

ARTIFICIAL INTELLIGENCE AS A CO-COUNSELLOR IN COUNSELLING SERVICES AND EDUCATIONAL MEASUREMENT AND EVALUATION: EMERGING TRENDS AND ETHICAL CONSIDERATIONS

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Abstract

This paper examined the emerging role of AI as a collaborative partner in guidance services and educational measurement and evaluation within the context of the digital age. It provided conceptual clarifications of Artificial Intelligence, guidance services, educational measurement and evaluation, and AI as a co-counsellor. The paper further highlighted emerging AI applications, including machine learning, natural language processing, predictive analytics, adaptive assessment, educational data mining, and generative AI, and their implications for professional practice. Although AI offers opportunities for improving accessibility, personalization, administrative efficiency, assessment quality, and early identification of learners requiring support, its implementation raises ethical concerns relating to data privacy, algorithmic bias, transparency, accountability, digital inequality, and the preservation of human empathy and professional judgment. The paper argued that AI should be regarded as an intelligent decision-support system that enhances rather than replaces the roles of counsellors and educational evaluators. It concluded that responsible AI integration requires ethical governance, continuous professional development, effective institutional policies, and sustained human oversight to ensure equitable, trustworthy, and learner-centred guidance and evaluation services.

Keywords: *AI, Co-Counsellor, Guidance Services, Educational Measurement and Evaluation*

Introduction

Artificial Intelligence (AI) has emerged as one of the most transformative technological innovations of the twenty-first century, influencing virtually every sector of society, including education. Through advances in machine learning, natural language processing, predictive analytics, and generative AI, intelligent systems are increasingly supporting decision-making, automating routine tasks, analyzing large datasets, and improving organizational efficiency (Russell & Norvig, 2021; UNESCO, 2023). Within education, AI is reshaping teaching, learning, administration, assessment, and student support services by enabling more personalized, efficient, and evidence-informed educational practices (Holmes et al., 2022; OECD, 2021).

Among the educational domains undergoing significant transformation are guidance services and educational measurement and evaluation. Guidance services have traditionally relied on professional counsellors to facilitate students' academic, career, personal-social, and emotional development through individualized support and evidence-based interventions (American School Counselor Association [ASCA], 2022). Similarly, educational measurement and evaluation have focused on assessing learning outcomes, monitoring educational quality, informing instructional improvement, and supporting institutional decision-making through valid and reliable assessment practices (Nitko & Brookhart, 2018).

Recent developments in AI have expanded the capacity of educational institutions to deliver these services more effectively. AI-powered systems can analyze learners' academic

records, behavioural patterns, interests, abilities, and assessment data to support career planning, academic advising, early identification of learners at risk, adaptive assessment, learning analytics, and institutional evaluation (Luckin, 2018; Siemens & Baker, 2012). Consequently, AI is increasingly functioning as a co-counsellor by complementing the expertise of professional counsellors and educational evaluators rather than replacing them.

Despite these opportunities, integrating AI into guidance services and educational measurement and evaluation presents important ethical, legal, and professional concerns. Issues relating to data privacy, algorithmic bias, transparency, accountability, digital inequality, and the preservation of human judgment continue to shape contemporary debates regarding responsible AI adoption in education (Floridi & Cows, 2019; UNESCO, 2023). These concerns underscore the importance of ensuring that AI remains a supportive technology that strengthens professional practice while safeguarding learners' rights, dignity, and well-being.

This paper examines the emerging role of Artificial Intelligence as a co-counsellor in guidance services and educational measurement and evaluation. Specifically, it clarifies the major concepts, explores emerging AI applications, highlights associated opportunities and ethical considerations, and discusses implications for professional practice, educational policy, and future research in the digital age.

Conceptual Clarifications

Artificial Intelligence

Artificial Intelligence (AI) refers to the branch of computer science concerned with designing intelligent systems capable of performing tasks that ordinarily require human intelligence, including learning, reasoning, problem-solving, language processing, pattern recognition, and decision-making (Russell & Norvig, 2021). Contemporary AI systems employ machine learning, deep learning, natural language processing, computer vision, predictive analytics, and generative models to analyze large volumes of data and produce intelligent outputs that support human decision-making (OpenAI, 2023).

