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**Generative AI for Education and Research:
Multidisciplinary Perspectives on Applications,
Ethics and Future Directions**

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(Blended Mode)

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Mother Teresa Women's University
Kodaikanal, Tamil Nadu, India

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CONTENTS

Sl. No.	Title & Author	Page No.
1	HUMAN INTELLIGENCE AND GENERATIVE AI IN SCIENCE EDUCATION: SCIENCE TEACHERS' READINESS FOR AI-ASSISTED CLASSROOMS IN THE ERA OF HUMAN-AI COLLABORATION Anshika Akshaysinh Chudasama	1
2	EXPLORING THE UTILIZATION OF GENERATIVE AI TOOLS IN ACADEMIC WRITING FOR PUBLICATION PURPOSES AMONG PH.D. SCHOLARS OF H.N.B. GARHWAL UNIVERSITY, UTTARAKHAND Ms. Snehal Soni, Research Scholar, Dr. Deivam M,	2
3	REIMAGINING TEACHER PROFESSIONAL DEVELOPMENT THROUGH GENERATIVE AI: AN AI-INTEGRATED FRAMEWORK FOR STRENGTHENING TEACHER CAPACITY UNDER NEP 2020 Dr. Krithika M C, Dr. Karuna K Simha	3
4	GENERATIVE AI IN EDUCATIONAL RESEARCH: A MIXED-METHOD FRAMEWORK FOR ETHICAL, SUSTAINABLE AND HUMAN-CENTRED RESEARCH PRACTICES Dr. Nambaru Mary Suneetha	4
5	THE ROLE OF GENERATIVE AI IN MODERN HUMAN RESOURCE MANAGEMENT Dr. Nayeemuddin Ahmed, Asif Mazumder	5
6	THE ALGORITHMIC RENAISSANCE: PARADIGMS OF GENERATIVE AI IN THE HUMANITIES AND SOCIAL SCIENCES IN INDIAN SCENARIO Dr. A. Balamallika Devi	6
7	GENERATIVE ARTIFICIAL INTELLIGENCE-ENHANCED AGRICULTURAL FORECASTING: A STATISTICAL AND DATA-DRIVEN FRAMEWORK FOR FOOD GRAIN PRODUCTION IN INDIA Dr. Sameerabanu P,	7
8	GENERATIVE AI AS A PEDAGOGICAL TOOL: TRANSFORMING TEACHING-LEARNING PRACTICES IN SCIENCE EDUCATION Dr. Yashpal Dashrath Netragaonkar, Dr. Vishwanath Karad	8

9	ENHANCING PEDAGOGICAL REASONING THROUGH AI-SCAFFOLDED LESSON PLANNING Dr. A. Rajeswari	9
10	INTEGRATION OF AI TOOLS AMONG HIGHER EDUCATION STUDENTS Dr. Arulselvi V, Dr. A. Kavitha	10
11	PROBLEMS IN LEARNING ENGLISH AMONG HIGHER SECONDARY STUDENTS IN SALEM DISTRICT Dr. S. Gerald	11
12	MATHEMATICS TEACHERS' READINESS TO ADOPT GENERATIVE AI FOR LESSON PREPARATION Dr. A. Vences Cyril & Mr. S. Arockia Samy	12
13	STRENGTHENING FOUNDATIONAL LITERACY AND NUMERACY IN INDIA: REFLECTIONS ON THE NIPUN BHARAT MISSION Durgaprasad Sahoo, Dr. M Sridevi	13
14	GENERATIVE ARTIFICIAL INTELLIGENCE FOR IMPROVING SOCIAL COMMUNICATION SKILLS AMONG STUDENTS WITH AUTISM SPECTRUM DISORDER: A CASE STUDY S. Gowsalya, Dr. C. Renuga Devi	14
15	GENERATIVE AI IN TEACHING AND LEARNING OF CHILDREN WITH AUTISM SPECTRUM DISORDER J. Evanglin Benitta, J. Julie Jenifer	15
16	GENERATIVE AI USAGE IN RELATION TO PERSONALIZED LEARNING AMONG COLLEGE STUDENTS L. Anusha, Dr. T. Sivasakthi Rajammal	16
17	GENERATIVE AI AS A TEACHING ASSISTANT FOR TEACHING CHILDREN WITH INTELLECTUAL DISABILITY: REDEFINING THE ROLE OF TEACHERS IN THE DIGITAL AGE Karthikai Selvi. S,	17
18	GENERATIVE AI IN TEACHER EDUCATION: EXPLORING STRESS MANAGEMENT, SELF-REGULATION AND PROFESSIONAL DEVELOPMENT AMONG PROSPECTIVE TEACHERS A. ThiruSelvi, A. Veliappan	18

19	EDUCATIONAL NEUROSCIENCE AND GENERATIVE AI: BUILDING PERSONALISED, INCLUSIVE AND FUTURE-READY LEARNING ENVIRONMENTS Lisha Appukuttan, Dr Sreevidya Nair N	19
20	GENERATIVE AI AS A LEARNING PARTNER: EXPLORING STUDENTS' PERCEPTIONS, USAGE PATTERNS AND ACADEMIC OUTCOMES IN HIGHER EDUCATION Ms. M. Sandhya, Dr. Yashpal D. Netragaonkar	20
21	SECONDARY SCHOOL STUDENTS ADDICTION TO SMARTPHONES AND GENERATIVE AI: BENEFITS OF EDUCATION AND ETHICAL CONCERNS Navroop Kour	21
22	GENERATIVE AI FOR TEACHING AND LEARNING: A SYSTEMATIC LITERATURE REVIEW Parthiban G	22
23	SOCIAL CONFORMITY AND METACOGNITIVE ENGAGEMENT IN ENGLISH LANGUAGE LEARNING THROUGH GENERATIVE AI TOWARDS INDEPENDENT KNOWLEDGE CONSTRUCTION R. Bhuvaneswari , Dr. A. Veliappan	23
24	GENERATIVE AI-SUPPORTED PERSONALIZED LEARNING AND ITS ROLE IN ADDRESSING MATHEMATICS ANXIETY AMONG SECONDARY SCHOOL STUDENTS- A NARRATIVE REVIEW. Ranjna Rani, Dr. Shalini	24
25	AWARENESS OF ARTIFICIAL INTELLIGENCE AMONG HIGHER SECONDARY STUDENTS IN MADURAI DISTRICT Shahana V, Mrs. L. Dhivya	25
26	GENDER STEREOTYPE OF VOICE ASSISTANTS: A CASE STUDY Sutapa Garai, Dr. Sarita Anand	26
27	GENERATIVE AI AS A PEDAGOGICAL SUPPORT TOOL FOR PRESCHOOL TEACHERS ENHANCING MEANINGFUL LEARNING THROUGH PLAY-BASED PEDAGOGY Tejaswini A	27
28	REGIONAL DISPARITIES IN POST-INDEPENDENCE KERALA SCHOOL EDUCATION: POLICY FRAMEWORKS FOR AI LITERACY, TEACHER TRAINING, AND EQUITY Veena P. S, Prof. (Dr.) Sreekala. S	28

29	BUILDING AI-READY HIGHER EDUCATION INSTITUTIONS: A FRAMEWORK FOR TEACHING, RESEARCH, AND GOVERNANCE Dr. T. Malliga	29
30	THE FUTURE OF HUMAN-CENTERED COUNSELLING IN THE AI ERA Abi A, Dr. T. S. Reena Ruby	30
31	AI FOR MONITORING AND ADDRESSING SYSTEMIC BIASES IN MEDIA CONTENT Dr. R. Sahaya Mary, Ms. V. Priyadharsini	31
32	PERSONALIZED TEACHING AND LEARNING THROUGH GENERATIVE AI: LEARNING STYLES INTEGRATION IN HIGHER EDUCATION Ms. Ajitha M, Dr. M. Vakkil	32
33	ASSESSING THE ECONOMIC ROLE OF THE COIR INDUSTRY IN REGIONAL DEVELOPMENT: EVIDENCE FROM KERALA'S ALAPPUZHA DISTRICT Akshitha Gopan, Dr. S. Valarmathi	33
34	BEYOND THE PROMPT: SAFEGUARDING ACADEMIC INTEGRITY, FAIRNESS, AND TRUST IN THE AGE OF GENERATIVE ARTIFICIAL INTELLIGENCE Dr. M. Maruthavanan	34
35	ARTIFICIAL INTELLIGENCE AND SUSTAINABLE DEVELOPMENT GOALS: ADVANCING QUALITY EDUCATION THROUGH MOTHER TONGUE-BASED EDUCATION Bhaktilipsa Pradhan, Dr. A. Catherin Jayanthi,	35
36	GENERATIVE AI IN TEACHING AND LEARNING - PERSONALIZED LEARNING, INTELLIGENT TUTORING SYSTEMS, AI-GENERATED CONTENT FOR CLASSROOMS. Dr. Hubert Antony, Shri. Sarath Chandran R	36
37	AN URGENT GLOBAL NEED FOR MULTIDISCIPLINARY APPROACHES IN THE HUMANITIES AT UNIVERSITIES Dr. I. Ambeth	37
38	AI - GENERATED TEACHING AND LEARNING CONTENT FOR CLASSROOMS Dr. A. Sneha Benedicta	38

39	HUMAN-AI COLLABORATION IN LITERATURE REVIEW: ENHANCING RESEARCH EFFICIENCY, CRITICAL ANALYSIS AND INNOVATION Dr. M. Arunasalam	39
40	GENERATIVE ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION: INNOVATIONS IN TEACHING, LEARNING, RESEARCH, AND POLICIES Dr. T. Mahendran	40
41	TRADITIONAL KNOWLEDGE SYSTEM AND SUSTAINABLE DEVELOPMENT GOALS: DIGITAL MODERN EDUCATION, SCIENCE, TECHNOLOGY IN FUTURE CHALLENGES AND OPPORTUNITIES Dr. Munna Lal Yadav, Dr. Ram Manohar	41
42	PREPARING FUTURE TEACHERS FOR THE AI ERA: A HUMAN CENTRED PEDAGOGICAL FRAMEWORK FOR TEACHER EDUCATION Dr. J. Sasipriyaa	42
43	GENERATIVE ARTIFICIAL INTELLIGENCE IN TEACHER EDUCATION: ADVANCING PRE-SERVICE TEACHERS' LEARNING AND PROFESSIONAL DEVELOPMENT Jetendra Nath Uthansingh	43
44	EFFECTIVENESS OF GENERATIVE AI- BASED ADVERTISING IN PROMOTING EDUCATIONAL INSTITUTION Jincy Thomas, Dr. T. S. Reena Ruby	44
45	FROM STATIC TEXTBOOKS TO DYNAMIC DISCOVERY- GENERATIVE AI-POWERED PERSONALIZED LEARNING AND INTELLIGENT TUTORING Mr. K. Balasubramanian	45
46	AN IN-DEPTH SCHOLARLY ANALYSIS OF AI'S APPLICATION TO RESEARCH METHODS AND THESIS WRITING Dr. N. Sridhar	46
47	TITLE: SUPPORTING STUDENTS WITH DISABILITIES USING GENERATIVE ARTIFICIAL INTELLIGENCE A REVIEW M. Ramya	47

48	GENERATIVE AI IN HISTORICAL RESEARCH: REVOLUTIONISING ARCHIVES, MANUSCRIPTS AND HISTORICAL WRITING Om Prasad Sahu	48
49	DIGITAL TRANSFORMATION OF EDUCATION THROUGH GENERATIVE ARTIFICIAL INTELLIGENCE: EMERGING TRENDS AND FUTURE PERSPECTIVES Mr. R. Rajkumar	49
50	ARTIFICIAL INTELLIGENCE AND SELF-REGULATED LEARNING: BUILDING INDEPENDENT LEARNERS FOR ACADEMIC EXCELLENCE. Rajat Kumar Dutta, Dr. C. Anbuchelvan	50
51	ARTIFICIAL INTELLIGENCE IN ACTIVE LEARNING STRATEGIES: TRANSFORMING TEACHING, LEARNING, AND STUDENT ENGAGEMENT IN HIGHER EDUCATION Dr. P. Varun	51
52	AI-ASSISTED TAMIL READING FOR CHILDREN WITH AUTISM SPECTRUM DISORDER: A CONCEPTUAL FRAMEWORK FOR LITERACY SUPPORT Rema Shilpal, PG	52
53	MAKING THE MATHEMATICS VISIBLE: RULE-BASED COMPOSITION AND ALGORITHMIC LITERACY IN SECONDARY EDUCATION Roopa Varma T P, Prof. (Dr.) Sunil Kumar A.S.	53
54	GENERATIVE AI AND PEDAGOGICAL ADAPTATION AMONG SECONDARY SCHOOL TEACHERS IN THE POST-COVID-19 ERA: OPPORTUNITIES, CHALLENGES AND FUTURE DIRECTIONS Mrs. Sahana Sayyad, Dr. A. Rajeswari, Ph.D.,	54
55	ACADEMIC ENGAGEMENT IN THE AGE OF GENERATIVE AI: EMERGING TRENDS, CHALLENGES, AND FUTURE DIRECTIONS Sajira M B, Dr. Sreevidya Nair	55
56	ETHICAL ISSUES IN AI BASED COUNSELLING: PRIVACY, BIAS AND TRUST Santhiya K, Dr. T.S. Reena Ruby	56
57	GENERATIVE AI IN SOCIAL SCIENCE SUBJECT: APPLICATIONS, ETHICAL CONCERNS AND FUTURE DIRECTIONS	57

	Sharmila D	
58	HYBRID WIENER FILTERING APPROACH FOR BREAST CANCER DETECTION AND IMAGE ENHANCEMENT V. Jeevitha	58
59	REIMAGINING HUMAN LEARNING IN THE AGE OF GENERATIVE AI: BALANCING CRITICAL THINKING, HUMAN AGENCY AND HUMAN-AI COLLABORATION IN HIGHER EDUCATION Vedika Sharma, Dr. Raghavendra Narayan Sharma,	59
60	FUTURE DIRECTIONS AND POLICY FRAMEWORKS OF GENERATIVE AI: AI LITERACY, TEACHER TRAINING, DIGITAL EQUITY AND INSTITUTIONAL POLICIES Vennila V	60
61	ARTIFICIAL INTELLIGENCE IN RELATION TO LEVEL OF ASPIRATION AND SELF-CONCEPT OF PROSPECTIVE TEACHERS Mr. Vinothkumar V, Dr. V. Vijayakumar	61
62	BUILDING DIGITAL TRUST IN AI-ENABLED EDUCATION Mrs. S. Amuthavalli	62
63	ETHICAL READINESS FOR GENERATIVE AI AMONG STUDENT TEACHERS Baby Dharshini A., Kokila M., Kiruthika P.	63
64	ETHICAL AND RESPONSIBLE USE OF GENERATIVE ARTIFICIAL INTELLIGENCE: CHALLENGES, PRINCIPLES AND FUTURE DIRECTIONS R. Bharathi Viveharshini, P. Dharani, S. Priyanka	64
65	CULTURALLY ADAPTIVE GENERATIVE AI TUTORS FOR STEM TEACHING IN LOW-RESOURCE LANGUAGES: A FRAMEWORK FOR REGIONAL LANGUAGE (TAMIL) Dhivyadhaeshini N., Sowmiya K.	65
66	AI LITERACY AMONG UNDERGRADUATE STUDENTS Dr. S. Raja Kumar	66
67	GENERATIVE AI IN TEACHING AND LEARNING: PERSONALIZED LEARNING, INTELLIGENT TUTORING SYSTEMS, AND AI-GENERATED CONTENT FOR THE CLASSROOM	67

	R. K. Gowsika, S. Anbarasi	
68	GENERATIVE AI ACROSS DISCIPLINES APPLICATIONS IN SOCIAL SCIENCES, HUMANITIES, SCIENCES, COMMERCE, EDUCATION, AND TOURISM D. Hemas, Govarthini	68
69	GENERATIVE AI IN TEACHING AND LEARNING: PERSONALIZED LEARNING, INTELLIGENT TUTORING SYSTEMS, AND AI-GENERATED CONTENT FOR CLASSROOMS Kavitha M	69
70	GENERATIVE AI IN TEACHING AND LEARNING Kowsalya S, Elavarasi. M	70
71	AI-GENERATED CONTENT FOR CLASSROOM TEACHING AND LEARNING: FUTURE TRENDS IN EDUCATION K. Mohana	71
72	GENERATIVE AI AND INFORMAL LEARNING SPACES IN SECOND LANGUAGE LEARNING: BENEFITS, ETHICAL AWARENESS AND CHALLENGES Mrs. Ma. Vijhi, Dr. K. P. Shanmuga Vadivu	72
73	ARTIFICIAL INTELLIGENCE LITERACY: A FOUNDATION FOR FUTURE LEARNING Mrs. P. Thana Lekshmi	73
74	FUTURE DIRECTIONS AND POLICY FRAMEWORKS-AI LITERACY, TEACHER TRAINING, DIGITAL EQUITY AND INSTITUTIONAL POLICIES Pooja. S	74
75	GENERATIVE AI IN TEACHING AND LEARNING: PERSONALIZED LEARNING, INTELLIGENT TUTORING SYSTEMS, AND AI-GENERATED CONTENT FOR 21ST-CENTURY CLASSROOMS Pragadeeswari. S, Tamilarasu. C.M Tharshna. K	75
76	CHATGPT AS A TEACHING AND LEARNING TOOL S. Vidhya	76
77	ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION: OPPORTUNITIES, CHALLENGES AND FUTURE DIRECTIONS Sathish C	77

