively help manage symptoms of depression and anxiety. A study by Park et al (2024) confirms that through innovative integration of AI technologies, AI has positive effects on preventing, diagnosing, and treating depression

The Study by Ugwoke, Eloanyi, Eziokwu, & Eneze (2025) examined the application of AI in the assessment of students' academic achievement in the private university system in the Southeast Zone of Nigeria. Three research questions guided the study. A mixed-methods research design was adopted for the study. The sample consisted of 72 lecturers from eight (8) private universities in the southeastern states of Nigeria. Two instruments: Questionnaire on the Application of AI in Assessment (QAIA) and Smartphone Audio Recorder (SAR) were used for data collection. It was found that the AI facilitates holistic assessment of students' academic achievement. The result also revealed that the level of awareness of lecturers on the application of AI in assessment is high. However, most lecturers do not apply AI in the assessment of their students.

Ofem, Anake, Abuo, Ukatu, and Onor (2024) conducted a study to analyse how professional counsellors apply artificial intelligence in counselling practices using the nexus between awareness and application through acceptance of AI with gender and professional rank as groups. They selected a total of 5,432 professional counsellors for the study. Data collection was conducted online to ensure a wide coverage. The findings revealed that professional counsellors exhibited high levels of awareness, acceptability, and application of AI in their counselling practices. However, male practitioners and professors displayed stronger awareness, acceptance, and application of AI tools compared to their counterparts. It underscores the importance of addressing gender and professional rank disparities to ensure equitable adoption and utilization of AI tools. The findings offer valuable insights for policymakers in promoting the integration of AI in counselling to enhance professional practices.

A recent study by Stina (2021) revealed that AI is impactful in career guidance and holds strong prospects for the discharge of professional responsibilities. In another study, Gado et al. (37) noted that knowledge of AI, attitude towards AI, and perceived usefulness were the reasons why psychology students accepted using AI. Information on awareness is limited, and this is not good for policymaking.

Al-qiam , H. A. A., AL-Derabseh, R.A.S., ALARIFI, N.A. & Darawsheh, S. R. (2023) studied what the introduction of artificial intelligence in education, especially in mathematics education in Jordanian schools and universities, will look like, and what its implications are for the future of schools. The study design was phenomenological, a qualitative approach that looked at the perspectives of participants from various fields. The findings show that even though participants have positive views of artificial intelligence, they observed negative aspects of it, and that schools and teachers will encounter new products, advantages, and disadvantages of AI in relation to the future of education.

Also, Spytka, L. (2025) study on "The use of artificial intelligence in psychotherapy: development of intelligent therapeutic systems showed that an AI tool chatbot provided accessible immediate support, while traditional

therapy proved more effective due to the emotional depth and adaptability provided by human therapists. The chatbot was particularly beneficial in crisis settings where access to therapists was limited, proving its value in scalability and availability. However, its emotional engagement was notably lower compared to in-person therapy.

Conclusion

The position of this paper is the same as the argument that the technological development to integrate AI in counseling services is an undertaking that needs to be taken with careful consideration (Cabrera et al., 2023; Kang & Kang, 2023, Fulmer, 2019). The effect of colonial masters' de-emphasis of Nigeria's technological development, perpetuated through the curriculum content of their Western education in Nigeria, is everlasting. Nigeria has not broken through technological dependence, and conversely, its technological development and strength cannot deal with the intricacies of the use of Artificial Intelligence in counseling.

Just as Russell and Norvig argue that "the additional project of making a machine conscious in exactly the way humans are is not one that we are equipped to take on." Nigeria is not equipped either. The goal is still a mirage. Intelligent tutoring systems, chatbots, and automated grading and assessment can increase efficiency, save time, and provide more accurate and consistent feedback, but there are controversies and even challenges associated with using AI in counselling. For instance, while human information processing is easy to explain, human subjective experience is difficult to explain. Small changes in facial expressions, voice intonation, gestures, and posture are critical for accurately assessing mental states. Robots, which are the main component of AI, cannot read human feelings. No wonder researchers and ethicists at the Montreal AI Ethics Institute argue that robots lack the autonomy to take part in society on their own. AI has limited capacity to approximate emotional understanding and empathic responses (Doraiswamy et al (2020), Researchgate.net 2020) Searle (1980) also challenges the claim that "the appropriately programmed computer with the right inputs and outputs would thereby have a mind in the same sense human beings have minds" with his Chinese room argument, which attempts to show that even a computer capable of perfectly simulating human behavior would not have a mind (Stanford Encyclopedia of Philosophy Archive 2025).