Within education, AI has evolved from supporting instructional activities to enhancing administration, assessment, student support, and institutional management. AI-powered technologies facilitate personalized learning, intelligent tutoring, automated scoring, learning analytics, adaptive testing, and educational data mining, thereby improving efficiency, accuracy, and evidence-based educational practice (Holmes et al., 2022; Luckin, 2018). Accordingly, AI should be viewed as an enabling technology that complements rather than replaces professional expertise.

Guidance Services

Guidance services refer to organized professional programmes designed to promote learners' academic, career, personal-social, and emotional development within educational institutions. These services assist students in understanding themselves, making informed educational and occupational decisions, developing interpersonal competencies, addressing personal challenges, and realizing their full potential (ASCA, 2022).

Comprehensive guidance services include orientation, appraisal, information, counselling, placement, consultation, referral, and follow-up activities that collectively foster holistic learner development. With the advancement of digital technologies, guidance services increasingly incorporate AI-supported tools to enhance accessibility, communication, case management, career exploration, and early identification of learners requiring intervention. Nevertheless, professional counsellors remain responsible for therapeutic relationships, ethical decision-making, and individualized support.

Educational Measurement and Evaluation

Educational measurement and evaluation involve the systematic collection, analysis, interpretation, and use of quantitative and qualitative information to determine learners' achievement, instructional effectiveness, programme quality, and institutional performance (Nitko & Brookhart, 2018). Educational measurement focuses on quantifying learning outcomes through valid and reliable assessment instruments, whereas educational evaluation involves making informed judgments regarding the effectiveness and value of educational programmes, policies, and practices.

Advances in AI have transformed educational measurement and evaluation through automated scoring, adaptive testing, predictive analytics, educational data mining, and learning analytics. These innovations support more timely, accurate, and evidence-informed assessment practices while improving instructional planning, quality assurance, and institutional decision-making (Siemens & Baker, 2012; Romero & Ventura, 2020).

Artificial Intelligence as a Co-Counsellor

Artificial Intelligence as a co-counsellor refers to the collaborative application of intelligent technologies to support professional counsellors and educational evaluators in delivering guidance services and making evidence-based decisions. Rather than replacing human professionals, AI functions as an intelligent partner by analyzing learner data, identifying academic and behavioural trends, generating personalized recommendations, supporting career exploration, facilitating early intervention, and assisting with educational assessment and evaluation (Holmes et al., 2022; UNESCO, 2023).

AI-powered applications, including conversational agents, virtual assistants, predictive analytics, and generative AI systems, enhance professional practice by improving efficiency, accessibility, consistency, and data-informed decision-making. However, AI lacks the empathy, ethical reasoning, cultural sensitivity, and contextual understanding that characterize effective counselling relationships and sound educational judgment. Consequently, AI should be regarded as a complementary decision-support tool, while counsellors and educational evaluators retain responsibility for ethical practice, interpretation of assessment results, and the overall welfare and development of learners.

Theoretical Perspective

This paper is anchored on Person-Centred Theory, the Technology Acceptance Model (TAM), and Evidence-Based Decision-Making (EBDM) Theory, which collectively explain the ethical, effective, and responsible integration of Artificial Intelligence (AI) into guidance services and educational measurement and evaluation. Person-Centred Theory emphasizes that AI should support rather than replace the empathy, ethical judgment, and therapeutic relationships provided by professional counsellors (Rogers, 1951, 1957; Holmes et al., 2022). TAM explains that the adoption of AI depends largely on users' perceptions of its usefulness and ease of use, highlighting the importance of adequate training, institutional support, and user-friendly technologies (Davis, 1989; Venkatesh & Davis, 2000). EBDM Theory further underscores that AI enhances professional practice by providing reliable data and predictive insights to support guidance, assessment, and educational evaluation, while human professionals remain responsible for interpreting AI-generated information within ethical, legal, and contextual frameworks (Pfeffer & Sutton, 2006; Siemens & Baker, 2012). Together, these theories support a balanced human–AI partnership in which AI strengthens evidence-informed practice without replacing professional expertise, learner-centred care, or ethical decision-making.