78	COMPETENCE OF TEACHER EDUCATORS IN INTEGRATING OER AND GEN AI TOOLS IN PEDAGOGICAL AND RESEARCH ACTIVITIES: A THEMATIC REVIEW R. Sathiya Priya	78
79	FUTURE DIRECTIONS AND POLICY FRAMEWORKS – AI LITERACY, TEACHER TRAINING, DIGITAL EQUITY, AND INSTITUTIONAL POLICIES S. J. Sobanapriya, K. Samyuktha	79
80	FUTURE DIRECTIONS AND POLICY FRAME WORK – AI LITERACY, TEACHER TRAINING, DIGITAL EQUITY AND INSTITUTIONAL POLICIES Srinithi. C, Sahana. K	80
81	THE ROLE OF GENERATIVE AI IN DEVELOPING TECHNO-PEDAGOGICAL SKILLS Anisha J S, Dr. K. R. Selvakumar	81
82	BUILDING TRUSTWORTHY GENERATIVE AI IN EDUCATION: ETHICAL PRINCIPLES, ACADEMIC INTEGRITY, PRIVACY, TRANSPARENCY AND ACCOUNTABILITY Dr. R. Annadurai	82
83	GEOGEBRA AND B.ED. TRAINEES: AN ATTITUDINAL STUDY Dr. S. Anbalagan	83
84	FROM PROMPT TO PUZZLE: LEVERAGING GENERATIVE AI FOR DESIGNING DIGITAL MATHEMATICAL GAMES Dr. N. Devaki, M.N. Vishal Raj, Geetha R. K	84
85	INTEGRATING THE SECI KNOWLEDGE MANAGEMENT MODEL AND GENERATIVE AI FOR AN INNOVATIVE LEARNING PROCESS IN HIGHER SECONDARY SOCIOLOGY PEDAGOGY Rejithkumar R., Prof. (Dr.) Issac Paul	85
86	THE 3I ARCHITECTURE FOR EDUCATIONAL SCIENCES: A CONCEPTUAL INTEGRATION OF “IN SILICO, IN VITRO AND IN VIVO” Dr. N. Devaki, Thamarai Selvan R, Dr. S. Janaki	86
87	GENERATIVE AI AND SELF-REGULATED LEARNING: WHO IS REALLY REGULATING THE LEARNING? Vanitha V, Prince Ebinezar. Y, Thamarai Selvan R	87

88	EXPLORING GENERATIVE AI'S ROLE IN MANAGING WORK AND STUDY DEMANDS FOR PART-TIME STUDENTS Nandhini Suruthi, I., Dr. Lenin, S.	88
89	ADMIRER TEACHERS AS CATALYSTS FOR RESPONSIBLE GENERATIVE AI USE AND HOLISTIC PERSONALITY DEVELOPMENT AMONG UNDERGRADUATE STUDENTS Mageswari, P., Dr. Lenin, S.	89
90	AI-AUGMENTED MANAGERS: EXPLORING THE ROLE OF GENERATIVE AI IN DEVELOPING CRITICAL THINKING, PROBLEM-SOLVING AND STRATEGIC DECISION-MAKING SKILLS Dr. A. Mariammal	90
91	GENERATIVE AI FOR INCLUSIVE K-12 MATHEMATICS EDUCATION: A SYSTEMATIC LITERATURE REVIEW THROUGH THE LENS OF UNIVERSAL DESIGN FOR LEARNING Dr. Karthikeyan P.	91
92	GENERATIVE AI IN EDUCATION: A MULTIDISCIPLINARY STUDY OF HIGHER SECONDARY ECONOMICS STUDENTS; ACHIEVEMENT IN RELATION TO ACADEMIC STRESS, SCHOOL ENVIRONMENT, AND PARENTAL MOTIVATION Mrs V. Varalakshmi, Dr P. Ponraj,	92
93	ROLE OF ARTIFICIAL INTELLIGENCE IN OVERCOMING THE ACADEMIC DIFFICULTIES FACED BY HIGHER SECONDARY STUDENTS Sandhoshima, M, Dr. Lenin, S	93
94	A STUDY ON THE IMPACT OF ARTIFICIAL INTELLIGENCE ON STUDENTS' INTEREST IN READING LITERARY WORKS Salina Farsath, Dr. Lenin, S.	94
95	MAPPING ALEXITHYMIA, NOMOPHOBIA, AND SOCIAL BEHAVIOUR THROUGH A GENERATIVE AI-ASSISTED THEMATIC REVIEW Ms. S. Jebasheela Jenifer, Dr. S. Lenin	95
96	AI-AUGMENTED WRITING ASSISTANCE IN HIGHER EDUCATION: BRIDGING LANGUAGE PROFICIENCY AND PEDAGOGICAL INNOVATION Dr. K. Meenatchi	96

97	தமிழ் துறையில் கற்பித்தலில் AI பயன்பாடு சா.சுலேத்குரியா	97
98	DESIGN AND DEVELOPMENT OF ML AND STOCHASTIC FORECASTING TECHNIQUES FOR ARACHIS HYPOGAEA PRODUCTION IN TAMIL NADU T. Jai Sankar, K. Nalini	98
99	GENERATIVE AI IN TEACHER EDUCATION: ITS IMPACT ON PEDAGOGICAL SKILLS, LESSON PLANNING AND LEARNING ENGAGEMENT AMONG B.Ed. STUDENT-TEACHERS Dr. M. Panneerselvam	99
100	PERSONALIZED LEARNING THROUGH GENERATIVE AI: OPPORTUNITIES AND CHALLENGES P.Kavitha, B. Vaishnavi, Kannan B,	100
101	GENERATIVE AI IN EDUCATIONAL RESEARCH: FROM LITERATURE REVIEW TO SCHOLARLY COMMUNICATION Antony samy J, Meenakshi V, Kannan B,	101
102	LIFELONG LEARNING IN THE AI ERA: OPPORTUNITIES, CHALLENGES AND STRATEGIES FOR AN INCLUSIVE FUTURE Dr. S. V. A. Prakash, Dr. A Senthilkumar,	102
103	MEASURING COMMERCE TEACHERS' READINESS TO ADOPT GENERATIVE AI FOR LESSON PREPARATION: A QUANTITATIVE SURVEY Dr. S. Shunmuga Narayanan	103
104	ARTIFICIAL INTELLIGENCE: AN OVERVIEW WITH SPECIAL REFERENCE TO INDIAN EDUCATION Mr. G. Sathishkumar	104
105	ARTIFICIAL INTELLIGENCE: A BOON OR BANE FOR IMPROVING READING HABITS IN THE CONTEXT OF THE 21ST CENTURY Nafeesa Fathima, S., Dr. Lenin, S.	105
106	ROLE OF ARTIFICIAL INTELLIGENCE IN IMPROVING CURRICULAR AND CO-CURRICULAR ACTIVITIES IN SCHOOL EDUCATION E. Maharajan, Dr. A. Veliappan	106

107	ROLE OF AI IN IMPROVING TAMIL COMMUNICATION: A THEMATIC STUDY Aishwarya, K, Dr. Lenin, S.	107
108	ROLE OF ARTIFICIAL INTELLIGENCE IN OVERCOMING THE DIFFICULTIES IN PRACTICE TEACHING Sivanammal, Dr. Veliappan, A.	108
109	SEASONAL DYNAMICS OF PHYSICOCHEMICAL FACTORS AND COMMERCIALY IMPORTANT MACROALGAL DIVERSITY ALONG THE GULF OF MANNAR COAST, INDIA Venkatesh. S. Murugan. P, Maruthupandian. A and Senthilkumar. N	109
110	GAMIFICATION IN INCLUSIVE STEM CLASSROOMS: ANALYZING ENGAGEMENT AND LEARNING OUTCOMES Romy Bhattak & Dr. Yashpal D. Netragaonkar	110
111	GENERATIVE AI AND THE FUTURE OF TEACHING–LEARNING ECOSYSTEMS Dr. Azhagu Ganeshwari N,	111
112	CULTIVATING MINDFUL TEACHERS: THE ROLE OF MINDFULNESS IN TEACHER EDUCATION Mr. A. Soundarapandiyan	112
113	EQUIPPING TOMORROW’S CLASSROOMS: AN ANALYSIS OF PROSPECTIVE TEACHERS’ CAREER READINESS AND WORKPLACE SKILLS S. K. Sreedevi & Dr. A. Balamallika Devi	113

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Abstract

The rapid advancement of Generative Artificial Intelligence (AI) is transforming educational practices by enabling personalized learning, intelligent content generation, adaptive assessment, and enhanced classroom engagement. However, the effective integration of Generative AI in science education depends largely on teachers' readiness to use these technologies while preserving the central role of Human Intelligence in teaching and learning. The present study investigated Science teachers' readiness for AI-assisted science classrooms by examining five dimensions: AI Awareness and Literacy, Attitude toward AI-Assisted Teaching, Pedagogical Competence for AI Integration, Ethical and Responsible Use of Generative AI, and Professional Development and Implementation Readiness. A descriptive survey method was adopted for the study. The sample comprised 96 Science teachers teaching Grades VI–X from selected schools in Ahmedabad, Gujarat. Data were collected using a researcher-developed Teachers' Readiness Scale consisting of 30 items distributed across the five dimensions. The collected data were analyzed using Mean, Standard Deviation, Quartile Method, and independent-samples t-test. The findings revealed that Science teachers demonstrated high levels of AI awareness, positive attitudes toward AI-assisted teaching, strong pedagogical competence, high ethical readiness, and very high professional development readiness for integrating Generative AI into science classrooms. The overall readiness analysis indicated that 35.42% of teachers exhibited high readiness, 47.91% demonstrated moderate readiness, and 16.67% showed low readiness. No significant differences were found in teachers' readiness with respect to gender, whereas a significant difference was observed with respect to teaching experience, with teachers having up to ten years of experience demonstrating higher readiness. Overall, the study concluded that Science teachers possess a high level of readiness for implementing AI-assisted science classrooms, while emphasizing that Human Intelligence remains indispensable for effective pedagogy, ethical decision-making, contextual understanding and meaningful teacher–student interaction.

Keywords: *Generative Artificial Intelligence, Human Intelligence, Science Education, Teacher Readiness, AI-Assisted Classrooms, Human-AI Collaboration.*

EXPLORING THE UTILIZATION OF GENERATIVE AI TOOLS IN ACADEMIC WRITING FOR PUBLICATION PURPOSES AMONG PH.D. SCHOLARS OF H.N.B. GARHWAL UNIVERSITY, UTTARAKHAND

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Abstract

The rapid diffusion of generative artificial intelligence (GenAI) tools such as ChatGPT, Google Gemini, Claude AI and Microsoft Copilot has begun to reshape how doctoral scholars prepare the manuscripts for publication. The aim of the study was to examine the utilization of Generative Artificial Intelligence tools in academic writing for publication purposes among Ph.D. Scholars of Hemvati Nandan Bahuguna Garhwal University (HNBGU), Uttarakhand. Its association with gender, discipline, age, year of study, prior training and publication experience. The cross-section survey method was adopted to collect the information regarding GenAI used in academic writing for publication purposes. The mixed sampling techniques (Simple and convenience sampling) used to select the participants. The five point Likert scale on Utilization of Generative AI Tools in Academic Writing for Publication Purposes. Percentage analysis, the Wilcoxon signed rank test, Mann–Whitney U test, and the Kruskal–Wallis H test was used to analyse the data. Findings reveal that utilization GenAI tools is occasional rather than habitual, especially for language and grammar checking rather interpreting tables, engaging with reviewers. General-purpose conversational tools ChatGPT, Google Gemini and Grammarly were the most frequently used for academic-writing assistants among research scholars. Scholars perceived the challenges of GenAI use ($M = 35.80$) was higher than benefits ($M = 30.20$ and $p = .024$), with concerns about weakened independent thinking, unintentional plagiarism and data privacy ranked highest. Ethical use means scores did not differ significantly by gender, discipline, age, year of study and number of publications, but scholars who had received prior AI related training reported significantly higher ethical use scores than those without ($U = 232.00$ and $p = 0.005$). The findings suggest that structured training is required for promoting responsible and ethical use of GenAI tools among research scholars for academic publishing.

Keywords: *Generative Artificial Intelligence, Academic Writing, Ph.D. Scholars, Publication, Academic Integrity, Uttarakhand, Higher Education*

REIMAGINING TEACHER PROFESSIONAL DEVELOPMENT THROUGH GENERATIVE AI: AN AI-INTEGRATED FRAMEWORK FOR STRENGTHENING TEACHER CAPACITY UNDER NEP 2020

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Abstract

The rapid advancement of Generative Artificial Intelligence (GenAI) is transforming education by enabling personalized learning, intelligent content generation, and evidence-informed pedagogical decision-making. In India, the National Education Policy (NEP) 2020 advocates competency-based teaching, experiential learning, and continuous professional development (CPD), while the National Professional Standards for Teachers (NPST) provide a framework for teacher growth and performance. However, teachers continue to face persistent challenges, including the theory–practice gap, limited access to contextualized professional learning, excessive administrative workload, inadequate mentoring, and the absence of structured, data-driven career progression. Addressing these challenges requires AI-enabled professional development systems that augment teacher expertise while preserving teacher agency and professional autonomy. This conceptual paper presents Teach Assist, an AI-integrated Teacher Professional Development (TPD) framework developed at Prayoga Institute of Education Research, Bengaluru, that leverages Generative AI to strengthen teacher capacity through personalized, evidence-informed professional learning. The proposed framework utilizes GenAI to generate context-specific lesson plans, inquiry-based classroom activities, multilingual instructional resources, formative assessment tasks, reflective prompts, and individualized learning pathways aligned with NPST competencies. Complementing these capabilities, the framework incorporates AI-enabled classroom analytics, continuous mentoring, competency tracking, multimodal feedback, and collaborative professional learning communities to support reflective practice and sustained instructional improvement. Grounded in the principles of responsible AI, the framework emphasizes transparency, teacher agency, data privacy, algorithmic fairness, and equitable access, ensuring that Generative AI complements rather than replaces teachers' professional expertise. The proposed model creates a private and psychologically safe professional learning space where teachers can learn at their own pace, receive proximal feedback which tends to become more actionable as the teacher can relate to the changes immediately, critically reflect on their classroom practices, and strengthen their pedagogical competencies without fear of judgement or evaluation. By fostering self-directed, continuous professional growth, the framework contributes to the emerging discourse on the responsible integration of Generative AI in teacher education and proposes a scalable, policy-aligned professional learning ecosystem that supports high-quality, inclusive, and sustainable educational transformation.

Keywords: *Personalized Continuous Professional Development, NEP 2020, National Professional Standards for Teachers (NPST), Responsible AI, Proximal Feedback*

GENERATIVE AI IN EDUCATIONAL RESEARCH: A MIXED-METHOD FRAMEWORK FOR ETHICAL, SUSTAINABLE AND HUMAN-CENTRED RESEARCH PRACTICES

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Abstract

Educational research is undergoing a significant transformation with the increasing integration of Generative Artificial Intelligence (GenAI), digital learning platforms, learning analytics, and data-driven decision-making. Although quantitative, qualitative, and mixed-method approaches provide methodological rigour, they can involve considerable time, manual effort, and limited scalability. GenAI offers opportunities to support literature discovery and synthesis, research problem identification, data organization, qualitative and quantitative analysis, academic writing, and evidence-based educational decision-making. However, its adoption also raises concerns related to academic integrity, transparency, privacy, algorithmic bias, accuracy, intellectual property, and human judgement. This conceptual paper proposes a mixed-method framework for the ethical, sustainable, and human-centred integration of GenAI into educational research. The framework incorporates literature review, GenAI-assisted information and data organization, research problem and instrument development, quantitative and qualitative analysis, validation through triangulation and expert review, ethical evaluation, and translation of findings into educational practice and policy. The framework positions GenAI as an intelligent research assistant rather than a replacement for the researcher. Human oversight, verification of AI-generated outputs, data protection, transparent documentation, and researcher accountability are integrated throughout the research process. The paper argues that responsible integration of GenAI can improve research efficiency, reproducibility, interdisciplinary collaboration, and evidence-based decision-making while maintaining methodological rigour and ethical responsibility.

Keywords: *Generative Artificial Intelligence, Educational Research, Mixed-Methods Research, Research Ethics, Academic Integrity, Human Oversight, Sustainable Education, Human-Centred Research.*

THE ROLE OF GENERATIVE AI IN MODERN HUMAN RESOURCE MANAGEMENT

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Abstract

Generative and agentic artificial intelligence (AI) are rapidly transforming human resource (HR) management by shifting the focus from administrative execution to strategic, people-centred leadership. Current studies indicate that AI can reduce up to 70% of time spent on routine tasks, enabling HR teams to prioritize culture, empathy, and inclusive practices. Adoption is accelerating, with approximately 25% of organizations already integrating AI into core HR functions such as recruitment, onboarding, performance management, learning and development, and employee engagement. AI-driven tools are increasingly used to personalize training, identify skills gaps, monitor workforce sentiment, and enhance decision-making for managers. However, implementation challenges remain significant: nearly half of AI projects fail due to unrealistic expectations, poor workflow alignment, or insufficient ethical safeguards. This paper examines how generative AI is reshaping HR practices, highlighting both opportunities and risks. It explores ethical considerations, governance frameworks, and real-world applications, while offering practical steps for organizations to pilot AI responsibly. By combining technological innovation with human oversight, HR leaders can harness AI to drive productivity, strengthen leadership, and reinforce the human values at the core of organizational success.

Keywords: *Generative AI, Human Resource Management (HRM), Employee engagement, Transparency and fairness, Ethical AI in HR.*

THE ALGORITHMIC RENAISSANCE: PARADIGMS OF GENERATIVE AI IN THE HUMANITIES AND SOCIAL SCIENCES IN INDIAN SCENARIO

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Abstract

The integration of Generative Artificial Intelligence (GenAI), driven by Large Language Models (LLMs) and multimodal neural networks, marks a profound shift in the Humanities and Social Sciences (HSS). Far beyond standard automation, GenAI introduces a generative paradigm capable of text recovery, automated translation of archaic scripts, synthetic demographic modelling, and dynamic curriculum mapping. In the Indian context, this technology meets an incredibly complex intellectual landscape characterized by multi-layered linguistic traditions, thousands of years of undocumented cultural practices, and contemporary educational overhauls like the National Education Policy (NEP) 2020. This article analyses how GenAI is transforming research, pedagogy, and digital preservation within the Indian HSS ecosystem. It highlights critical advancements in Indian Knowledge Systems (IKS), digital epigraphy, and Outcome-Based Education (OBE), while rigorously examining the ethical, epistemological, and structural challenges of applying Western-trained computational tools to non-Western contexts.