Counselling is an effective, human relations profession, talking therapy/ Interaction in a counselling session x-ray and conjures feelings, and the client reads the counselor's verbal and non-verbal signals to draw inferences about the counselor and the process. The extent to which AI offers that opportunity is yet to be ascertained. It has been documented that AI tools in counselling can assist in providing basic counselling support as well as carrying out initial assessments through virtual therapy assistants (VTA). The question is, are they available in our setting? Most universities in Nigeria still use traditional methods in their counselling practices. The level of technological know-how that is necessary and required for full application of AI is not yet available, and counsellors too may not even know the various AI tools that can facilitate quality and efficient counselling outcomes.

Moreover, the cost of providing the technology and expertise is massive, and this government that pays lip service to welfare and service delivery may disappoint in sponsoring the project of introducing artificial intelligence tools in counselling. Recommendations

1. There is a feeling of uncertainty conjured by Pendy, (2023) and Raczka, (2025) argument that "AI therapists can't replace the human touch; Artificial intelligence offers many benefits to society, but it should not replace the human support that is essential to mental health care ('It cannot provide nuance': UK experts warn AI therapy chatbots are not safe)." It cannot replicate genuine human empathy, and there is a risk that it creates an illusion of connection rather than meaningful interaction." This warrants a suggestion that the use of Artificial Intelligence tools should be supplementary and complementary to the traditional counselling methods.
2. Moreover, the Nigerian environment is beset with inadequate funding of institutions and or counselling settings, inadequate ICT infrastructure, poor ICT/digital literacy skills, weak internet connectivity, fear of change, attachment to the traditional counselling patterns, and lack of priority of use of Artificial Intelligence tools by counselors. Most disturbing is the inadequate or ineffective policy frameworks on the use of AI in counseling. There is, therefore, a need for training and articulation of implementation strategies to maximize their integration and impact within clinical settings.
3. This invariably calls for massive government funding and investment in the programme. There is also a need for further research to improve AI/s emotional responsiveness and adaptability.

References

- AI and Regent University, (2024). AI: Artificial Intelligence. <https://libguides.regent.edu>
- Al-qiam , H. A. A., et al. (2023). Artificial Intelligence and Its Relationship to Teaching School and University Mathematics in Jordan, *International Journal of Membrane Science and Technology*
- Arend Hintze., 2016, Evolution of Natural and Artificial Intelligence, Falun Dalarna University
- Awati, R. Yasar K. (2025). What is a neural network? *Techtarget.com SearchEnterpriseAI and SearchNetworking.*
- Blanton (2023). Fox News Poll: More see bad than good in AI*
- British Association for Counselling and Psychotherapy (2007). Introduction to Counselling and Psychotherapy. BACP <https://www.bacp.co.uk>.
- Cabrera-Solano et al (2023). Students' Perception of Artificial Intelligence Technology to Develop 21st Century Learning Skills ResearchGate* <https://www.researchgate.net>
- Copeland (2025). Artificial Intelligence (AI). Definitions, Examples, Types, Applications: Britannica* <https://www.Britannica.com>
- Coursera (2026) 4Types of Neural Network Architecture Coursera* <https://www.coursera.org>
- Doraiswamy PM, et al (2020). Artificial intelligence and the future of psychiatry: insights from a global physician survey. Artif Intell Med. (2020) 102:101753. 10.1016/j.artmed.2019.101753 [DOI] [PubMed]*
- Ehrhardt,M.(2025) The Human Touch: Why AI will Never Fully Replace Human Creativity*
- Fragkiadaki & Strauss, (2012). Termination of Psychotherapy ResearchGate.net*
- Fulmer, R.(2019). Artificial intelligence and counseling: Four levels of implementation. Theory & Psychology 29(7):095935431985304. Northwestern University, 618 Library Place, Evanston, IL 60201, USA.*
- Gado S, Kempen R, Lingelbach K, Bipp T. Artificial intelligence in psychology: how can we enable psychology students to accept and use artificial intelligence? Psychol Learn Teach. (2022) 21(3). 10.1177/14757257211037149 [DOI] [Google Scholar]*
- Gocen & Aydemir (2020). Artificial Intelligence in Education and School ResearchGate* <https://www.researchgate.net>
- Hackney Cormier (2005). Defining the Counselling Process and Its Stages. PositivePsychology.com* <https://positivepsychology.com>
- Harry, A. (2023). Role of AI in Education. Interdisciplinary Journal and Humanity (INJURITY) 2(3):260-268 DOI:10.58631/injury.v2i3.52*
- IPSOS (2022). Global Opinions and Expectations about Artificial Intelligence in Brazil. https://www.ipsos.com*
- Jeremy, S. (2021). Defining the Counselling Process and Its Stages. PositivePsychology.com* <https://positivepsychology.com>
- Khan, B. et al (2023). Drawbacks of Artificial Intelligence and their Potential Solutions in the Health Sector Krishnan, n.d.; Lesley University, n.d.; American Psychological Association, (2008):*
- Marr, B. & Co (2024). Understanding the 4 Types of Artificial Intelligence. Bernardmarr.com.*
- Mohammed & Watson (2019). Towards Inclusive Education in the Age of Artificial Intelligence. Chicago. ResearchGate* <https://www.researchgate.net>
- McCorduck (2004). Dartmouth workshop pp. 111–136, NRC (1999, pp. 200–201)*
- Ofem et al (2024) Artificial intelligence (AI) in Academic Research. A Multi-group Analysis of Students' Awareness and Perceptions using Gender and Programme Type. Journal of Applied Learning and Teaching. DOI:10.37074/jalt.2024.7.1.9*
- OECD The Impact of Artificial Intelligence on the Labour Market (EN) https://www.oecd.org*
- Ofozoba et al, (2024) Education, Leadership, and Artificial intelligence: implications for Adaptive Learning Outcomes Researchgate.net Chukwuemeka Odumegwu Ojukwu University*
- Okoye, C.C. et al (2024). Awareness and Use of Artificial Intelligence Tool for Learning the English Language among Secondary School Students in Awka South LGA, Anambra State.*
- Pan, Y. (2024). Different Types of Neural Networks and Applications: Evidence from Feedforward, Convolutional, and Recurrent Neural Networks. Highlights in Science Engineering Technologies85:247-255 DOI:10.54097/6rn1wd81*
- Park et al. (2024). Effectiveness of artificial intelligence in detecting and managing depressive disorders: Systematic review Journal of Affective Disorders Vol 361 pp 445-456*
- Raczka (2025). AI Therapists can't replace the human touch/Mental Health. The Guardian* <https://www.the-guardian.com>
- Russell, S.J. & Norvig, P. (2021). Dartmouth workshop p. 18)*
- Russell, S. J. & Norvig, P. (2022). Artificial Intelligence: A Modern Approach. 4th ed. Pearson (2022*