Artificial Intelligence as a Co-Counsellor in Guidance Services

Artificial Intelligence (AI) is increasingly transforming guidance services by functioning as a co-counsellor that complements the expertise of professional counsellors. Rather than replacing human counsellors, AI enhances counselling practice through intelligent data analysis, personalized recommendations, predictive modelling, automated communication, and evidence-based decision support (Holmes et al., 2022; UNESCO, 2023). AI-powered technologies facilitate timely interventions, improve service accessibility, and strengthen decision-making across the major domains of guidance services, including career counselling, academic counselling, personal-social counselling, mental health support, virtual counselling, and predictive student support. The collaborative integration of AI enables counsellors to devote greater attention to complex interpersonal and therapeutic issues while intelligent systems perform routine analytical and administrative tasks.

1. **AI in Career Counselling:** AI enhances career counselling by analyzing learners' interests, abilities, academic performance, personality traits, and labour market information to generate personalized career recommendations. It also provides real-time information on educational opportunities, scholarships, and employment trends. However, professional counsellors remain responsible for interpreting AI-generated recommendations within learners' personal, cultural, and socioeconomic contexts to support informed career decision-making (Savickas, 2013; Brown & Lent, 2020).
2. **AI in Academic Counselling:** AI supports academic counselling through learning analytics and predictive models that monitor students' academic performance, attendance, and learning behaviours. These technologies facilitate early identification of learners at risk of poor performance or dropout and recommend appropriate learning resources and academic interventions. Nevertheless, counsellors must integrate AI insights with learners' personal and contextual circumstances before making educational decisions (Siemens & Baker, 2012; Ifenthaler & Yau, 2020).
3. **AI in Personal-Social Counselling:** AI contributes to personal-social counselling by identifying behavioural patterns, monitoring student engagement, and providing psychoeducational resources that promote emotional well-being, resilience, and positive social adjustment. While AI can facilitate early identification of students requiring support, professional counsellors remain indispensable for addressing complex emotional, interpersonal, and psychosocial issues that require empathy, ethical judgment, and therapeutic relationships (Holmes et al., 2022).
4. **AI in Mental Health Support:** Artificial Intelligence strengthens school-based mental health support by facilitating the early identification of learners who may be experiencing emotional or psychological difficulties through the analysis of academic, behavioural, attendance, and self-reported data. AI-powered screening tools assist counsellors in prioritizing cases, monitoring intervention outcomes, and making timely referrals. However, AI should serve only as a decision-support and early-warning system, while qualified counsellors and mental health professionals remain responsible for psychological assessment, therapeutic intervention, crisis management, and follow-up care (World Health Organization, 2022; UNESCO, 2023).
5. **AI Chatbots and Virtual Counselling:** Advances in Natural Language Processing have enabled AI-powered chatbots and virtual counselling platforms to provide immediate responses to routine enquiries, psychoeducational information, appointment scheduling, and career guidance. These technologies improve access to counselling services, particularly for students with limited access to face-to-face support. Nevertheless, AI chatbots cannot replicate genuine empathy, ethical judgment, or complex therapeutic interactions. They should therefore operate under professional supervision and function

as complementary tools rather than substitutes for professional counsellors (OpenAI, 2023; UNESCO, 2023).

6. **Predictive Analytics for Student Support:** Predictive analytics enables counsellors to analyze educational data to identify learners at risk of academic failure, absenteeism, behavioural problems, or school dropout. By supporting early intervention, individualized support, resource allocation, and programme evaluation, AI enhances the effectiveness of guidance services. However, predictive models should be interpreted cautiously to avoid bias and inaccurate conclusions. Professional counsellors must validate AI-generated insights using multiple sources of evidence to ensure ethical, equitable, and learner-centred interventions (Ifenthaler & Yau, 2020; Romero & Ventura, 2020).

Artificial Intelligence in Educational Measurement and Evaluation

Artificial Intelligence (AI) is transforming educational measurement and evaluation by improving the accuracy, efficiency, objectivity, and timeliness of assessment processes. AI supports educational measurement through intelligent assessment design, automated scoring, adaptive testing, learning analytics, educational data mining, and institutional evaluation, thereby enhancing evidence-based educational decision-making. Rather than replacing measurement specialists, AI serves as a decision-support tool that complements professional expertise through advanced data analysis and predictive capabilities (Russell & Norvig, 2021; Holmes et al., 2022).