Keywords -Generative AI (GenAI), Digital Humanities, Indian Knowledge Systems (IKS), Cultural Preservation

GENERATIVE ARTIFICIAL INTELLIGENCE-ENHANCED AGRICULTURAL FORECASTING: A STATISTICAL AND DATA- DRIVEN FRAMEWORK FOR FOOD GRAIN PRODUCTION IN INDIA

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Abstract

Food grain production forecasting is essential for strengthening food security, agricultural planning, resource allocation, and policy formulation in India. Conventional statistical models such as autoregressive integrated moving average (ARIMA) models have been widely applied to agricultural time-series data because of their ability to capture temporal dependence and historical production patterns. However, agricultural production is influenced by complex and potentially nonlinear interactions among climatic conditions, technological changes, policy interventions, and production systems, which may not be adequately represented by a single forecasting approach. Recent advances in Generative Artificial Intelligence (GenAI) provide new opportunities for agricultural analytics by supporting intelligent interpretation, scenario generation, natural-language communication, and decision-support applications. Recent agricultural research has highlighted the potential of GenAI for predictive analytics, precision agriculture, and agricultural decision-making, although concerns regarding hallucination, reliability, data quality, and human oversight remain. The present study proposes a statistical and data-driven framework for forecasting foodgrain production in India by integrating conventional time-series modelling with machine-learning techniques and a Generative AI-enhanced interpretation layer. Historical annual production data for major foodgrain categories, including rice, wheat, coarse cereals, pulses, and total foodgrains, are analysed using descriptive statistics, trend analysis, stationarity testing, and forecasting models. ARIMA and selected machine-learning models are considered for model development and comparison using forecasting accuracy measures such as mean absolute error (MAE), root mean square error (RMSE), mean absolute percentage error (MAPE), and coefficient of determination (R^2), where appropriate. The best-performing model is subsequently used to generate future foodgrain production forecasts. Generative AI is incorporated as an interpretative and decision-support layer to translate statistical outputs into understandable agricultural scenarios and policy-oriented insights rather than replacing statistically validated forecasting models. This integrated framework aims to bridge the gap between quantitative agricultural forecasting and accessible intelligent decision support. The proposed approach may contribute to evidence-based food-security planning and demonstrate how GenAI can complement, rather than substitute, established statistical and machine-learning methodologies in agricultural forecasting.

Keywords: *Generative Artificial Intelligence; Agricultural Forecasting; Foodgrain Production; ARIMA; Machine Learning; Time-Series Analysis; Food Security; India; Decision Support.*

GENERATIVE AI AS A PEDAGOGICAL TOOL: TRANSFORMING TEACHING-LEARNING PRACTICES IN SCIENCE EDUCATION

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Abstract

Generative Artificial Intelligence (GenAI) tools — capable of producing text, images, explanations, and simulations on demand — are increasingly available to classroom teachers as instructional aids, yet empirical evidence on their actual effect on science learning outcomes, as distinct from novelty-driven enthusiasm, remains limited. This paper reports a quasi-experimental investigation into the use of Generative AI as a teacher-facing pedagogical tool in science classrooms, examining its effect on student learning outcomes and the mediating role of student engagement. Employing a pre-test/post-test non-equivalent control group design, the study compared a GenAI-assisted instructional condition — in which a teacher used GenAI tools to generate differentiated explanations, worked examples, analogies, and formative quiz items — against a matched traditional-instruction control condition, across an equivalent unit of science content, with two intact sections ($N = 70$; 35 per group). Learning outcomes were analysed using Analysis of Covariance (ANCOVA), controlling for prior achievement, while a bootstrapped mediation model examined whether the effect of GenAI-assisted instruction on outcomes operated through increased student engagement. Results show that, after controlling for pre-test scores, the GenAI-assisted group achieved significantly higher adjusted post-test scores than the control group ($F(1,67) = 32.77, p < .001, \text{partial } \eta^2 = .328$), with a ten-point adjusted mean advantage. The GenAI-assisted group also reported significantly higher engagement ($t(68) = 5.68, p < .001, d = 1.36$), and engagement was found to partially mediate the effect of condition on achievement (indirect effect = 4.86, 95% bootstrap CI [2.31, 7.68]). The paper situates its methodological contribution — a controlled, causal-inference approach — and discusses findings in terms of classroom-level pedagogical practice. Implications are offered for teacher professional development, GenAI literacy, and the responsible integration of generative tools into science pedagogy.

Keywords: *Generative Artificial Intelligence, Science Education, Quasi-Experimental Design, Pedagogical Innovation, Student Engagement, Learning Outcomes.*

ENHANCING PEDAGOGICAL REASONING THROUGH AI- SCAFFOLDED LESSON PLANNING

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Abstract

*The integration of Generative Artificial Intelligence into teacher education presents both transformative opportunities and significant pedagogical challenges. This study investigates the effectiveness of **Claude AI (Anthropic)**—specifically its Projects and Artifacts features—as a cognitive scaffold for enhancing pedagogical reasoning and lesson planning competencies among pre-service teachers in Chennai District, Tamil Nadu. Employing a quasi-experimental pre-test/post-test control group design, the study involved 120 B.Ed. students from four teacher education institutions across Chennai. The experimental group ($n=60$) received structured training on Claude AI and completed lesson planning tasks using the tool, while the control group ($n=60$) completed identical tasks without AI assistance. Drawing on the Intelligent-TPACK framework and transformative learning theory, the study measured pedagogical reasoning quality, lesson plan quality, and self-efficacy beliefs. Eight hypotheses were tested examining relationships between AI-assisted planning and pedagogical outcomes. Results revealed that the Claude AI-assisted group demonstrated significantly higher pedagogical reasoning scores ($M=4.21$, $SD=0.58$) compared to the control group ($M=3.42$, $SD=0.61$), $t(118)=7.43$, $p<0.001$, Cohen's $d=1.36$. Lesson plan quality was also significantly higher in the experimental group ($M=4.15$, $SD=0.52$) compared to the control group ($M=3.35$, $SD=0.58$), $t(118)=8.01$, $p<0.001$, Cohen's $d=1.46$. Frequency of Claude AI use was positively correlated with lesson plan quality ($r=0.38$, $p<0.01$). High-performing participants exhibited proactive "problem representation–AI interaction–monitoring" patterns, while low-performing users relied on reactive prompting ($\chi^2=21.60$, $p<0.001$, $\phi=0.60$). Prior technology experience significantly predicted Claude AI effectiveness ($\beta=0.42$, $p<0.001$). The study concludes with recommendations for integrating AI literacy and metacognitive training into teacher education curricula in Chennai and beyond.*

Keywords: *Claude AI, Generative AI, Teacher Education, Pedagogical Reasoning, Lesson Planning, Quasi-Experimental Design, Chennai, TPACK, Pre-Service Teachers*

INTEGRATION OF AI TOOLS AMONG HIGHER EDUCATION STUDENTS

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Abstract

This study investigated the integration of Artificial Intelligence (AI) powered tools among higher education students in Salem District using a descriptive survey design with a sample of 280 participants selected via stratified random sampling from Arts and Science, Education, and Engineering colleges. Data were collected using the self-constructed, validated AI-Powered Learning Tools Integration Scale (AILTIS)—which measures usage, impact, challenges, and benefits—and analyzed using percentage analysis, mean, standard deviation, and independent samples t-tests. The findings revealed that smartphones are the predominant learning device (60.71%), and the majority of students (68.22%) exhibit a moderate level of AI tool integration. While the medium of instruction (Tamil vs. English) showed no significant difference across any dimensions or overall AI integration, gender significantly influenced overall integration, usage, perceived challenges, and benefits—with female students scoring higher—though no gender difference was observed regarding the impact of AI tools. The study underscores the necessity for higher education institutions to strengthen technical infrastructure, curriculum alignment, and faculty support to enable equitable and effective AI adoption.

Key Words: *Artificial Intelligence (AI) Tools, Higher Education, AI Integration*

PROBLEMS IN LEARNING ENGLISH AMONG HIGHER SECONDARY STUDENTS IN SALEM DISTRICT

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Abstract

English plays a vital role in academic achievement, higher education, and global communication. Despite studying English for several years, many higher secondary students continue to experience difficulties in acquiring language proficiency. The present study investigated the problems encountered by higher secondary students in learning English in Salem District, Tamil Nadu. Specifically, the study examined the overall level of learning problems and the influence of selected background variables on students' learning difficulties and attitudes towards English. A normative survey method was employed for the study. The sample comprised 300 higher secondary students selected through a random sampling technique from schools in Salem District. Data were collected using a structured questionnaire developed and validated by the investigator. Statistical techniques such as percentage analysis, mean, standard deviation, independent sample t-test, and one-way ANOVA were used for data analysis. The findings revealed that the majority of students experienced a moderate level of problems in learning English. Significant differences were observed with respect to selected demographic variables such as locality, school type, medium of instruction, and parents' educational qualification, whereas no significant differences were found for certain other variables. The study recommends strengthening communicative language teaching, teacher professional development, and school-based language support programmes to enhance English language learning among higher secondary students.

Keywords: *English language learning, higher secondary students, learning problems, communicative competence, language education, Salem District.*

MATHEMATICS TEACHERS' READINESS TO ADOPT GENERATIVE AI FOR LESSON PREPARATION

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Abstract

The rapid emergence of Generative Artificial Intelligence (GenAI) is transforming educational practices by providing teachers with new opportunities to design lesson plans, generate instructional materials, develop classroom activities, and prepare assessment resources. The present empirical study aimed to examine Mathematics Teachers' Readiness to Adopt Generative AI for Lesson Preparation among secondary and higher secondary school teachers in Dindigul District, Tamil Nadu. A descriptive survey method was adopted, and data were collected from a sample of 100 Mathematics teachers. The study examined teachers' readiness in relation to selected background variables, namely gender, location, and type of school. The findings revealed that Mathematics teachers generally demonstrated readiness to adopt Generative AI for lesson preparation. Further, the results showed a significant difference based on gender, with male Mathematics teachers demonstrating a higher level of readiness than female teachers. The study highlights the importance of strengthening teachers' AI literacy, pedagogical competence, and confidence to facilitate the effective and responsible integration of Generative AI into Mathematics lesson preparation.

Keywords: *Generative Artificial Intelligence, Mathematics Teachers, Teacher Readiness, Lesson Preparation, AI Adoption, Gender, Location, Type of School.*

STRENGTHENING FOUNDATIONAL LITERACY AND NUMERACY IN INDIA: REFLECTIONS ON THE NIPUN BHARAT MISSION

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Abstract

Foundational literacy and numeracy (FLN) are essential for child development, academic achievement, and lifelong learning, and hence its attainment by all children is a matter of national priority. The NIPUN Bharat Mission was launched by the Ministry of Education to achieve the vision of the National Education Policy (NEP), 2020, on foundational literacy and numeracy by Grade 3. The paper reflects upon the NIPUN Bharat: Guidelines for Implementation (2021), discussing the NIPUN Bharat's vision, objectives, and key areas of focus for achieving the mission. The guidelines stress the importance of competence-based learning, school readiness, foundational language and literacy, numeracy, continuous assessment, teacher preparedness, building digital resources, parent community participation, collaborative governance, and a host of other issues. The guidelines promote child-centred, inclusive, joyful, and activity-based approaches to achieving learning outcomes, addressing children's diverse needs. The paper also reflects upon the opportunities and challenges in implementing the NIPUN Bharat Mission and concludes that it provides an excellent framework for the reform of foundational education. The insights offered by this reflective piece will be useful to policymakers, teacher educators, researchers, and administrators in realizing the goals of foundational literacy and numeracy for school-age children in India.

Keywords: *Assessment, Competency-Based Learning, Foundational Literacy and Numeracy, NIPUN Bharat, Teacher Capacity Building.*

GENERATIVE ARTIFICIAL INTELLIGENCE FOR IMPROVING SOCIAL COMMUNICATION SKILLS AMONG STUDENTS WITH AUTISM SPECTRUM DISORDER: A CASE STUDY

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Abstract

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that affects social communication, social interaction, behavior, and sensory processing. Many students with ASD experience difficulties in social communication, which can affect their learning and classroom participation. Generative Artificial Intelligence (Gen-AI) can support the development of personalized learning experiences that meet each learner's individual needs. It provides opportunities to create personalized and engaging learning materials for students with diverse learning needs. The present case study focuses on the use of Generative AI-personalized materials to support selected social communication skills in a child with Autism Spectrum Disorder. The study was conducted with a 7-year-old child with Autism Spectrum Disorder. Generative AI was used to develop personalized video based learning materials on the child's learning needs. The 6 week intervention focused on greeting and responding, answering simple questions, turn-taking, expressing basic needs, and social participation. A pre-test and post-test were conducted to assess changes in the child's performance. The results showed improvement in most of the selected social communication skills after the intervention following the intervention.

Keywords: *Autism Spectrum Disorder, Generative Artificial Intelligence, Social Communication Skills, Personalized Learning, Inclusive Education.*

GENERATIVE AI IN TEACHING AND LEARNING OF CHILDREN WITH AUTISM SPECTRUM DISORDER

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Abstract

Autism Spectrum Disorder (ASD) is a developmental condition that affects children's communication, learning, behavior, and social interaction. Teaching children with ASD requires individualized and specific support to address their unique needs, making personalized teaching strategies essential. Generative Artificial Intelligence (Gen AI) has emerged as a promising tool in this context, as it can assess each child's requirements and generate individualized strategies accordingly. This study aims to examine the role and effectiveness of Generative AI in enhancing teaching and learning for children with ASD. Specifically, it explores its impact on personalized learning, communication, academic achievement, engagement, and confidence, while also identifying challenges and recommending effective approaches for implementation in special education. The findings suggest that Generative AI can be effectively integrated into special education classrooms to support individualized instruction and improve learning outcomes for children with ASD. Moreover, it can assist teachers in designing personalized teaching strategies and fostering inclusive learning environments that promote accessibility, participation, and confidence.

Keywords: *Generative Artificial Intelligence, Autism Spectrum Disorder, Inclusive Education, Personalized Learning, Assistive Technology, Special Education.*

GENERATIVE AI USAGE IN RELATION TO PERSONALIZED LEARNING AMONG COLLEGE STUDENTS

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Abstract

The rapid advancement of Generative Artificial Intelligence (AI) has transformed the landscape of higher education by providing innovative opportunities for personalized learning. AI-powered tools such as ChatGPT, Gemini and Microsoft Copilot enable students to access customized learning resources, receive instant feedback and learn at their own pace. This study aims to examine the relationship between Generative AI usage and personalized learning among college students. A descriptive survey research design will be employed. The study will be conducted among 300 college students selected through simple random sampling. A structured questionnaire will be used to measure Generative AI usage and personalized learning. The collected data will be analyzed using descriptive statistics (mean and standard deviation) Pearson's product-moment correlation, independent samples t-test and one-way ANOVA to examine differences across selected demographic variables. The findings are expected to reveal whether the use of Generative AI is significantly associated with personalized learning experiences. The study is anticipated to provide valuable insights for educators, policymakers and higher education institutions regarding the effective integration of Generative AI into teaching and learning practices to enhance student-centered education.

Keywords: *Generative AI Usage, Personalized Learning, College Students, Higher Education, Artificial Intelligence, Correlational Study.*

GENERATIVE AI AS A TEACHING ASSISTANT FOR TEACHING CHILDREN WITH INTELLECTUAL DISABILITY: REDEFINING THE ROLE OF TEACHERS IN THE DIGITAL AGE

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Abstract

The fast growth of digital technologies and Artificial Intelligence (AI) is creating new possibilities for inclusive and special education. Generative AI tools can help teachers plan lessons, create custom learning materials, design activities, and provide suitable learning support for children with intellectual disabilities. Teachers of children with intellectual disability need to invest considerable time and effort in modifying the content of instruction based on individual learning needs, abilities and pace of learning. This study aims to explore the possibility of Generative AI as a teaching assistant to help teachers tackle these teaching difficulties and enhance the effectiveness of teaching. In this paper, we explore the role of Generative AI in helping special educators to create simplified learning content, personalize instructional content, design visual and activity-based instructional content, and provide customized educational experiences for children with intellectual disability. This research highlights the use of AI as an assistive tool to complement rather than replace the professional knowledge, empathy and decision-making of teachers. By incorporating Generative AI, teachers could see their routine tasks decreased, allowing for more time dedicated to personalized teaching and meaningful student engagements. The paper proposes a technology-supported approach to co-create accessible, inclusive, and learner-centered educational environments for children with intellectual disability in the digital era by teachers and AI.

Keywords: *Generative AI, Teaching Assistant, Intellectual Disability, Special Education, Individualized Learning, Inclusive Education*

GENERATIVE AI IN TEACHER EDUCATION: EXPLORING STRESS MANAGEMENT, SELF-REGULATION AND PROFESSIONAL DEVELOPMENT AMONG PROSPECTIVE TEACHERS

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Abstract

Generative Artificial Intelligence (GenAI) is increasingly influencing teacher education by providing prospective teachers with flexible support for learning, planning, reflection and professional preparation. This conceptual paper explores the potential role of GenAI in stress management, self-regulation and professional development among prospective teachers, while examining the boundaries and ethical considerations associated with its use. The discussion highlights how GenAI may assist trainees in organizing academic responsibilities, managing routine academic pressures, setting goals, structuring reflective practice, preparing lessons and rehearsing professional situations. At the same time, the paper recognizes that evidence concerning the effectiveness of AI-based conversational tools for stress and broader mental well-being remains emerging and inconsistent. Particular attention is therefore given to the risks of inaccurate information, excessive dependence, privacy concerns, algorithmic bias, reduced learner agency and inappropriate use for psychological difficulties. The paper argues that GenAI should be integrated into teacher education as a human-centered educational resource rather than a replacement for teacher educators, mentors, counsellors or professional support services. Responsible integration requires AI literacy, critical evaluation, privacy awareness, ethical guidance and institutional support. The paper concludes that the greatest educational potential of GenAI lies not in replacing human judgement but in strengthening prospective teachers' capacity for self-regulated learning, reflective practice and professional development while preserving their autonomy and responsibility.