- Simon, F. (2020). The Non-existent Moral Agency of Robots- A Lack of Intentionality and Free Will. Montreal AI Ethics Institute. <https://montrealetics.ai>
- Sheik, H. (2021). Artificial Intelligence: Definition and Background. Springer. <https://link.springer.com>
- Spyska, L. (2025). The use of artificial intelligence in psychotherapy: development of intelligent therapeutic systems. bmcpsychology.biomedcentral.com
- Zalta, E. N. & Nodelman, U. (2025) Stanford Encyclopedia of Philosophy Masthead Editorial Board Stanford University
- Stryker, C. (2017). What is a recurrent neural network (RNN) AI Model, IBM Think, California?
- Stryker, C. & Kavlakoglu, E. (2024). What is artificial intelligence (AI)? Business Development Partnerships. IBM Research
- Stina M. *Artificial intelligence in career guidance: impacts and prospects for professional practice. J Educ Technol Soc. (2021) 24(3):45–56.*
- Turing, A.M(1950) Computing Machinery and Intelligence. Mind 49: 433-460 courses.cs.umbc.edu
- The Alan Turing Institute (1950). Understanding Artificial Intelligence Ethics and Safety. <https://www.turing.ac.uk> PDF.
- Ugwoke, M.E., Eloanyi, B.C. Eziokwu, P.N. & Eneze, B.N. (2025) "Application of Artificial Intelligence in Assessment of Academic Achievement of Students of Private Universities in the South East Zone of Nigeria" INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH AND ANALYSIS 8(04) Godfrey Okoye University, Enugu State Nigeria.
- Uwaifo, V, Uddin (2009). Technology and Development in Nigeria: The Missing Link Journal of Human Ecology 28(2): 107-111. Ambrose Alli University
- Wartman, S.A. & Combs, D. (2018). Medical Education Must Move from the Information Age to the Age of Artificial Intelligence. Academic Medicine,93,1107-1109. <https://doi.org/10.1097/ACM.0000000000002044>
- Wikipedia (2025). Artificial Intelligence <https://en.wikipedia.org>