1. **AI-Assisted Assessment:** AI enhances formative and summative assessment by supporting test administration, scoring, performance analysis, and immediate feedback. It enables continuous monitoring of learners' academic progress through the analysis of classroom activities, assignments, quizzes, examinations, and online learning behaviours. By integrating multiple indicators of performance, AI contributes to more comprehensive and valid assessment while supporting instructional planning and learner development. Nevertheless, educators remain responsible for ensuring that assessment practices are valid, fair, and aligned with educational objectives (Luckin, 2018; UNESCO, 2023).
2. **Automated Scoring:** Automated scoring employs machine learning and natural language processing to score both objective and selected constructed-response assessments efficiently and consistently. AI significantly reduces marking time, minimizes human error, and improves scoring reliability. However, it may not fully capture higher-order thinking, creativity, originality, or contextual nuances in learners' responses. Consequently, professional human oversight remains essential, particularly in high-stakes assessments, to ensure fairness, validity, and accurate interpretation of assessment outcomes (Russell & Norvig, 2021; OpenAI, 2023).
3. **Learning Analytics:** Learning analytics involves the systematic collection, analysis, and interpretation of learners' educational data to improve learning outcomes and instructional practices (Siemens & Baker, 2012). AI enhances learning analytics by processing large datasets, including attendance records, assessment results, classroom participation, and online learning activities, to identify learners' strengths, weaknesses, and support needs (Ifenthaler & Yau, 2020). These insights enable educators and counsellors to implement targeted interventions, monitor student progress, and identify learners at risk of poor academic performance or school dropout. However, the use of learning analytics must comply with ethical principles relating to data privacy, confidentiality, and informed consent (UNESCO, 2023).
4. **Adaptive Testing:** Adaptive testing is an AI-driven assessment approach that adjusts the difficulty and sequence of test items according to a learner's performance, thereby

improving measurement precision and testing efficiency (van der Linden & Glas, 2010). AI algorithms estimate learners' ability levels in real time, reducing test length while enhancing diagnostic accuracy and learner engagement. Adaptive testing provides detailed information on learners' competencies to support educational decision-making. Nevertheless, its successful implementation requires robust technological infrastructure, secure testing platforms, comprehensive item banks, and continuous psychometric validation.

5. **Test Development and Validation:** Artificial Intelligence supports test development and validation by assisting in item generation, item analysis, content evaluation, and bias detection, thereby improving the quality of educational assessments (OECD, 2021). AI analyses psychometric properties such as item difficulty, discrimination, distractor effectiveness, and response patterns to strengthen the reliability and validity of assessment instruments. Despite these capabilities, educational measurement specialists remain responsible for developing test specifications, evaluating validity evidence, interpreting psychometric results, and ensuring alignment with curriculum objectives and professional standards.
6. **Educational Data Mining:** Educational Data Mining (EDM) applies AI and computational techniques to analyze large educational datasets and identify patterns that support teaching, learning, and institutional improvement (Romero & Ventura, 2020). AI-powered EDM examines learners' academic, behavioural, and demographic data to identify factors influencing academic success, retention, and institutional performance. These insights support curriculum evaluation, instructional improvement, resource allocation, and evidence-based educational planning. Effective implementation, however, requires strong data governance, transparency, and adherence to ethical standards.
7. **Institutional Evaluation:** Artificial Intelligence strengthens institutional evaluation by analyzing performance indicators related to student achievement, staff performance, resource utilization, financial management, quality assurance, and accreditation (Holmes et al., 2022). AI-generated reports and predictive models support educational leaders in monitoring institutional performance, evaluating programmes, and developing strategic improvement plans. While AI enhances institutional accountability and evidence-based decision-making, final evaluation and policy decisions should remain the responsibility of educational leaders and evaluation experts to ensure ethical, contextual, and balanced interpretation of institutional data.

Emerging Trends

Artificial Intelligence (AI) is reshaping guidance services and educational measurement and evaluation through innovations that promote personalized support, intelligent collaboration, predictive analytics, and evidence-based decision-making. These developments enhance the quality, accessibility, and effectiveness of educational services while supporting learner-centred practice. However, their successful implementation requires ethical governance, professional competence, and continuous human oversight (Holmes et al., 2022; UNESCO, 2023).