Keywords: *Generative Artificial Intelligence, teacher education, prospective teachers, stress management, self-regulation, reflective practice, professional development, AI literacy.*

EDUCATIONAL NEUROSCIENCE AND GENERATIVE AI: BUILDING PERSONALISED, INCLUSIVE AND FUTURE-READY LEARNING ENVIRONMENTS

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Abstract

Generative Artificial Intelligence (AI) has the ability to benefit learners by enabling better learning in the domains of cognitive, competency and affective competencies, especially with respect to mathematics, science and humanities (Ma & Zhong, 2025). Nonetheless, the effectiveness of adopting new technologies should not be limited to the technology itself or machines. The knowledge in educational neuroscience based on the concepts of cognitive neuroscience, brain sciences and educational psychology can be adopted in conjunction with Generative AI to provide information about learning processes (Rahman & Mehnaz, 2024). This conceptual paper is an examination of the intersection between the field of Educational Neuroscience and Generative AI for the establishment of a personalized and inclusive approach for learning. In this study, a qualitative document analysis methodology with a descriptive-analytical approach has been used to synthesise the literature at the point where educational neuroscience and Generative AI intersect. Evidence-based theories such as neuroplasticity, Cognitive Load Theory (CLT), and spaced retrieval have been stated. It will be examined how neuroadaptive systems like real-time EEG-monitored Nested Learning can use these theories to help neurodiverse learners, especially those with ADHD and dyslexia. The results show that Generative AI could significantly reduce cognitive load, offer personalised learning with immediate feedback and foster self-regulated learning through brain-based learning mechanisms. An integrated instructional model that utilises AI as a cognitive tool to enhance human-centred instruction is proposed. Ethical governance needs to be in place to address algorithmic bias and data privacy issues during implementation. The findings suggest that Generative AI and the combination of educational neuroscience with AI-generated content would support neurodiversity through multimodal instruction and thus enhance human-centred learning rather than replacing instruction by AI and technology.

Keywords: *educational neuroscience, generative AI, personalised instruction models based on educational neuroscience.*

GENERATIVE AI AS A LEARNING PARTNER: EXPLORING STUDENTS' PERCEPTIONS, USAGE PATTERNS AND ACADEMIC OUTCOMES IN HIGHER EDUCATION

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Abstract

The rapid emergence of Generative Artificial Intelligence (GenAI) is changing the ways students access information, understand concepts, complete academic tasks, and engage in independent learning. Generative AI tools such as ChatGPT, Google Gemini, Microsoft Copilot, and Grammarly are increasingly being used by students for academic purposes. While these technologies offer opportunities for immediate and personalized learning support, their growing use also raises questions regarding students' usage patterns, perceptions, responsible use, and perceived academic outcomes.

The present study explores Generative AI as a learning partner among Bachelor of Education (B.Ed.) students in higher education. The study specifically examines students' usage patterns, perceptions of Generative AI as a learning support, and their perceived academic outcomes. A quantitative descriptive survey design was adopted. Data were collected through a structured online questionnaire administered using Google Forms. A total of 31 responses were received, of which 29 valid responses from students who provided informed consent were considered for analysis. Among these 29 respondents, 25 students (86.2%) reported using Generative AI for learning.

The findings indicate that ChatGPT was the most frequently used Generative AI tool, followed by Google Gemini. Students primarily used Generative AI for understanding difficult concepts, preparing for examinations, brainstorming ideas, completing assignments, writing reports, and language improvement. The overall mean score across the perception and perceived academic-outcome statements was 3.72 on a five-point scale, indicating a generally positive perception of Generative AI as a learning support. The highest-rated statement was that Generative AI provides quick and useful academic support ($M = 4.14$), followed by its usefulness in understanding difficult concepts ($M = 4.00$). However, the perceived improvement in academic performance received a comparatively lower mean score ($M = 3.45$).

The findings suggest that B.Ed. students increasingly perceive Generative AI as a useful learning companion; however, access to AI alone does not necessarily translate into improved academic achievement. The study highlights the need for AI literacy, critical evaluation of AI-generated information, ethical awareness, and responsible use within teacher education. The study recommends that Generative AI be integrated into teacher education as a supportive learning resource while retaining human judgement, critical thinking, and teacher guidance at the centre of the learning process.

Keywords: *Generative Artificial Intelligence, B.Ed. Students, Higher Education, Learning Partner, Student Perceptions, AI Literacy, Perceived Academic Outcomes, Teacher Education*

SECONDARY SCHOOL STUDENTS ADDICTION TO SMARTPHONES AND GENERATIVE AI: BENEFITS OF EDUCATION AND ETHICAL CONCERNS

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Abstract

Generative AI has quickly become a game-changing educational tool with its cutting-edge possibilities for personalized instruction, intelligent tutoring, automatic feedback, and increased academic engagement. AI-powered tools such as ChatGPT, Google Gemini, Microsoft Copilot, and Claude have become increasingly accessible through smartphones, making learning more flexible and interactive for secondary school students. Although these technologies have a lot of educational potential, their constant accessibility via mobile devices has sparked worries about teenagers' excessive smartphone use, digital reliance, and smartphone addiction. Secondary school students represent one of the most active groups of smartphone users, making them particularly vulnerable to problematic concerns of technology use. Overdependence on AI-powered apps may promote extended screen time, diminish independent thought, raise academic dishonesty, and have a detrimental effect on students' mental health. At the same time, responsible integration of Generative AI can improve learning outcomes by promoting self-directed learning, personalized instruction, academic motivation, and digital literacy. This conceptual review critically examines the dual role of Generative AI in secondary education by synthesizing recent literature on its educational benefits and its potential contribution to smartphone addiction among adolescents. The paper discusses the ethical concerns associated with AI adoption, including academic integrity, data privacy, algorithmic bias, digital inequality, and emotional dependence on AI systems. Additionally, it identifies protective factors including AI literacy, teacher guidance, parental supervision, and digital well-being education while proposing a conceptual framework that illustrates the relationship between smartphone addiction, generative AI use, and educational outcomes. The paper concludes with recommendations for educators, policymakers, parents, and researchers to promote the responsible and ethical integration of Generative AI in secondary education while minimizing the risks associated with excessive smartphone use.

Keywords : *Generative Artificial intelligence, Smartphone Addiction, Secondary School Students, Educational Technology, AI Literacy, Ethics.*

GENERATIVE AI FOR TEACHING AND LEARNING: A SYSTEMATIC LITERATURE REVIEW

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Abstract

The rapid advancement of Generative Artificial Intelligence has ushered in a transformative era in education, offering unprecedented opportunities for personalized learning, intelligent tutoring systems, and AI-generated classroom content. This systematic literature review synthesizes evidence from 43 high-quality studies selected through a PRISMA-informed methodology. The review examines the applications of Generative AI in teaching and learning contexts, focusing on three core dimensions: personalized and adaptive learning pathways, intelligent tutoring systems powered by generative AI, and AI-generated content for classroom instruction. Findings indicate that Generative AI technologies, particularly large language models such as ChatGPT, are transforming educational practices by providing adaptive learning pathways, real-time feedback, automated content generation, and interactive tutoring. Generative AI-enabled personalized learning significantly enhances student engagement and performance through adaptive interventions. Intelligent tutoring systems leveraging large language models demonstrate improved pedagogical quality through real-time trait analysis and adaptive strategy selection. AI-generated instructional materials show strong potential for reducing teacher workload while diversifying content formats. However, significant challenges persist regarding academic integrity, data privacy, algorithmic bias, transparency, and digital equity. The review identifies critical research gaps in longitudinal studies, K-12 contexts, and policy frameworks, emphasizing the need for responsible, pedagogically grounded, and ethically informed adoption of Generative AI in teaching and learning.

Keywords: *Generative AI, Personalized Learning, Intelligent Tutoring Systems, AI-Generated Content, Systematic Literature Review, Educational Technology.*

SOCIAL CONFORMITY AND METACOGNITIVE ENGAGEMENT IN ENGLISH LANGUAGE LEARNING THROUGH GENERATIVE AI TOWARDS INDEPENDENT KNOWLEDGE CONSTRUCTION

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Abstract

Generative Artificial Intelligence (GenAI) is reshaping English language learning by providing learners with immediate access to explanations, feedback, language resources and interactive support. However, the educational value of GenAI depends not only on its technological affordances but also on how learners engage with AI-generated information. This paper thematically examines the relationship between social conformity, metacognitive engagement and independent knowledge construction in GenAI-supported English language learning. Drawing on recent research, the paper argues that learners' use of GenAI is influenced by the social norms and practices surrounding them, while metacognitive engagement determines whether they critically question, monitor, verify and transform AI-generated responses. The analysis further conceptualizes independent knowledge construction not as learning without AI, but as retaining human responsibility for evaluating information, making judgments and constructing understanding while using AI as a learning resource. The synthesis suggests that social conformity may shape learners' patterns of AI use, but its educational consequences depend on the quality of those social norms and the learner's capacity for metacognitive regulation. Accordingly, GenAI can support independent learning when learners actively interrogate and integrate its outputs rather than reproduce them uncritically. The paper highlights the need for English language education to establish classroom norms that value critical AI use, strengthen learners' metacognitive practices and preserve human epistemic agency. Overall, the paper shifts the focus from whether learners should use GenAI to how they can use it responsibly without surrendering their role as independent constructors of knowledge.

Keywords: *Generative Artificial Intelligence, Social Conformity, Metacognitive Engagement; Independent Knowledge Construction*

GENERATIVE AI-SUPPORTED PERSONALIZED LEARNING AND ITS ROLE IN ADDRESSING MATHEMATICS ANXIETY AMONG SECONDARY SCHOOL STUDENTS- A NARRATIVE REVIEW.

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Abstract

Generative AI is reshaping the field of mathematics teaching and learning by enabling personalized learning and adaptive learning practices. Real time feedback and adaptive learning support addresses the cognitive and affective needs of learners. Mathematics anxiety is termed as an emotional barrier to mathematics learning especially among secondary school students. Despite of growing literature on application of Generative AI in mathematics education and its role in academic performance, there is a lack of synthesis of the findings related to Generative AI supported personalized learning and its impact on mathematics anxiety among secondary school students. This paper aims to synthesize the findings of recent studies related to generative AI-supported personalized learning and mathematics anxiety among secondary school students. To address the research gap, a narrative review of the studies published from 2021 to 2026 was conducted by exploring the resources such as Semantic Scholar and Google Scholar. Synthesis of the evidences indicates that in the field of mathematics education, Generative AI enhances personalized learning by providing real time feedback and adaptive learning practices. It supports in enhancing cognitive abilities, students' engagement, learning motivation and reduces mathematics anxiety among secondary school students. Some of the studies also highlighted the ethical concerns and challenges associated with AI integration in mathematics education. This review also proposes a conceptual linkage between; cognitive and psychological outcomes of Generative AI supported personalized learning that lead to reduce mathematics anxiety among secondary school students. It also highlights its practical implications for mathematics educators and policy makers.

Keywords: *Generative AI, Artificial intelligence, Personalized Learning, Mathematics anxiety, Secondary school students.*

AWARENESS OF ARTIFICIAL INTELLIGENCE AMONG HIGHER SECONDARY STUDENTS IN MADURAI DISTRICT

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Abstract

Awareness of Artificial Intelligence (AI) has become an essential competency for higher secondary students in the digital era. The present study aimed to assess the level of AI awareness among Higher Secondary Students in Madurai District and to examine differences with respect to three selected variables: gender, locality, and medium of instruction. The investigator adopted the normative survey method and selected a sample of 167 higher secondary students from ten schools in Madurai District using random sampling. A self-developed and validated Awareness of Artificial Intelligence Scale consisting of 32 items was administered. Descriptive and inferential statistics (mean, standard deviation, t-test and F-test) were employed for data analysis. Findings revealed that the overall level of AI awareness was moderate (Mean = 123.94). Significant differences were observed with respect to gender (male students higher), locality (rural students higher), medium of instruction (Tamil medium higher). The study highlights the need for gender-inclusive AI programmes, stronger support for urban students, and the development of AI learning resources in regional languages to enhance awareness among higher secondary students. Also came up with solutions for Ethics involved in proposed Future Directions for Artificial Intelligence in Education.

Keywords: Artificial Intelligence, Awareness, Higher Secondary Students, Gender.

GENDER STEREOTYPE OF VOICE ASSISTANTS: A CASE STUDY

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Abstract

Artificial Intelligence specially voice-based Artificial Intelligence systems like Gemini and ChatGPT became integral part to everyday digital interaction. This study examines how major voice assistants perceive gendered expectations through default voice selection, linguistic patterns, behavioural responses and task positioning. This study was using a comparative analysis of widely used assistants and the research explores how feminine-coded voices are employed for service-oriented, domestic and emotional labour tasks, while male or neutral voices appear less frequently; typically associated with authority-driven or technical functions. Findings of this study revealed that gender dominates the voice assistant's service of Gemini and ChatGPT. Further details will be discussed in the full paper.

Key Words: *Artificial Intelligence, Voice assistant, Gemini, ChatGPT, Gender Stereotype.*

GENERATIVE AI AS A PEDAGOGICAL SUPPORT TOOL FOR PRESCHOOL TEACHERS ENHANCING MEANINGFUL LEARNING THROUGH PLAY-BASED PEDAGOGY

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Abstract

The rapid growth of Artificial Intelligence is transforming education by enabling innovative and personalized teaching practices. In preschool education where the central learning is focused on the play-based learning which aids to cognitive, social, emotional and language development. Generative AI can support teachers by helping them create lesson plans, develop engaging stories and activities, in creating the classroom materials and other instructional materials by considering the age of the children. However, there is limited research on preschool teachers' awareness, readiness and perception regarding the use of Generative AI in early childhood education. This study aimed to examine the role of generative AI as a pedagogical support tool for preschool teachers in Bengaluru. It assessed teacher awareness, current usage, challenges and willingness to integrate AI into play-based teaching practices. A quantitative research approach was adopted and the data was collected through a structured questionnaire administered to 60 preschool teachers from selected schools in Bengaluru. The data was analysed using frequency, percentage, mean, standard deviation, mean rank and thematic analysis. The findings of this study indicate a high level of awareness of Generative AI among preschool teachers, with 98.33% of the respondents reporting that they had heard of Generative AI tools. However, only 26.67% of the respondents reported having received formal training in the use of Generative AI. Pedagogical Support recorded the highest mean score of 3.85 (SD = 0.78), indicating that teachers perceived Generative AI as useful in supporting their teaching practices. Lesson planning received the highest priority among the identified applications of Generative AI, with a mean rank of 2.32. The findings also indicate that teachers recognise the potential of Generative AI while having concerns regarding accuracy, responsible use and the need for appropriate teacher guidance. The findings of this study offer valuable insights into how Generative AI can assist preschool teachers in designing meaningful and engaging learning experiences for young minds. In addition, the research strengthens the existing pedagogy with the inclusion of AI in preschool education and provides practical guidance to educators and policy makers in promoting its practices and ethical implications in early childhood education. The outcomes may also serve as a foundation for future research and support informed decision-making regarding integration of AI into preschool teaching practices.

Keywords: *Generative Artificial Intelligence, Preschool education, play – based learning, Early Childhood Education, Preschool teachers, meaningful learning.*

REGIONAL DISPARITIES IN POST-INDEPENDENCE KERALA SCHOOL EDUCATION: POLICY FRAMEWORKS FOR AI LITERACY, TEACHER TRAINING, AND EQUITY

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Abstract

Kerala is a state that achieved universal literacy through decentralized planning, grassroots organization, and public investment. The coming of Generative Artificial Intelligence (GenAI) into school education has created a crucial era. Without deliberate institutional intervention, this technology has the potential to widen long-term regional inequalities across Kerala's hilly, coastal, urban, and rural divisions. This also creates space to repeat past patterns of access seen through print literacy, computer education, and internet connectivity. The objective of the study is To analyze regional disparities in post-independence Kerala school education and to propose institutional policy frameworks for AI literacy, teacher training, and equity. The main focus of this study is to analyse the historical manner in which Kerala handled educational reforms contributes to designing institutional policies aimed at the integration, GenAI, and AI literacy in schools across Kerala. The methodology used for the study is theoretical reviews. This study also helps to formulate an institutional policy framework that helps to avoid technological progress-driven narratives, by integrating the adoption of GenAI within Kerala's existing, equality-focused educational framework. Insights from educational equality theory, digital divide frameworks, socio-technical systems analysis, and AI literacy studies along with programs including IT@School, KITE, and Panchayati Raj-based decentralized planning are. This study adopts a theoretical analysis method that combines a historical review of educational reforms in Kerala. This study, top-down models of regional inequalities and institutional responses are identified. This study also reveals that disparities in digital infrastructure, teacher readiness, and language proficiency are major factors creating inequalities in the adoption of GenAI across districts. Furthermore, the study suggests decentralised administrative structures as a powerful and hitherto underutilised pathway towards equitable implementation. Continuous teacher training, Malayalam-medium AI tools, critical AI literacy curricula, and effective policy priorities targeting historically backward regions and resource allocation must be provided.

Keywords: *regional disparities, postindependence, Kerala school education, policy frameworks, AI literacy, teacher training, equity.*

BUILDING AI-READY HIGHER EDUCATION INSTITUTIONS: A FRAMEWORK FOR TEACHING, RESEARCH, AND GOVERNANCE

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Abstract

The rapid advancement of Generative Artificial Intelligence (GenAI) is transforming the landscape of higher education by reshaping teaching, research, and institutional governance. AI-powered technologies such as ChatGPT, Gemini, Microsoft Copilot, Claude, and Perplexity AI are enabling educators, researchers, and administrators to enhance productivity, personalize learning experiences, support academic research, and streamline institutional operations. However, the successful adoption of these technologies requires higher education institutions to become "AI-ready" by developing appropriate digital infrastructure, institutional policies, faculty competencies, ethical governance mechanisms, and AI literacy among students. This paper presents a conceptual framework for building AI-ready higher education institutions that integrates three major institutional functions: teaching, research, and governance. The framework identifies critical dimensions of AI readiness, including visionary leadership, digital infrastructure, faculty professional development, student AI literacy, ethical and legal compliance, data security, institutional governance, and continuous quality enhancement. The paper further discusses the opportunities offered by Generative AI in personalized learning, intelligent assessment, academic writing, research collaboration, institutional decision-making, and administrative efficiency. At the same time, it critically examines emerging challenges such as academic integrity, algorithmic bias, data privacy, copyright concerns, overdependence on AI, and the need for responsible AI governance. The proposed framework offers a strategic roadmap for universities and teacher education institutions to integrate Generative AI. The study contributes to the growing discourse on AI-enabled educational transformation and provides practical recommendations for policymakers, institutional leaders, teacher educators, and researchers in preparing higher education institutions for the AI-driven future.

Keywords: *Generative Artificial Intelligence, Higher Education, AI Readiness, Teaching, Research, Governance, Teacher Education, Digital Transformation, AI Literacy, Educational Innovation.*

THE FUTURE OF HUMAN-CENTERED COUNSELLING IN THE AI ERA

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Abstract

Artificial intelligence (AI) is being used to transform mental health treatment by creating access to counselling through chatbots, virtual assistants, and other digital applications. These technological innovations have the potential to increase the counsellors' efficiency, provide early intervention, and assist with administrative duties. At the same time, they cannot replace the human touch of a counsellor in building relationships and trust. This paper discusses the implications of using artificial intelligence technologies in counsellors' practice, focusing on benefits and possible ethical concerns, including confidentiality issues and biases. The article argues that AI should be employed as an addition to human-centered counselling to make services more accessible and effective. The paper concludes that technology can optimize human-centered counselling services while maintaining humans in the center of the therapeutic relationship.

Keywords: *Artificial Intelligence, Human-Centered Counselling, Mental Health, Counselling, Ethics.*

AI FOR MONITORING AND ADDRESSING SYSTEMIC BIASES IN MEDIA CONTENT

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Abstract

Artificial intelligence helps monitor and fix systemic media bias by using Natural Language Processing (NLP) to scan large volumes of text, video, and audio. It flags underrepresentation, loaded framing, and stereotypes, allowing newsrooms and watchdogs to correct imbalances before content reaches the public. AI-driven monitoring and detection techniques use machine learning (ML), deep learning (DL), and natural language processing (NLP) to analyse massive data streams in real time. Unlike traditional signature-based frameworks that rely on rigid, predetermined rules, AI systems establish baseline behaviours to uncover complex, zero-day vulnerabilities and hidden anomalies. These advanced strategies are heavily utilized across cybersecurity, enterprise IT observability, manufacturing, and financial fraud prevention. Using Artificial Intelligence (AI) to monitor and address systemic biases in media content is an essential strategy for promoting fair, objective, and inclusive storytelling. Teaching AI is essential for fostering logical reasoning, problem-solving skills, and digital literacy in a technology-driven world. It prepares students for diverse, high-demand careers, promotes innovation, and empowers them to be active creators rather than passive consumers of technology. The aims of AI are broad, long-term goals designed to equip students with the intellectual tools and practical skills necessary to navigate a technology-driven world. Deploying AI to monitor and address systemic media bias shifts modern media operations from reactive tracking to proactive narrative intelligence. The technical architecture and structural framework for implementing automated bias mitigation require a multi-layered approach. AI systems use Named Entity Recognition (Recognition) and Dependency Parsing to separate sources into distinct authority classes. This reveals when media outlets rely heavily on institutional figures while relegating marginalized voices to passive or emotional anecdotes. Structural amplification and silencing define how media platforms use algorithmic distribution, editing choices, and interface design to elevate specific viewpoints while quietly suppressing others. Rather than relying on overt censorship, this form of bias alters the volume, visibility, and reach of information across digital and traditional media ecosystem networks.

Keywords: NLP (Natural Language Processing), LLMs (Large Language Models), NER (Named Entity Recognition), CV (Computer Vision), Transformers, Diarization (Audio Voice-Share), Embeddings (Semantic Vectors), Parsing (Syntax Dependency), Metrics & Mechanics, Screen-Time, Tone-Analysis.

PERSONALIZED TEACHING AND LEARNING THROUGH GENERATIVE AI: LEARNING STYLES INTEGRATION IN HIGHER EDUCATION

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Abstract

Generative Artificial Intelligence (Generative AI) revolutionizes higher education through personalized, adaptive, and learner-centered teaching and learning. In this study, the use of Generative AI for learning style integration and enhancement of instruction is analyzed. Major learning style theories, including the VARK model, Experiential Learning Theory, and the Learning Styles according to Honey and Mumford are considered, and the role of AI in facilitating various learning preferences via multimodality, intelligent tutoring, adaptive testing, and personalized feedback is discussed. In addition, this study considers the use of AI in research innovation, ethical issues, implementation barriers, and suggestions. The conclusion made is that proper and pedagogically sound Generative AI integration can lead to personalized learning in higher education.

Keywords: *Generative Artificial Intelligence (Generative AI), Learning Styles, Personalized Learning, Higher Education, Adaptive Learning*

ASSESSING THE ECONOMIC ROLE OF THE COIR INDUSTRY IN REGIONAL DEVELOPMENT: EVIDENCE FROM KERALA'S ALAPPUZHA DISTRICT

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Abstract

Over a year's socioeconomic development has been significantly impacted by the coir industry one of the greatest agriculturally based conventional industries in kerala. The most important production and processing center in kerala is Alappuzha district. Which is regarded as the origin of the coir industry. It makes a major contribution to rural industrialisation, export revenue, women empowerment, employment opportunities and sustainable economic growth. This study investigates the economic significant of the coir industry in the regional growth of Alappuzha district using secondary data collected from the coir board, MSME, kerala economic review, directorate of industries and commerce and published research. The industry contribution including production, employment, trade, value addition and government support has been evaluated with a descriptive and analytical study design. Despite challenges like labour shortage, raw material challenges, technological gaps and increasing competition from synthetic alternatives, the study find that coir industry remains significant contribution to the economy. The study conclusion that sustaining the industry contribution to regional development needs modernization, product diversification, market expansion and institutional support.

Keywords: *coir industry, regional development, employment, rural economy, export and import, MSMEs*

BEYOND THE PROMPT: SAFEGUARDING ACADEMIC INTEGRITY, FAIRNESS, AND TRUST IN THE AGE OF GENERATIVE ARTIFICIAL INTELLIGENCE

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Abstract

Generative artificial intelligence (GenAI) has moved from the margins of educational technology to the centre of academic practice within a remarkably short span of time, reshaping how students write, how researchers synthesise literature, and how institutions verify original work. This conceptual article examines the ethical and responsible use of GenAI in higher education through five interlocking pillars: academic integrity, algorithmic bias, privacy, transparency, and accountability. Drawing on an integrative review of contemporary scholarship and institutional policy guidance, the article argues that these pillars are not isolated compliance checkboxes but mutually reinforcing conditions for trustworthy adoption. Academic integrity concerns are shown to extend beyond plagiarism detection into questions of authorship and disclosure; bias is traced to the composition of training corpora and its downstream effects on marginalised learners; privacy risks are linked to the opaque data practices of commercial AI vendors; transparency is framed as a prerequisite for meaningful consent and critical evaluation; and accountability is presented as the structural mechanism that binds the other four pillars together. The article proposes an integrative governance framework linking each pillar to concrete institutional responses, and closes with implications for policy, curriculum design, and future empirical research. The discussion is intended to support academic leaders, teacher educators, and policymakers in developing GenAI governance that is proactive rather than reactive, and responsive to the realities of the twenty-first-century classroom.

Keywords: *generative artificial intelligence, academic integrity, algorithmic bias, data privacy, transparency, accountability, higher education policy*

ARTIFICIAL INTELLIGENCE AND SUSTAINABLE DEVELOPMENT GOALS: ADVANCING QUALITY EDUCATION THROUGH MOTHER TONGUE-BASED EDUCATION

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Abstract

Education is acknowledged as one of the most powerful tools for achieving the Sustainable Development Goals (SDGs), especially SDG 4 which aims to ensure inclusive, equitable and quality education for all. Mother Tongue-Based Education (MTBE) has emerged as an effective pedagogy that facilitates meaningful learning by allowing children to start their education in their first language and gradually transition to other languages. This is particularly important for indigenous, tribal and multilingual communities where barriers of language often lead to low enrolment, poor learning outcomes and higher dropout rates. MTB-MLE is consistent with the principles of equity, inclusion and lifelong learning that are underscored in the 2030 Agenda for Sustainable Development. This paper reviews literature, international policy frameworks and educational practices to examine the role of mother tongue-based education in achieving the Sustainable Development Goals. It emphasizes the benefits of learning in the mother tongue in terms of literacy, cognitive development, classroom participation, academic achievement and socio-emotional well-being. It also discusses the role of the mother tongue education in reducing educational inequalities, preserving cultural heritage, promoting gender equity and strengthening social cohesion. The paper also delves into the policy support provided by UNESCO and National Education Policy (NEP) 2020 of India for the implementation of mother tongue instruction in the initial years of schooling. Despite its numerous advantages, the successful implementation of mother tongue-based education faces challenges such as inadequate teacher preparation, limited teaching-learning materials, linguistic diversity, and insufficient policy implementation. The paper concludes that strengthening mother tongue-based education through appropriate curriculum development, teacher training, digital learning resources, and community participation can significantly contribute to achieving the Sustainable Development Goals. Governments, educational institutions, and policymakers should therefore prioritize multilingual education as an essential strategy for ensuring equitable, inclusive, and sustainable educational development.

Keywords: *SDGs, Mother Tongue-based Education, Multilingual Education, SDG 4, Inclusive Education, NEP 2020, Tribal Education, Quality Education.*

GENERATIVE AI IN TEACHING AND LEARNING - PERSONALIZED LEARNING, INTELLIGENT TUTORING SYSTEMS, AI-GENERATED CONTENT FOR CLASSROOMS.

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Abstract

Generative Artificial Intelligence is rapidly reshaping teaching and learning by providing innovative tools that enhance educational experiences for both teachers and students. Unlike traditional educational technologies, Generative AI can create original content, provide adaptive feedback, and support interactive learning experiences tailored to the needs of individual learners. As educational institutions increasingly integrate AI-powered technologies, new opportunities have emerged to personalize instruction, provide intelligent academic support, and create high-quality learning resources with greater efficiency. This conceptual paper explores the role of Generative AI in promoting Personalized Learning, supporting Intelligent Tutoring Systems, and creating AI-generated content for classroom instruction. Personalized learning enables instruction to be adapted to individual learner's needs, interests, abilities and pace, thereby improving engagement and learning outcomes. Intelligent Tutoring Systems use AI to deliver customized guidance, instant feedback, and adaptive learning support, helping students, strengthen their understanding of concepts. In addition Generative AI assists educators by producing lesson plans, quizzes, worksheets, presentations and other instructional resources, reducing preparation time while enriching classroom activities. Despite these advantages, the integration of Generative AI presents important ethical and educational challenges including concerns about academic integrity, data privacy, algorithmic bias, transparency and need of for AI literacy among educators and Students. Addressing these issues requires thoughtful implementation, appropriate policy frameworks, and ongoing professional development to ensure that AI is used responsibly and effectively. This paper argues that Generative AI is most valuable when it enhances, rather than replaces, the professional expertise of teachers. By combining human pedagogical judgment with AI-supported innovation, educational institutions can foster inclusive, flexible, and future-ready learning environments. This discussion contributes to the growing understanding of how Generative AI can responsibly transform teaching and learning in the digital era.

Keywords: *Generative Artificial Intelligence, Teaching and Learning, Personalized Learning, Intelligent Tutoring Systems, AI-Generated Content, Educational Technology.*

AN URGENT GLOBAL NEED FOR MULTIDISCIPLINARY APPROACHES IN THE HUMANITIES AT UNIVERSITIES

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Abstract

Contemporary social, economic, technological and environmental challenges increasingly exceed the problem-solving capacity of a single academic discipline. This paper examines the need to strengthen multidisciplinary approaches in Humanities education at the tertiary level. It argues that meaningful integration of Humanities with social sciences, science, technology and related fields can broaden students' knowledge, strengthen critical and creative thinking, improve communication and collaboration, and enhance their capacity to respond to real-world problems. The discussion adopts a descriptive approach and considers the rationale, educational value, collaborative practices, implementation barriers and strategies for institutionalizing multidisciplinary learning. Particular attention is given to rigid disciplinary boundaries, curriculum structures, faculty specialization, inadequate teacher preparation and limited institutional support. The paper proposes flexible curricula, collaborative teaching, integrated teacher education, cross-disciplinary research, appropriate institutional incentives and stronger links among universities, schools and communities. Multidisciplinary education should therefore be regarded not as a temporary trend but as an essential dimension of contemporary university education.

Keywords

Multidisciplinary education; interdisciplinary learning; Humanities; higher education; collaborative teaching; curriculum; cross-disciplinary research.

AI - GENERATED TEACHING AND LEARNING CONTENT FOR CLASSROOMS

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Abstract

Artificial Intelligence (AI) is rapidly changing the educational landscape by introducing new methods for creating, delivering, and experiencing teaching and learning content. AI-generated content refers to educational materials produced or assisted by artificial intelligence systems, including lesson plans, explanations, worksheets, quizzes, presentations, images, summaries, assessment questions, learning activities, and personalized learning resources. The emergence of generative AI has created significant opportunities for teachers and students by making educational content more accessible, adaptable, interactive, and personalized. Teachers can use AI to reduce the time required for routine content preparation, differentiate instruction, generate classroom activities, and provide learning resources according to students' individual needs. Students can use AI-generated content for explanation, practice, brainstorming, revision, language learning, and feedback. This article examines the concept, applications, benefits, challenges, and future possibilities of AI-generated teaching and learning content in classrooms. It also discusses the changing role of teachers, the importance of AI literacy, assessment practices, inclusive education, and responsible classroom implementation. The article argues that AI should be used as a supportive educational technology rather than as a replacement for teachers or human thinking. Effective integration of AI-generated content requires a balanced approach in which technology enhances teaching while teachers retain professional judgment and students remain active, critical, creative, and responsible learners.

Keywords: *Artificial Intelligence, Generative AI, AI-Generated Content, Teaching, Learning, Classroom, Personalized Learning, Educational Technology, AI Literacy, Digital Education*

HUMAN-AI COLLABORATION IN LITERATURE REVIEW: ENHANCING RESEARCH EFFICIENCY, CRITICAL ANALYSIS AND INNOVATION

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Abstract

The emergence of Generative Artificial Intelligence (GenAI) has introduced a significant transformation in the way academic researchers search, organize, interpret and synthesize scholarly literature. Literature review, which has traditionally required extensive human effort in identifying sources, reading research articles, comparing findings, developing themes and identifying research gaps, is increasingly being supported by Artificial Intelligence-based tools. Large Language Models and AI-enabled research platforms can assist researchers in generating keywords, discovering related concepts, summarizing scholarly texts, organizing literature, comparing studies and suggesting potential research gaps. However, the growing use of AI also creates serious concerns regarding hallucinated information, fabricated references, algorithmic bias, superficial synthesis, overdependence, privacy, academic integrity and the loss of researcher autonomy. Therefore, the future of AI-supported literature review should not be understood as the replacement of human researchers but as a collaborative relationship between human intellectual judgement and machine-assisted information processing. This thematic paper explores the role of Human-AI Collaboration in literature review with particular emphasis on research efficiency, critical analysis and research innovation. It proposes a Human-AI Collaborative Literature Review Framework consisting of seven interconnected stages: research-question formulation, intelligent literature discovery, screening and organization, AI-assisted comprehension, comparative synthesis, human verification and research-gap identification. The paper argues that Artificial Intelligence can increase the speed and scale of literature processing, whereas human researchers remain essential for evaluating evidence, interpreting findings, understanding context, recognizing contradictions and making ethical scholarly decisions. The paper concludes that meaningful research innovation emerges when the computational capabilities of AI are combined with human creativity, critical thinking, methodological expertise and ethical responsibility.

Keywords: *Generative Artificial Intelligence, Human-AI Collaboration, Literature Review, Educational Research, Research Efficiency, Critical Analysis, Research Innovation, AI Literacy*

GENERATIVE ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION: INNOVATIONS IN TEACHING, LEARNING, RESEARCH, AND POLICIES

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Abstract

Generative Artificial Intelligence (GenAI) is revolutionizing higher education through improved teaching, learning, assessment, and research. This paper focuses on the transformational role played by AI from conventional AI to Generative AI and provides an overview of its applications in customized learning, intelligent tutoring, academic research, and many other areas. It sheds light on the opportunities presented by GenAI, along with its challenges associated with academic dishonesty, bias, privacy, reliability, infrastructure, and AI literacy. Finally, this paper offers some strategic suggestions for the future.

Keywords: *Generative Artificial Intelligence, Higher Education, Teacher Education, AI Literacy, Educational Technologies*

**TRADITIONAL KNOWLEDGE SYSTEM AND SUSTAINABLE
DEVELOPMENT GOALS: DIGITAL MODERN EDUCATION,
SCIENCE, TECHNOLOGY IN FUTURE CHALLENGES AND
OPPORTUNITIES**

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Abstract

Education is fundamental for achieving full human potential, developing an equitable and just society, and promoting national development. Providing universal access to quality education is the key to India's continued ascent, and leadership on the global stage in terms of economic growth, social justice and equality, scientific advancement, national integration, and cultural preservation. Universal high-quality education is the best way forward for developing and maximizing our country's rich talents and resources for the good of the individual, the society, the country and the world. India will have the highest population of young people in the world over the next decade, and our ability to provide high-quality educational opportunities to them will determine the future of our country.

Key Words: - *Early Childhood Care and Education, Foundational Literacy and Numeracy*

PREPARING FUTURE TEACHERS FOR THE AI ERA: A HUMAN CENTRED PEDAGOGICAL FRAMEWORK FOR TEACHER EDUCATION

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Abstract

The rapid advancement of Generative Artificial Intelligence (GenAI) is transforming teacher education by reshaping instructional practices, learning environments, assessment strategies, and professional competencies. As AI powered technologies become increasingly integrated into educational settings, teacher education institutions face the challenge of preparing future teachers who can effectively utilize these technologies while preserving the human values that underpin quality education. Although Generative AI enhances personalized learning, instructional design, content creation, and assessment efficiency, it cannot replace essential human attributes such as empathy, ethical reasoning, creativity, critical thinking, and professional judgment. This thematic paper proposes a Human Centred Pedagogical Framework to guide teacher education programmes in preparing future educators for AI enabled classrooms. The framework comprises eight interconnected dimensions: AI literacy, pedagogical innovation, ethical and responsible AI use, critical thinking and reflective practice, creativity and innovation, inclusive and equitable education, socio emotional learning and human values, and continuous professional development. The paper discusses the transformative role of AI in teacher preparation, the need for balancing technological competence with human centred educational practices, and the implications for curriculum redesign, institutional policy, and faculty development. It further emphasizes that AI should function as an intelligent educational partner that supports teachers rather than replacing their professional role. By integrating technological innovation with pedagogical expertise, ethical responsibility, and learner centred values, the proposed framework offers a practical roadmap for developing future ready educators capable of fostering inclusive, innovative, and sustainable learning environments. The paper contributes to the ongoing discourse on responsible AI integration in teacher education and provides strategic directions for preparing teachers who can successfully lead education in the era of Artificial Intelligence.