1. **Generative Artificial Intelligence:** Generative AI, powered by large language models, supports guidance services by generating career guidance materials, counselling reports, intervention plans, and psychoeducational resources. In educational measurement and evaluation, it assists in developing assessment items, scoring rubrics, feedback reports, and instructional materials, thereby improving efficiency. Nevertheless, concerns regarding accuracy, bias, academic integrity, and copyright

necessitate professional review of AI-generated outputs (OpenAI, 2023; UNESCO, 2023).

2. **Intelligent Tutoring Systems:** Intelligent Tutoring Systems provide personalized instruction by adapting learning experiences to learners' abilities and progress. The data generated by these systems support counsellors in identifying students requiring academic assistance and enable educational evaluators to improve assessment practices and instructional planning through evidence-based insights (Luckin, 2018).
3. **Explainable Artificial Intelligence:** Explainable Artificial Intelligence (XAI) enhances transparency by ensuring that AI-generated recommendations and decisions can be understood and justified by users. In guidance services and educational evaluation, explainability strengthens accountability, promotes stakeholder trust, facilitates ethical decision-making, and minimizes algorithmic bias (Kaur et al., 2023).
4. **AI-Powered Decision Support:** AI-powered decision-support systems analyze educational data from multiple sources to generate evidence-based recommendations for counselling, assessment, institutional evaluation, and educational planning. These systems improve the quality and timeliness of professional decision-making while allowing educators to focus on complex analytical and interpersonal responsibilities (Russell & Norvig, 2021).
5. **Personalized Guidance:** AI enables personalized guidance by analyzing learners' academic performance, interests, abilities, and developmental needs to provide individualized career, academic, and psychosocial support. Such tailored interventions enhance learner engagement, improve educational outcomes, and promote informed decision-making (Holmes et al., 2022).
6. **Competency-Based Assessment:** AI supports competency-based assessment by continuously monitoring learners' knowledge, skills, critical thinking, communication, and other competencies through multiple performance indicators. This approach provides comprehensive learner profiles that improve feedback, curriculum development, instructional planning, and educational decision-making while promoting lifelong learning and workforce readiness (OECD, 2021).

Benefits and Opportunities

The integration of Artificial Intelligence (AI) into guidance services and educational measurement and evaluation offers significant opportunities to enhance educational quality, institutional effectiveness, and learner outcomes. By complementing the expertise of counsellors and educational evaluators, AI improves accessibility, efficiency, personalization, and evidence-based educational practice.

1. **Improved Accessibility to Educational Services:** AI enhances access to guidance and assessment services by providing continuous access to career information, academic support, and psychoeducational resources through virtual assistants and digital platforms. This is particularly beneficial in institutions with limited professional personnel or geographical constraints (UNESCO, 2023).
2. **Personalized Learner Support:** AI analyses learners' academic performance, interests, abilities, and developmental needs to provide individualized guidance, assessment, and intervention. Personalized support promotes learner engagement, improves academic achievement, and strengthens career development (Holmes et al., 2022).
3. **Enhanced Efficiency and Productivity:** AI automates routine tasks such as appointment scheduling, documentation, report generation, scoring, data analysis, and record management. This reduces administrative workload and enables educational

professionals to focus on learner support, instructional improvement, and professional practice.

4. **Evidence-Based Decision-Making:** AI strengthens educational decision-making by analyzing large datasets to generate timely and objective insights that support planning, intervention, programme evaluation, resource allocation, and institutional management (Russell & Norvig, 2021).
5. **Early Identification and Preventive Intervention:** Predictive analytics enables AI to identify learners at risk of academic failure, absenteeism, behavioural difficulties, or emotional challenges, thereby facilitating timely counselling, targeted interventions, and improved educational outcomes (Ifenthaler & Yau, 2020).
6. **Improved Assessment Quality:** AI enhances assessment through automated scoring, adaptive testing, intelligent feedback, psychometric analysis, and continuous performance monitoring, thereby improving the validity, reliability, efficiency, and consistency of educational measurement.
7. **Support for Institutional Improvement:** AI provides educational leaders with comprehensive data on learner achievement, programme effectiveness, staff performance, resource utilization, and quality assurance, thereby supporting strategic planning, accreditation, and continuous institutional improvement.
8. **Professional Support for Educational Practitioners:** AI serves as an intelligent professional assistant by supporting report writing, assessment interpretation, intervention planning, educational research, programme evaluation, and career information management, thereby improving professional productivity and evidence-informed practice.