Keywords: *Generative Artificial Intelligence, Teacher Education, Human Centred Pedagogy, AI Literacy, Future Teachers, Ethical AI, Pedagogical Innovation, Professional Development.*

GENERATIVE ARTIFICIAL INTELLIGENCE IN TEACHER EDUCATION: ADVANCING PRE-SERVICE TEACHERS' LEARNING AND PROFESSIONAL DEVELOPMENT

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Abstract

Generative Artificial Intelligence (GenAI) has become a groundbreaking technology in education, influencing teaching, learning, assessment, and instructional design processes through state-of-the-art large language models. While there is extensive academic literature on GenAI's impact on education, relatively little conceptual attention has been paid to the role of GenAI in enhancing the learning experiences and professional development of pre-service teachers. In this conceptual review, recent literature is reviewed to investigate GenAI as a tool for personalized learning, academic writing, prompt engineering, critical thinking, creativity, collaborative learning, self-directed learning, AI literacy, AI readiness, AI-integrated pedagogical competencies (AI-TPACK), teaching self-efficacy, and behavioural intention to integrate AI into future teaching practices. According to the synthesised literature, GenAI has significant potential to enhance the learning and professional development of pre-service teachers, although its integration should be guided by pedagogically sound, ethical, and critical approaches. On the basis of the review findings, the paper presents an integrated conceptual framework, which positions learning enhancement and professional development as interrelated pathways towards developing AI-ready pre-service teachers. The review also highlights ethical issues in the use of GenAI for teacher education, such as academic integrity, bias, privacy, and equity. The proposed conceptual framework provides a foundation for future empirical research and offers practical guidance to teacher educators, curriculum developers, policymakers, and educational institutions for integrating GenAI into teacher education.

Keywords: *Generative Artificial Intelligence; Teacher Education; Pre-Service Teachers; Learning Enhancement; Professional Development.*

EFFECTIVENESS OF GENERATIVE AI- BASED ADVERTISING IN PROMOTING EDUCATIONAL INSTITUTION

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Abstract

The emergence of Generative Artificial Intelligence (Generative AI) has introduced advanced strategies and innovative approaches to digital marketing, significantly transforming traditional advertising into more dynamic and personalized digital marketing practices. In today's technology-driven era, Generative AI enables the advertising industry to create engaging and personalized promotional content through high-quality videos, images, text, and interactive media. These advertisements help prospective students and other stakeholders gain a better understanding of an educational institution's academic programmes, campus facilities, achievements, and overall learning environment. Generative AI-based advertisements can be tailored to students' interests and preferences, making them more engaging, relevant, cost-effective, and time-efficient than conventional advertising methods.

Keywords: *Generative Artificial Intelligence, Digital Marketing, Advertising, Educational Institution*

FROM STATIC TEXTBOOKS TO DYNAMIC DISCOVERY- GENERATIVE AI-POWERED PERSONALIZED LEARNING AND INTELLIGENT TUTORING

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Abstract

This study, employing a mixed-methods approach, investigated how Generative AI-powered personalized learning and intelligent tutoring systems impact academic achievement, learner engagement, and self-regulated learning among secondary school students in Biology. A quasi-experimental design was implemented, featuring an experimental group (EG, n=24) that received instruction supplemented by a customized intelligent tutoring system powered by GPT-4o and a control group (CG, n=24) that followed traditional teacher-centered methods. Quantitative data derived from pre-tests, post-tests, and a Biology achievement measure were analyzed using t-tests and ANCOVA. To capture the nuanced experiences of learners, qualitative data was collected through semi-structured interviews. The quantitative analysis demonstrated a statistically significant improvement in the experimental group's post-test scores ($t(23)=9.24$, $p<.001$, $d=1.58$). Furthermore, ANCOVA results confirmed a significant inter-group difference in post-test performance ($F(1,45)=6.89$, $p=.012$) after adjusting for baseline knowledge. A moderate positive correlation was established between learner engagement with the AI tutor and post-test achievement ($\rho=0.59$, $p<.01$), indicating that higher engagement strongly correlated with improved performance. Qualitative themes revealed increased learner autonomy, enhanced conceptual clarity, greater confidence in approaching complex biological concepts, and development of scientific inquiry skills. This research concludes that Generative AI-powered personalized learning systems represent a transformative educational instrument for not only strengthening conceptual understanding in Biology but also for systematically cultivating self-regulated learning, scientific reasoning, and intellectual independence.

Keywords: *Generative AI, Personalized Learning, Intelligent Tutoring Systems, Biology Education, Mixed-Methods, Secondary Education, Self-Regulated Learning, Scientific Inquiry*

AN IN-DEPTH SCHOLARLY ANALYSIS OF AI'S APPLICATION TO RESEARCH METHODS AND THESIS WRITING

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Abstract

Academic writing procedures and research approaches are being quickly transformed by artificial intelligence (AI). AI tools have proven indispensable in contemporary research workflows, from automating literature reviews to data analysis, generating hypotheses, and helping with draft writing. AI integration poses serious issues with academic integrity, ethical use, output reliability, and researcher dependency, even though it promises significant benefits including enhanced productivity, better writing quality, and accessibility for non-native researchers. In addition to examining the ethical landscape, outlining recommended practices for responsible use, and suggesting future approaches for successfully integrating AI into academia, this study synthesizes current information on how AI both supports and challenges research technique and thesis writing.

Keywords

Artificial Intelligence, Research Methodology, Thesis Writing, Academic Writing, Generative AI, Ethical Challenges, Literature Review, Data Analysis, Academic Integrity

TITLE: SUPPORTING STUDENTS WITH DISABILITIES USING GENERATIVE ARTIFICIAL INTELLIGENCE A REVIEW

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Abstract

Student with disabilities have challenges in day today activities daily life. Technology supports the student with disabilities in day to day activities and reduce the challenges. Generative Artificial Intelligence (Gen AI) is developing as changes in technology with the protective to improve teaching learning and accessibility for students with disabilities. Through different modified adapted instructional content, adaptive learning activities, Differential teaching, real time feedbacks, and assistive communication devices. Generative Artificial Intelligence (Gen AI) helps diverse learning needs and encourage inclusive educational practices among students with disabilities. This review shows the growth of research in this area, suggestion on the educational applications, benefits and challenges of Generative artificial Intelligence for students with disabilities. This review shows the literature to provide a comprehensive overview of the role of generative artificial intelligence in supporting learners with disabilities. This review article shows of peer-reviewed studies published between 2020 and 2026 was conducted using major academic databases, including Scopus, Web of Science, ERIC, IEEE Xplore, and Science Direct. Studies exploring the use of GenAI technologies, including large language models, AI-powered teaching systems, content generation tools, and assistive learning applications for students with disabilities, were studied. The selected studies were analysed to recognise application and challenges areas, educational process and outcomes, applied innovative teaching strategies, ethical considerations, and research gaps. The findings explores GenAI improves modified adapted learning, differentiated instruction, curriculum adaptation, communication support, accessibility, and learner engagement for students with autism spectrum disorder, learning disabilities, intellectual disabilities, sensory impairments, multiple disability and other disabilities. In addition, GenAI supports teachers by facilitating individualized instructional planning, reducing administrative workload among teachers, and generating accessible learning resources. However, challenges related to data confidentiality, algorithmic bias, transparency, digital accessibility, teacher preparedness, and the reliability of AI-generated content remain significant concerns. Overall, the review explains about the possible ways of Generative Artificial Intelligence to support inclusive education and improve learning experiences for students with disabilities when implemented within ethical, pedagogical, and strategy frameworks. The article findings also classify current research gaps and provide directions for future research and educational practice.

Keywords: *Generative Artificial Intelligence, Students with Disabilities, Inclusive Education, Personalized Learning, Assistive Technology, Large Language Models, Educational Technology.*

GENERATIVE AI IN HISTORICAL RESEARCH: REVOLUTIONISING ARCHIVES, MANUSCRIPTS AND HISTORICAL WRITING

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Abstract

With the advent of Generative AI, it has transformed historical research by reshaping the ways historians discover, analyze, interpret, and communicate with the past. The paper centrally questions how generative AI will revolutionize historical research, and what opportunities, challenges, and ethical responsibilities it creates for historians. Conventionally, historians depended on time-intensive process of archival exploration, manuscript transcription, source criticism, and narrative construction, but today HTR, LLMs, OCR, and multimodal AI systems are strengthening researcher's ability to process vast collections of records, decipher manuscripts, constructing descriptive metadata, multilingual translation, and pattern identification across dispersed collections with automatic cataloguing, intelligent retrieval, semantic search, duplicate detection and its preservation. Even though AI has reshaped the methodological foundations of historical research, it also has negative impacts which lead to risks and challenges like algorithmic biased representation, citations reliability, fabricated quotations, colonial dimensions in training data, transparency, copyright concerns, source authenticity, and etc. With the introduction of a framework for responsible integration: one that brings together comprehensive verification protocols, cryptographic origin tracking, indigenous and community data-governance principles, and a refined pedagogy of historical method, establishing generative AI as a useful collaborator. The central argument presented in the paper is that even if generative AI is the most significant methodological innovation in historical research, it can only act as an intellectual assistant, whose outputs demand the same source criticism as any other primary source rather than replacing historian's expertise. The article concludes with the idea that by aligning the discipline's commitment, technological innovation with evidence-based inquiry, the future of historical research can reach new heights in this age of artificial intelligence.

Keywords: *Generative AI, Archive, HTR, LLM, OCR, Metadata, Cryptography.*

DIGITAL TRANSFORMATION OF EDUCATION THROUGH GENERATIVE ARTIFICIAL INTELLIGENCE: EMERGING TRENDS AND FUTURE PERSPECTIVES

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Abstract

The rapid evolution of Generative Artificial Intelligence (GenAI) is accelerating the digital transformation of education by redefining teaching, learning, assessment, educational administration, and research practices. Unlike earlier digital technologies that primarily supported content delivery and communication, Generative AI enables the creation of personalized learning materials, intelligent tutoring, automated assessment, adaptive feedback, and interactive educational resources. These innovations provide significant opportunities to improve learner engagement, instructional effectiveness, and educational accessibility while supporting teachers in designing innovative learning experiences. However, the increasing integration of AI also raises important concerns regarding academic integrity, algorithmic bias, data privacy, ethical decision making, and digital inequality. Consequently, educational institutions must adopt balanced strategies that combine technological innovation with human centered educational values. This thematic paper explores the emerging trends driving the digital transformation of education through Generative Artificial Intelligence and examines their implications for future educational systems. The paper discusses key developments, including AI powered personalized learning, intelligent tutoring systems, AI assisted assessment, curriculum innovation, educational administration, and teacher professional development. It further analyses the opportunities and challenges associated with AI adoption and highlights the importance of ethical governance, digital inclusion, AI literacy, and responsible educational practices. The paper argues that the future of education should not focus on replacing teachers with Artificial Intelligence but on establishing collaborative human AI partnerships that enhance learning quality while preserving creativity, empathy, critical thinking, and professional judgment. Finally, strategic recommendations are presented for policymakers, educational institutions, and teacher educators to support sustainable digital transformation. The paper contributes to the growing discourse on AI enabled education by providing a comprehensive conceptual perspective on how Generative Artificial Intelligence can foster innovative, inclusive, and future ready educational ecosystems.

Keywords: *Generative Artificial Intelligence, Digital Transformation, Educational Technology, Personalized Learning, Artificial Intelligence in Education, Digital Pedagogy, AI Literacy, Future Education.*

ARTIFICIAL INTELLIGENCE AND SELF-REGULATED LEARNING: BUILDING INDEPENDENT LEARNERS FOR ACADEMIC EXCELLENCE.

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Abstract

Artificial Intelligence (AI) is emerging as a valuable tool in education by supporting personalized instruction, adaptive learning, and continuous feedback. When combined with self-regulated learning (SRL) strategies, AI can help students become more independent learners by improving their ability to set goals, plan learning activities, monitor progress, and evaluate their own performance. This study aims to investigate the impact of AI-supported self-regulated learning strategies on the academic achievement of secondary school students. An experimental research design will be employed, comparing students who receive AI-assisted SRL instruction with those taught through conventional methods. Data will be gathered using standardized academic achievement tests and self-regulated learning scales, and analyzed through appropriate statistical techniques. The study is expected to show that integrating AI with self-regulated learning strategies enhances students' academic performance, learning motivation, and self-directed learning skills. The findings are expected to provide practical guidance for educators, curriculum developers, and policymakers in promoting the effective use of AI to improve teaching and learning in secondary education.

Keywords:

Artificial Intelligence, Self-Regulated learning, Adaptive learning, Learning motivation, Self-monitoring

ARTIFICIAL INTELLIGENCE IN ACTIVE LEARNING STRATEGIES: TRANSFORMING TEACHING, LEARNING, AND STUDENT ENGAGEMENT IN HIGHER EDUCATION

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Abstract

Artificial Intelligence (AI) is transforming higher education by enhancing teaching, learning, and student engagement through the integration of active learning strategies. AI technologies, such as intelligent tutoring systems, adaptive learning platforms, learning analytics, virtual assistants, and generative AI tools, support personalized, collaborative, and student-centered learning experiences. These technologies help improve student motivation, academic performance, critical thinking, creativity, and problem-solving skills while enabling educators to provide timely feedback and data-driven instruction. This thematic review examines recent research (2020–2026) on the role of AI in active learning strategies and highlights its potential to improve educational outcomes through personalized learning, collaborative activities, and predictive learning analytics. The review also discusses key challenges, including ethical concerns, data privacy, algorithmic bias, academic integrity, unequal access to technology, and the need for faculty training. The paper concludes that AI should complement rather than replace educators by supporting innovative, inclusive, and evidence-based teaching practices. Successful implementation requires responsible AI governance, ethical guidelines, and digital literacy initiatives. The findings provide valuable insights for educators, researchers, policymakers, and higher education institutions seeking to integrate AI effectively into active learning environments while promoting quality education and lifelong learning.

Keywords: *Artificial Intelligence, Active Learning Strategies, Higher Education, Student Engagement, Personalized Learning, Adaptive Learning, Intelligent Tutoring Systems, Learning Analytics, Generative AI, Educational Technology.*

AI-ASSISTED TAMIL READING FOR CHILDREN WITH AUTISM SPECTRUM DISORDER: A CONCEPTUAL FRAMEWORK FOR LITERACY SUPPORT

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Abstract

Reading is an essential skill for academic learning and everyday participation. However, children with Autism Spectrum Disorder (ASD) may experience difficulties in developing reading and language skills, particularly when learning through their mother tongue. For Tamil speaking children with ASD, access to structured, technology supported reading resources remains limited. Although Artificial Intelligence (AI) is increasingly being explored in education, its use for supporting Tamil literacy among children with ASD has received comparatively little attention. This paper proposes a conceptual framework for AI-Assisted Tamil reading that provides adaptive learning support according to individual reading abilities. The framework brings together multisensory learning activities, adaptive reading tasks, and continuous feedback to support reading fluency, vocabulary development, comprehension, and learner engagement. The proposed approach aims to contribute to inclusive and technology enabled special education by providing a contextually relevant model for Tamil speaking learners with ASD. It may also offer useful directions for educators, parents, researchers, and policymakers working towards more accessible and culturally responsive literacy support.

Keywords: *Artificial Intelligence, Autism Spectrum Disorder, Tamil Reading, Literacy Development, Special education*

MAKING THE MATHEMATICS VISIBLE: RULE-BASED COMPOSITION AND ALGORITHMIC LITERACY IN SECONDARY EDUCATION

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Abstract

Generative artificial intelligence has been absorbed into the social sciences, the humanities, the natural sciences, commerce, education and tourism faster than any of these fields has been able to build a framework for it. Each discipline has produced its own review literature and its own anxieties, and the six bodies of work rarely speak to one another. This article argues that they describe a single mechanism. A generative language model produces text by converting language into number, learning conditional regularities and then selecting inside a set of limits. That is also, precisely, the working method of rule-governed composition, a tradition of writing under stated mathematical constraint whose earliest and most fully developed articulation is Piṅgala's Chandaḥśāstra. Drawing on twenty-five studies published mainly between 2021 and 2025, the article identifies two documented costs of generative AI in education - the association between unguided use and weakened critical thinking, and the convergence of assisted writing towards a common centre and sets these against evidence from computational linguistics that strict formal constraint remains one of the tasks generative systems perform least reliably. From this convergence the article develops a conceptual framework, Do-Compare-Critique, in which students compose under an explicit mathematical rule before encountering machine output, and then adjudicate between the two. The framework offers a device-independent route to algorithmic literacy, an argument for the pedagogical value of difficulty, and a curricular anchor in Indian Knowledge Systems that carries beyond the Indian context.

Keywords: *Generative Artificial Intelligence, Rule-governed Composition, Constraint-based Writing, Critical Thinking, Secondary Education*

GENERATIVE AI AND PEDAGOGICAL ADAPTATION AMONG SECONDARY SCHOOL TEACHERS IN THE POST-COVID-19 ERA: OPPORTUNITIES, CHALLENGES AND FUTURE DIRECTIONS

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Abstract

The COVID-19 pandemic accelerated the integration of digital technologies into education and significantly influenced teachers' pedagogical practices. In the post-COVID-19 era, the emergence of Generative Artificial Intelligence (GenAI) has created new possibilities for lesson planning, instructional content creation, differentiated learning, assessment, feedback, and student engagement. At the same time, its integration raises concerns related to teacher preparedness, academic integrity, accuracy, privacy, bias, digital equity, and ethical use. This thematic paper examines the role of Generative AI in supporting pedagogical adaptation among secondary school teachers in the post-COVID-19 era. It explores its potential to transform instructional practices, assessment, classroom management, digital pedagogy, and flexibility and innovation in teaching. The paper adopts a conceptual and thematic review approach based on recent scholarly literature, educational frameworks, and relevant policy perspectives. It argues that Generative AI should complement rather than replace teachers' professional knowledge, judgement, creativity, and human relationships with learners. Effective integration requires AI literacy, continuous professional development, ethical guidelines, institutional support, and equitable access to technology. The paper concludes by highlighting opportunities, challenges, and future directions for responsible, inclusive, and human-centred integration of Generative AI in secondary education.

Keywords: *Generative Artificial Intelligence, Pedagogical Adaptation, Secondary School Teachers, Post-COVID-19 Education, Digital Pedagogy, Student Engagement, AI Literacy.*

ACADEMIC ENGAGEMENT IN THE AGE OF GENERATIVE AI: EMERGING TRENDS, CHALLENGES, AND FUTURE DIRECTIONS

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Abstract

Generative Artificial Intelligence (Generative AI) is changing the way teaching and learning take place in education. It is becoming an important tool that supports students in learning, completing academic tasks, solving problems, and improving their academic engagement. Many educational institutions are now using AI-powered tools to provide personalized learning, instant feedback, and easy access to learning materials. As the use of Generative AI continues to grow, it is becoming necessary to understand its influence on students' learning experiences and academic engagement. This thematic paper explores the relationship between Generative AI and academic engagement by examining the emerging trends, major challenges, and future directions in this field. The paper is based on a review of recent literature and discusses how Generative AI can improve behavioural, emotional, and cognitive engagement through personalized learning, creative learning activities, collaboration, and better access to educational resources. It also explains how AI can support both teachers and students by making learning more flexible, interactive, and learner-centred. At the same time, the paper highlights important challenges such as academic dishonesty, excessive dependence on AI, reduced critical thinking, ethical concerns, data privacy issues and unequal access to technology. The paper emphasizes that Generative AI should be used

as a learning support tool rather than a replacement for students' own thinking and effort. It concludes that the responsible and balanced use of Generative AI, along with proper guidance from teachers and educational institutions, can strengthen academic engagement and improve learning outcomes. The paper also suggests that future research should focus on AI literacy, ethical practices, digital responsibility, and effective strategies for integrating AI into education.

Keywords: *Generative AI, Academic Engagement, Emerging Trends, Challenges, Future Directions.*

ETHICAL ISSUES IN AI BASED COUNSELLING: PRIVACY, BIAS AND TRUST

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Abstract

Artificial Intelligence (AI) is increasingly prevalent in the field of counselling, as it offers rapid assistance through chatbots, virtual assistants and mental health applications. This technology facilitates easier access to counselling services, particularly when immediate professional help is unavailable. However, the integration of AI into counselling raises several ethical concerns that must be addressed. This paper examines three significant ethical issues: privacy, bias and trust. Privacy is crucial because individuals disclose their personal thoughts and feelings during counselling sessions and it is imperative that this information remains secure and confidential. Bias presents another challenge, as AI systems may produce unfair or inaccurate responses if they are developed using biased or insufficient data. Trust is also vital, as clients must feel assured that the advice they receive is safe, dependable and transparent. While AI can offer support, it cannot substitute for the empathy, emotional insight and professional judgment that a human counsellor provides. From the presenter point of view, AI can make counselling more accessible and helpful, but it should not replace human counsellors. It should only be used as a tool to support them. If AI is used carefully in the counselling process by protecting privacy, reducing bias and building trust, it can become a better support system for both counsellors and clients.

Keywords: *Artificial Intelligence (AI), Counselling, Ethics, Privacy, Bias, Trust, Confidentiality and Mental Health.*

GENERATIVE AI IN SOCIAL SCIENCE SUBJECT: APPLICATIONS, ETHICAL CONCERNS AND FUTURE DIRECTIONS

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Abstract

Generative Artificial Intelligence (AI) is steadily reshaping the manner in which Social Science as a school and college subject is taught, learnt and researched. This paper examines the applications of Generative AI tools in Social Science classrooms, ranging from personalised learning support to assistance in research and academic writing, while critically discussing the ethical dilemmas of academic integrity, algorithmic bias and data privacy that accompany such adoption. The paper further situates these developments within the larger discourse of digital equity, highlighting how disparities in access to technology among urban, rural and under-resourced learners may widen if left unaddressed. Drawing upon the National Education Policy 2020 and recent scholarly literature, the paper proposes pedagogical and policy measures for the responsible, inclusive and human-centred integration of Generative AI in Social Science education.

Keywords: *Generative AI, Social Science Education, Digital Equity*

HYBRID WIENER FILTERING APPROACH FOR BREAST CANCER DETECTION AND IMAGE ENHANCEMENT

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Abstract

Breast cancer is a major health concern among women worldwide, and early detection is essential for effective treatment. Medical imaging techniques, especially mammography, are widely used for breast cancer diagnosis, with images stored in the DICOM format. However, noise and low contrast can affect image quality and diagnostic accuracy. This study focuses on Wiener filtering techniques to enhance mammographic images by reducing noise and minimizing mean square error while preserving important details. The enhanced images improve the visualization of breast tissues and abnormalities, supporting the classification of benign, malignant, and normal cases. Wiener-based image enhancement improves signal quality and assists in accurate breast cancer detection and diagnosis.

Keywords: *Breast cancer, Medical imaging, Wiener filter, Mammography, Image enhancement.*

REIMAGINING HUMAN LEARNING IN THE AGE OF GENERATIVE AI: BALANCING CRITICAL THINKING, HUMAN AGENCY AND HUMAN-AI COLLABORATION IN HIGHER EDUCATION

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Abstract

In the age of Generative AI like ChatGPT and all the rest of these technologies of this kind, the process of students' academic education is going through some changes in the way of their learning and thinking process. With the help of Generative AI technologies, students can do their assignments, write an essay, solve problems, and answer any questions in seconds. It is very convenient for students, and it gives them some benefits; however, the major question is how do students think on their own and how much they become dependent on the technologies that help them to think. The current research paper touches upon the issue and tries to explore how Generative AI affects the development of critical thinking and human agency in college students. The research is based on the literature review and personal experience of professors and students who use AI in colleges and universities. The key conclusion of the research is that the role of Generative AI technologies is to assist in thinking rather than replace it. This goal can be achieved through the offered framework. The proposed framework is based on three key principles: maintaining critical thinking via guided questions, preserving human agency through the encouragement of students' decision-making, and creating good collaboration between people and AI, not full dependence. There is also a discussion in the paper on possible ways of implementation of AI into the learning process through the application of different classroom practices like reflective writing, assisted brainstorming with the subsequent verification by humans, and AI-literacy training conducted by teachers. The conclusion drawn in the paper is that Generative AI is both helpful and detrimental. However, its influence depends entirely on the context of its usage. When used correctly, students can employ AI as an additional aid but at the same time retain their independence.

Keywords: *Generative AI, Critical Thinking, Human Agency, Human-AI Collaboration, Higher Education, AI Literacy.*

FUTURE DIRECTIONS AND POLICY FRAMEWORKS OF GENERATIVE AI: AI LITERACY, TEACHER TRAINING, DIGITAL EQUITY AND INSTITUTIONAL POLICIES

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Abstract

The advent of Generative Artificial Intelligence (AI) is changing the field of education and business in profound ways through facilitating creativity and personalized learning. Yet the inclusion of Generative AI in educational systems and institutions necessitates strong policy frameworks. The following paper discusses future directions in the context of four key pillars – AI literacy, teacher training, digital equity, and institutional policies – based on contemporary global frameworks and academic discourses.

Keywords: *Generative Artificial Intelligence (Generative AI), AI Literacy, Teacher Training, Digital Equity, Institutional Policy, Educational Governance*

ARTIFICIAL INTELLIGENCE IN RELATION TO LEVEL OF ASPIRATION AND SELF-CONCEPT OF PROSPECTIVE TEACHERS

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Abstract

Artificial Intelligence (AI) has emerged as one of the most influential technological developments in contemporary education. Its applications in teaching, learning, assessment, content generation, personalized learning, and academic support are rapidly expanding. Teacher education is particularly important in this context because prospective teachers will be responsible for integrating emerging technologies into future classrooms. While considerable attention has been given to the academic and technological implications of AI, its possible relationship with psychological dimensions such as level of aspiration and self-concept among prospective teachers requires further investigation. The present study focuses on Artificial Intelligence in relation to the level of aspiration and self-concept of prospective teachers. The study aims to examine the relationship between AI-related engagement and awareness and the aspirations and self-perceptions of future teachers. A descriptive and correlational research approach may be adopted for the study. Prospective teachers enrolled in teacher-education programmes may constitute the population, and an appropriate sample may be selected using a suitable sampling technique. Data may be collected using standardized or researcher-developed instruments measuring AI-related awareness/use, level of aspiration, and self-concept. Appropriate descriptive and inferential statistical techniques may be employed to analyze the data. The study is expected to provide insights into the psychological and professional dimensions of AI integration in teacher education. The findings may help teacher educators design AI-integrated learning environments that promote technological competence while strengthening positive self-concept, realistic aspirations, autonomy, ethical awareness, and professional confidence among prospective teachers.

Keywords: *Artificial Intelligence, Prospective Teachers, Teacher Education, Level of Aspiration, Self-Concept, Educational Technology, AI in Education*

BUILDING DIGITAL TRUST IN AI-ENABLED EDUCATION

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Abstract

The rapid integration of Artificial Intelligence (AI) into education has transformed traditional teaching and learning processes by enabling personalized learning experiences, automated assessment, intelligent tutoring systems and data-driven decision-making. AI-powered educational technologies provide significant opportunities to improve accessibility, efficiency and learner engagement. However, the increasing dependence on AI systems has raised critical concerns regarding transparency, privacy, fairness, reliability and ethical use of learner data. Digital trust has therefore become a fundamental requirement for ensuring the successful adoption and sustainable implementation of AI-enabled education. This review paper explores the concept of digital trust in AI-based educational environments and examines its key dimensions, including transparency and explainability, data privacy and security, algorithmic fairness, reliability and human-AI collaboration. The paper reviews existing research on trustworthy AI in education and analyzes the challenges associated with building confidence among students, educators, institutions and policymakers. Furthermore, it presents a conceptual framework for developing trustworthy AI-enabled education systems that balance technological innovation with human values and ethical responsibility. The study highlights future directions, including explainable AI, responsible data governance, inclusive AI design and human-centered approaches to strengthen trust in digital learning ecosystems.

Key Words: *Artificial Intelligence, Digital Trust, AI in Education, Explainable AI, Data Privacy, Algorithmic Fairness, Intelligent Tutoring Systems, Learning Analytics, Responsible AI.*

ETHICAL READINESS FOR GENERATIVE AI AMONG STUDENT TEACHERS

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Abstract

Generative Artificial Intelligence (GenAI) is rapidly influencing higher education by supporting learning, content creation, assessment, communication, and research. For student teachers, the ability to use GenAI ethically is particularly important because they will eventually guide school students in technology-rich learning environments. This thematic review examines the concept of ethical readiness for GenAI among student teachers, focusing on AI literacy, academic integrity, privacy and data protection, copyright and attribution, critical evaluation, transparency, human agency, and responsible use. The review indicates that effective AI use requires more than technical skills; student teachers need ethical judgement and the ability to evaluate AI-generated information and recognize its limitations. Recent research involving pre-service teachers identifies academic integrity, privacy, and preservation of human skills as important concerns in GenAI integration. ([ScienceDirect](#)) The review proposes an Ethical Readiness Framework for Student Teachers consisting of AI literacy, ethical awareness, critical evaluation, academic integrity, privacy protection, transparency, responsible use, and professional responsibility. The paper concludes that teacher education programmes should systematically develop ethical AI competence rather than treating responsible AI use as an optional skill.

Keywords: *Generative AI, ethical readiness, student teachers, AI literacy, academic integrity, responsible AI, teacher education*

ETHICAL AND RESPONSIBLE USE OF GENERATIVE ARTIFICIAL INTELLIGENCE: CHALLENGES, PRINCIPLES AND FUTURE DIRECTIONS

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Abstract

Generative Artificial Intelligence (GenAI) has emerged as a transformative technology, influencing education, research, communication, business and knowledge production. Its ability to generate human-like text, images, audio, video and code offers significant opportunities while simultaneously creating complex ethical challenges. This paper examines the ethical and responsible use of Generative AI through a paper-based analysis of existing scholarly literature, research articles, institutional reports and policy documents. The study focuses on five interconnected dimensions: academic integrity, bias, privacy, transparency and accountability. The review highlights concerns regarding plagiarism, originality and authorship in academic contexts; discriminatory or stereotypical outputs resulting from biased data; risks associated with personal and confidential information; limited transparency regarding AI-generated content and system limitations; and uncertainty regarding responsibility for AI-assisted outcomes. The study argues that responsible Generative AI adoption requires human oversight, ethical awareness, AI literacy and appropriate institutional governance. It concludes that a human-centred framework is essential for balancing technological innovation with academic, social and ethical responsibility.

Keywords: *Generative Artificial Intelligence, Academic Integrity, Algorithmic Bias, Privacy, Transparency, Accountability, Responsible AI, AI Ethics, Human Oversight, Paper-Based Research*

CULTURALLY ADAPTIVE GENERATIVE AI TUTORS FOR STEM TEACHING IN LOW-RESOURCE LANGUAGES: A FRAMEWORK FOR REGIONAL LANGUAGE (TAMIL)

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Abstract

Integrating Generative Artificial Intelligence (GenAI) into Science, Technology, Engineering, and Mathematics (STEM) education offers transformative potential, yet a significant linguistic and cultural divide remains for speakers of low-resource languages. Standard educational large language models (LLMs) primarily operate in high-resource tongues like English, alienating regional language students and reinforcing global educational inequities. This paper proposes a comprehensive, multi-layered framework for Culturally Adaptive Generative AI Tutors tailored specifically for Tamil, an ancient classical language classified as a low-resource language in natural language processing (NLP). The proposed framework integrates local pedagogical structures, indigenous cultural metaphors, regional context, and code-mixing capabilities (Tanglish / Tamil-English) to make complex STEM concepts intuitive and digestible. By addressing architectural bottlenecks, data scarcity, and localized evaluation metrics, this framework outlines a scalable blueprint for equitable, inclusive, and region-specific digital education that honors local linguistic identities.

Keywords: *Generative AI, STEM Education, Low-Resource Languages, Tamil Language Processing, Culturally Adaptive Learning, Large Language Models (LLMs), Pedagogical Frameworks.*

AI LITERACY AMONG UNDERGRADUATE STUDENTS

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Abstract

Use of Generative AI tools has become part of the undergraduate academic landscape (e.g., ChatGPT, Gemini, Copilot), guidance on their use has not yet emerged from the institutions of learning. The study explored the nature of AI literacy and the relationship between AI literacy and fourteen demographic, digital access and AI engagement factors among 238 students from four streams of undergraduate courses in thirteen government, aided and private colleges in Madurai district, Tamil Nadu. Literacy on AI was measured by an adapted version of the Artificial Intelligence Literacy Scale (Aktay et al., 2025), which was tested by 14 null hypotheses, using t-tests and one-way ANOVA. The overall AI literacy was moderately above the scale midpoint ($M = 53.89$, $SD = 8.80$), with 68.9% of the respondents falling in the moderate range. Twelve out of 14 hypotheses were rejected, with significant differences in the age, stream, type of college, locality, usage and availability of the internet, ownership of a device to use AI, training and experience in using AI, frequency of use of AI, the purpose of AI in their education, and their awareness of AI applications; gender and the preferred AI tool were not significant. Results prove digital divide and technology-acceptance theories and indicate access-oriented, tool-independence intervention tactics.

Keywords: *AI Literacy, Under-graduate students, Digital Divide, Generative AI, Higher education, India.*

GENERATIVE AI IN TEACHING AND LEARNING: PERSONALIZED LEARNING, INTELLIGENT TUTORING SYSTEMS, AND AI-GENERATED CONTENT FOR THE CLASSROOM

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Abstract

Generative Artificial Intelligence (AI) is increasingly influencing modern education by improving teaching and learning processes. It offers several educational benefits, including enhanced student engagement, improved learning outcomes, increased accessibility, and effective support for differentiated instruction. However, its adoption also presents significant challenges such as data privacy concerns, threats to academic integrity, algorithmic bias, misinformation, digital inequality, and ethical issues in educational use. The paper also highlights the educational benefits of Generative AI, including improved student engagement, higher learning achievement, differentiated instruction, accessibility, and enhanced creativity in teaching. At the same time, it discusses important challenges such as data privacy, academic integrity, algorithmic bias, misinformation, digital inequality, and the ethical use of AI in educational settings. The study emphasizes that Generative AI should be viewed as a supportive tool rather than a replacement for teachers. The guidance, empathy, professional judgment, and critical thinking fostered by teachers remain indispensable for meaningful learning.

Keywords: *Generative AI, Personalized Learning, Intelligent Tutoring Systems, Artificial Intelligence in Education, Digital Learning, Educational Technology.*

GENERATIVE AI ACROSS DISCIPLINES APPLICATIONS IN SOCIAL SCIENCES, HUMANITIES, SCIENCES, COMMERCE, EDUCATION, AND TOURISM

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Abstract

Generative Artificial Intelligence (Generative AI) is one of the most significant technological developments of the 21st century. Unlike traditional artificial intelligence systems that primarily analyses existing information, Generative AI can create new content such as text, images, audio, video, computer code, presentations, and other forms of digital material. The rapid development of large language models and multimodal AI systems has expanded the application of Generative AI across almost every academic and professional discipline. This paper explores the applications of Generative AI in Social Sciences, Humanities, Sciences, Commerce, Education, and Tourism. In Social Sciences, Generative AI can assist researchers in analysing qualitative data, generating surveys, summarising interviews, and identifying social trends. In Humanities, it supports language studies, translation, literary analysis, historical research, creative writing, tourism and preservation of cultural heritage. In Sciences, Generative AI contributes to scientific research, hypothesis generation, simulation, scientific writing, drug discovery, and data interpretation.

Keywords: *Generative AI, Artificial Intelligence, Social Sciences, Humanities, Science, Commerce, Education, Tourism, Digital Transformation, Ethics.*

GENERATIVE AI IN TEACHING AND LEARNING: PERSONALIZED LEARNING, INTELLIGENT TUTORING SYSTEMS, AND AI-GENERATED CONTENT FOR CLASSROOMS

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Abstract

Generative artificial intelligence (GenAI) has moved rapidly from an experimental technology to a widely accessible presence in classrooms at every level of education. This review article synthesizes current research on three interconnected applications of GenAI in teaching and learning: personalized learning, intelligent tutoring systems (ITS), and AI-generated instructional content. Drawing on recent empirical studies, systematic reviews, and conceptual analyses published between 2019 and 2026, the paper examines how large language models (LLMs) and related generative technologies adapt instructional materials to individual learners, extend the pedagogical logic of earlier tutoring systems, and reduce the time educators spend preparing lesson plans, assessments, and supplementary resources. The review also considers the limitations of these applications, including inconsistent instructional adaptivity, algorithmic bias, data-privacy risk, the erosion of academic integrity, and the danger of an AI-driven digital divide that could widen rather than close existing achievement gaps. The article concludes that GenAI is best understood not as a replacement for teachers but as an augmentative layer that requires deliberate pedagogical design, educator training, and institutional policy to realize its benefits responsibly. Directions for future research, including longitudinal studies of learning outcomes and equity-focused implementation frameworks, are proposed.