Ethical Considerations and Challenges

The integration of Artificial Intelligence (AI) into guidance services and educational measurement and evaluation offers substantial benefits but also presents important ethical, legal, professional, and technological challenges. Since AI increasingly informs educational decisions affecting learners' academic achievement, career development, and well-being, its implementation must uphold the principles of fairness, transparency, accountability, privacy, and respect for human dignity (Floridi & Cowls, 2019; UNESCO, 2023).

1. **Privacy and Confidentiality:** AI systems process large volumes of sensitive learner data, including academic records, counselling information, assessment results, and personal details. Educational institutions must therefore ensure informed consent, secure data management, restricted access, and compliance with data protection regulations to safeguard learners' privacy and confidentiality (UNESCO, 2023).
2. **Algorithmic Bias:** AI systems may reproduce biases embedded in training data, leading to unfair recommendations, assessment outcomes, or educational decisions. Regular algorithmic auditing, diverse datasets, and continuous validation are essential to minimize bias and promote equitable educational practices (Floridi & Cowls, 2019; Kaur et al., 2023).
3. **Fairness in Assessment:** AI-assisted assessments should provide valid, reliable, and equitable evaluation for all learners regardless of gender, ethnicity, language, disability, or socioeconomic background. Human review remains essential to ensure psychometric quality, appropriate interpretation, and fairness in assessment decisions (AERA, APA, & NCME, 2014).
4. **Transparency:** Educational stakeholders should understand how AI systems generate recommendations, assign scores, and support decision-making. Explainable AI promotes trust, accountability, and informed educational practice by making AI processes transparent and interpretable (European Commission, 2021).

5. **Accountability:** Although AI supports educational decision-making, responsibility for educational outcomes remains with counsellors, educators, evaluators, and institutional leaders. Effective governance requires clear policies, quality assurance mechanisms, regular system evaluation, and accountability for AI-assisted decisions (UNESCO, 2023).
6. **Human Oversight:** AI should complement rather than replace professional judgment. Counsellors and educational evaluators must review AI-generated recommendations to ensure that educational decisions reflect ethical principles, contextual understanding, and learners' best interests (Holmes et al., 2022).
7. **Professional Competence:** Effective AI integration requires continuous professional development in AI literacy, data analytics, digital ethics, cybersecurity, and responsible AI governance. Educational professionals must understand both the capabilities and limitations of AI to apply it responsibly (UNESCO, 2023).
8. **Digital Equity:** Unequal access to digital infrastructure, internet connectivity, and technological resources may widen educational inequalities. Governments and educational institutions should invest in digital infrastructure and digital literacy programmes to ensure equitable access to AI-supported educational services (OECD, 2021).

Conclusion

Artificial Intelligence (AI) has become a transformative tool in guidance services and educational measurement and evaluation, enhancing learner support, assessment practices, and evidence-based educational decision-making. Through innovations such as generative AI, intelligent tutoring systems, predictive analytics, automated scoring, learning analytics, adaptive testing, and AI-powered decision-support systems, AI improves the efficiency, accuracy, personalization, and quality of educational services, thereby strengthening educational outcomes and institutional effectiveness (Holmes et al., 2022; UNESCO, 2023). Despite these advantages, the adoption of AI presents ethical and professional challenges, including concerns related to privacy, confidentiality, algorithmic bias, fairness, transparency, accountability, digital equity, and professional competence. Addressing these challenges requires robust ethical governance, continuous professional development, secure data management, and sustained human oversight.

The paper concludes that AI should be viewed as an intelligent co-counsellor and professional decision-support tool that complements rather than replaces human expertise. The integration of AI into counselling services and in educational measurement and evaluation could promote ethical, learner-centred, equitable, and evidence-based educational practice in the digital era.

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