Keywords: *generative artificial intelligence; personalized learning; intelligent tutoring systems; AI-generated content; educational technology; large language models*

GENERATIVE AI IN TEACHING AND LEARNING

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Abstract

Generative Artificial Intelligence (Generative AI) is an emerging technology that has significant potential to transform teaching and learning. It can generate text, questions, lesson plans, explanations, learning activities, images, and other educational resources. In teaching, Generative AI can assist teachers in lesson planning, content creation, assessment, and providing feedback. In learning, it can support personalized learning, independent learning, language development, and problem-solving. Three important applications of Generative AI in education are personalized learning, intelligent tutoring systems, and AI-generated classroom content. These applications can make education more flexible and learner-centred. However, the use of Generative AI also raises concerns regarding accuracy, academic integrity, privacy, bias, and overdependence on technology. Therefore, responsible and ethical use of AI is essential. This paper examines the applications, benefits, challenges, and responsible use of Generative AI in teaching and learning.

Keywords: *Generative AI, Teaching, Learning, Personalized Learning, Intelligent Tutoring Systems, AI-Generated Content*

AI-GENERATED CONTENT FOR CLASSROOM TEACHING AND LEARNING: FUTURE TRENDS IN EDUCATION

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Abstract

Artificial Intelligence (AI) is revolutionizing education by transforming how teaching and learning materials are created, delivered, and assessed. AI-generated content enables educators to design personalized lesson plans, interactive presentations, quizzes, simulations, digital assessments, and multimedia resources with greater efficiency and accuracy. These intelligent technologies support differentiated instruction, improve student engagement, and reduce teachers' administrative workload. As educational institutions increasingly adopt AI-powered tools, classrooms are evolving into smart learning environments that promote creativity, collaboration, critical thinking, and lifelong learning. This paper explores the concept of AI-generated content for classroom teaching and learning, its applications, benefits, challenges, ethical considerations, and future trends shaping the next generation of education. The study concludes that AI should complement teachers by enhancing instructional quality while preserving the essential human elements of education such as empathy, guidance, and ethical decision-making.

Keywords: *Artificial Intelligence, Generative AI, Classroom Teaching, Learning, Personalized Education, Smart Classrooms, Educational Technology, Future Education.*

GENERATIVE AI AND INFORMAL LEARNING SPACES IN SECOND LANGUAGE LEARNING: BENEFITS, ETHICAL AWARENESS AND CHALLENGES

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Abstract

Generative Artificial Intelligence (AI) and informal learning spaces are increasingly influencing the ways in which learners engage with the second language outside of the formal classroom. Tools such as YouTube, WhatsApp, Generative AI, and other informal learning resources offer learners an opportunity to discover, practice, and learn the target language. However, the increased use of these tools presents ethical awareness and privacy issues, challenges, and opportunities for the learners, instructors, and informal digital spaces. This paper, titled “Generative AI and Informal Learning Spaces in Second Language Learning: Benefits, Ethical Awareness and Challenges,” aims to examine the benefits, ethical awareness, and challenges of using Generative AI and informal learning spaces in second language learning among B.Ed. students. The paper adopts a quantitative research design and implements the descriptive survey method to examine the benefits, ethical awareness, and challenges of using Generative AI and informal learning spaces in second language learning among B.Ed. students. The paper includes a total of 50 participants and employs a questionnaire as the research instrument.

Keywords: *Generative AI, Informal Learning Spaces, Second Language Learning, Ethical Awareness, Descriptive Survey*

ARTIFICIAL INTELLIGENCE LITERACY: A FOUNDATION FOR FUTURE LEARNING

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Abstract

*Artificial Intelligence (AI) is rapidly transforming education and creating new possibilities for teaching, learning, assessment, and knowledge creation. In this context, **AI literacy** has become an essential competency for learners, teachers, and educational institutions. AI literacy refers to the knowledge, skills, attitudes, and ethical awareness required to understand, use, evaluate, and interact responsibly with AI technologies. This article examines AI literacy as a foundation for future learning and highlights its importance in preparing learners for an increasingly technology-driven society. AI can support personalized learning, provide immediate feedback, enhance creativity, assist problem-solving, and promote self-directed and lifelong learning. At the same time, its growing use presents challenges such as misinformation, algorithmic bias, privacy concerns, academic dishonesty, copyright issues, and overdependence on technology. Therefore, learners need more than technical skills; they require critical thinking, information evaluation, ethical reasoning, creativity, and responsible digital citizenship. The article also emphasizes the important role of teachers in guiding students to use AI effectively and responsibly. Teacher education and professional development should incorporate AI competencies to ensure that educators are prepared to integrate emerging technologies into meaningful learning experiences. Educational institutions must also develop appropriate policies, provide digital infrastructure, and promote equitable access to AI-based learning opportunities. The article concludes that AI literacy should be integrated into contemporary education as a core learning competency. Developing AI-literate learners will help individuals adapt to technological change, make informed decisions, and participate responsibly in future learning, employment, and society.*

Keywords: *Artificial Intelligence, AI Literacy, Future Learning, Digital Literacy, Critical Thinking, Teacher Education, Generative AI, Ethical AI, Lifelong Learning.*

FUTURE DIRECTIONS AND POLICY FRAMEWORKS-AI LITERACY, TEACHER TRAINING, DIGITAL EQUITY AND INSTITUTIONAL POLICIES

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Abstract

Artificial Intelligence is rapidly transforming the field of education by influencing teaching, learning, assessment and educational administration. The future of education requires effective policy frameworks that ensure the responsible, ethical and equitable use of AI. AI literacy helps teachers and students understand the basic concepts, applications, limitations and ethical issues associated with artificial intelligence. Continuous teacher training is essential to develop the technological and pedagogical competencies required to integrate AI effectively into classroom practices. Digital equity ensures that every learner has fair access to digital devices, internet connectivity and AI-based educational resources. Institutional policies provide guidelines for the safe, responsible and effective use of AI within educational institutions. A balanced policy framework can therefore contribute to creating an inclusive, innovative, learner-centred and future-ready education system

Keywords: *Artificial Intelligence (AI), AI Literacy, Teacher Training, Digital Equity, Institutional Policies, Ethical AI, Digital Education, Inclusive Education, Future-Ready Education.*

GENERATIVE AI IN TEACHING AND LEARNING: PERSONALIZED LEARNING, INTELLIGENT TUTORING SYSTEMS, AND AI-GENERATED CONTENT FOR 21ST-CENTURY CLASSROOMS

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Abstract

Generative Artificial Intelligence (AI) is reshaping the landscape of teaching and learning by enabling personalized instruction, intelligent tutoring, and dynamic content generation tailored to diverse learner needs. This paper examines the applications of Generative AI in the classroom, focusing on three interconnected pillars: personalized learning pathways, AI-driven Intelligent Tutoring Systems (ITS), and generative content creation for instructional purposes. Drawing on a review of contemporary literature, institutional practice, and emerging pedagogical frameworks, the paper explores how large language models, adaptive learning platforms, and AI-powered content generators are transforming curriculum delivery, assessment, and student engagement. The discussion is situated within the Indian educational context, referencing the National Education Policy 2020's emphasis on technology-enabled, inclusive, and quality education, while also drawing on global practice. While Generative AI offers considerable promise in bridging learning gaps, fostering learner autonomy, and reducing educator workload, its adoption also raises concerns regarding academic integrity, algorithmic bias, digital equity, and the erosion of critical thinking skills. The paper concludes by proposing a balanced pedagogical framework that positions Generative AI as a supportive tool rather than a replacement for human-centered teaching, and outlines recommendations for teacher training, institutional policy, and future research to ensure equitable and ethical adoption of Generative AI in classrooms.

Keywords: *Generative AI, Personalized Learning, Intelligent Tutoring Systems, AI-Generated Content, Educational Technology, Teacher Education.*

CHATGPT AS A TEACHING AND LEARNING TOOL

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Abstract

Artificial Intelligence (AI), particularly ChatGPT, has become an important educational technology that enhances teaching and learning through content generation, personalized learning, instant feedback, and academic support. ChatGPT assists teachers in lesson planning, assessment, and instructional material development, while helping students with self-learning, language improvement, problem-solving, and research. Despite its benefits, challenges such as academic integrity, misinformation, overdependence, and data privacy require responsible and ethical use. This paper examines the applications, benefits, challenges, and future potential of ChatGPT in education, concluding that it can significantly improve personalized, inclusive, and technology-enhanced learning when used as a support tool rather than a replacement for teachers.

Keywords: *Artificial Intelligence, ChatGPT, Teaching, Learning, Educational Technology, Personalized Learning, Digital Education, AI in Education*

ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION: OPPORTUNITIES, CHALLENGES AND FUTURE DIRECTIONS

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force in higher education, reshaping the processes of teaching, learning, assessment, research, and institutional management. AI-driven technologies such as adaptive learning systems, intelligent tutoring systems, automated assessment tools, learning analytics, and generative AI applications provide new opportunities for enhancing educational quality, accessibility, and efficiency. These technologies support personalized learning experiences by analyzing learner data, identifying individual needs, and providing timely feedback. AI also assists educators and administrators through automation, data-driven decision-making, and improved resource management. Despite its significant potential, the integration of AI in higher education presents several challenges, including ethical concerns, data privacy issues, algorithmic bias, digital inequality, academic integrity risks, and the need for faculty readiness. Effective implementation requires balanced approaches that combine technological innovation with human-centered educational practices. This paper explores the major opportunities, challenges, and future directions of AI in higher education, emphasizing the need for responsible, inclusive, and sustainable adoption of AI technologies.

Keywords: *Artificial Intelligence, Higher Education, Adaptive Learning, Learning Analytics, Intelligent Tutoring Systems, Generative AI, Educational Technology.*

COMPETENCE OF TEACHER EDUCATORS IN INTEGRATING OER AND GEN AI TOOLS IN PEDAGOGICAL AND RESEARCH ACTIVITIES: A THEMATIC REVIEW

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Abstract

The rapid development of digital technologies has transformed higher education and created new possibilities for teaching, learning, and research. Open Educational Resources (OER) and Generative Artificial Intelligence (GenAI) have emerged as important technologies supporting access to knowledge, instructional innovation, personalized learning, academic writing, and research productivity. Teacher educators play a vital role in preparing future teachers; therefore, competence in integrating OER and GenAI is an essential professional requirement. This thematic review examines literature concerning teacher educators' competence in using OER and GenAI. The review focuses on eight major themes: OER in teacher education, GenAI in teacher education, teacher educators' competence, pedagogical integration, research applications, digital and AI literacy, ethical and professional issues, and institutional support and professional development. Literature published primarily between 2019 and 2026 was considered, along with selected foundational studies. The thematic synthesis indicates that effective integration requires multidimensional competence encompassing technological proficiency, OER literacy, AI literacy, pedagogical knowledge, research competence, critical evaluation, and ethical awareness. The review further identifies challenges related to misinformation, academic integrity, copyright, privacy, bias, inadequate infrastructure, and limited professional development. A significant research gap exists regarding the combined integration of OER and GenAI by teacher educators. The review proposes an integrated competency perspective linking OER competence, GenAI competence, pedagogical competence, research competence, ethical competence, and professional development. The findings provide implications for teacher educators, institutional leaders, policymakers, and researchers seeking to promote responsible and effective technology integration in teacher education.

Keywords: *Open Educational Resources, Generative Artificial Intelligence, Teacher Educators, Digital Competence, AI Literacy, Pedagogical Practices, Research Practices, Teacher Education, Professional Development.*

FUTURE DIRECTIONS AND POLICY FRAMEWORKS – AI LITERACY, TEACHER TRAINING, DIGITAL EQUITY, AND INSTITUTIONAL POLICIES

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Abstract

Artificial Intelligence (AI) is rapidly transforming education by influencing how teachers teach, students learn, and institutions manage educational activities. The future of AI in education depends not only on technological advancement but also on effective policies, teacher preparation, digital equity, and responsible implementation. AI literacy enables students and teachers to understand the basic concepts, benefits, limitations, ethical concerns, and responsible use of AI tools. Teacher training is essential to develop educators' knowledge and skills for integrating AI into teaching, learning, assessment, and classroom management. Digital equity ensures that all learners have fair access to devices, reliable internet connectivity, digital resources, and AI-supported learning opportunities, regardless of their socioeconomic background. At the institutional level, clear policies are required to address data privacy, security, academic integrity, transparency, algorithmic bias, accessibility, and ethical AI use. This paper examines future directions and policy frameworks for developing an inclusive, equitable, responsible, and effective AI-enabled education system that supports teachers, empowers learners, and improves educational quality. The integration of AI in education requires a balanced approach that combines innovation with human values and educational goals. A collaborative and inclusive policy approach can ensure that AI becomes a tool for improving educational quality, supporting teachers, empowering learners, and creating equal opportunities for all.

Keywords: *Artificial Intelligence, AI Literacy, Teacher Training, Digital Equity, Educational Technology, Institutional Policy, Digital Education, Ethics*

FUTURE DIRECTIONS AND POLICY FRAME WORK – AI LITERACY, TEACHER TRAINING, DIGITAL EQUITY AND INSTITUTIONAL POLICIES

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Abstract

Artificial Intelligence (AI) is rapidly transforming education by influencing teaching, learning, assessment, educational administration, and access to knowledge. The future of AI-enabled education depends not only on technological development but also on effective policies, responsible implementation, and the preparation of teachers and learners. AI literacy is becoming an essential educational competency that enables students and teachers to understand, use, evaluate, and critically engage with AI tools. Teacher training is equally important because teachers need the knowledge and skills to integrate AI into classroom practices while maintaining human-centred education. At the same time, digital equity must be addressed to ensure that all learners have equal opportunities to access devices, internet connectivity, digital resources, and AI-based learning tools. Institutional policies are required to guide ethical AI use, protect privacy and data, prevent discrimination, ensure academic integrity, and establish accountability. This paper examines the future directions and policy frameworks required for responsible AI integration in education. It highlights four major areas: AI literacy, teacher training, digital equity, and institutional policies. The paper argues that collaboration among governments, educational institutions, teachers, technology developers, parents, and learners is essential for creating an inclusive, ethical, and sustainable AI-enabled education system.

Keywords: *Artificial Intelligence, AI Literacy, Teacher Training, Digital Equity, Educational Technology, Institutional Policies, Ethical AI, Inclusive Education, Digital Education*

THE ROLE OF GENERATIVE AI IN DEVELOPING TECHNO-PEDAGOGICAL SKILLS

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Abstract

Generative Artificial Intelligence is emerging as an important technological development in the field of education. It has the ability to generate text, images, questions, lesson plans, teaching-learning materials and other educational resources. In teacher education, Generative AI can support student teachers in developing techno-pedagogical skills by helping them integrate technology with appropriate teaching methods and subject content. It can assist in lesson planning, digital content creation, assessment and classroom activities. At the same time effective use of Generative AI requires critical thinking, digital literacy, ethical awareness and verification of AI generated information. This paper examines the role of Generative AI in developing techno-pedagogical skills, its educational applications, benefits, challenges and implications for teacher education.

Keywords: *Generative AI, Techno-Pedagogical Skills, Teacher Education, Student Teachers*

BUILDING TRUSTWORTHY GENERATIVE AI IN EDUCATION: ETHICAL PRINCIPLES, ACADEMIC INTEGRITY, PRIVACY, TRANSPARENCY AND ACCOUNTABILITY

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Abstract

Generative Artificial Intelligence (GenAI) is rapidly transforming education by supporting personalized learning, content creation, assessment, feedback, research, and academic administration. Tools capable of generating text, images, code, presentations, and other forms of content offer significant opportunities for improving teaching and learning. However, their increasing use also raises important ethical concerns related to academic integrity, algorithmic bias, privacy, transparency, accountability, misinformation, and unequal access. This article examines the principles required to build trustworthy Generative AI ecosystems in education. Particular attention is given to maintaining academic integrity while recognizing the legitimate educational applications of AI, protecting students' and teachers' personal data, ensuring transparency in AI-assisted decision-making, addressing bias and discrimination, and establishing clear accountability among developers, institutions, educators, and learners. The article adopts a conceptual and analytical approach based on contemporary literature and policy perspectives on artificial intelligence in education. It argues that trustworthy Generative AI should not be understood merely as a technological achievement but as a socio-technical system grounded in human agency, fairness, explainability, privacy, responsibility, and educational values. The article proposes a framework for responsible institutional adoption involving ethical governance, AI literacy, human oversight, transparent policies, data protection, assessment reform, and continuous evaluation. Building trust in Generative AI requires collaboration among educators, learners, researchers, policymakers, technology developers, and educational institutions.

Keywords: *Generative AI, Artificial Intelligence in Education, Academic Integrity, Privacy, Algorithmic Bias, Transparency, Accountability, Ethical AI, Trustworthy AI*

GEOGEBRA AND B.ED. TRAINEES: AN ATTITUDINAL STUDY

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Abstract

The integration of digital technology into teacher education has created new possibilities for improving the quality of teaching and learning. GeoGebra is a dynamic mathematical software application that provides opportunities for visualizing, exploring, and understanding mathematical concepts through interactive representations. The present study was undertaken to examine the attitude of B.Ed. trainees towards the use of GeoGebra in mathematics education. The study adopted the normative survey method and included a sample of 170 B.Ed. trainees. Data were collected using an appropriate attitude scale relating to GeoGebra. The study examined the overall level of attitude and the differences in attitude with respect to selected background variables. The background characteristics considered in the study included gender, locality, and other selected variables. Descriptive and inferential statistical techniques were used for the analysis of the data. The study is expected to provide useful information regarding the readiness of prospective teachers to adopt dynamic mathematics software in their future teaching practice. The findings may assist teacher educators and teacher education institutions in designing appropriate technology-based training programmes and practical experiences for B.Ed. trainees.

Keywords: *GeoGebra, B.Ed. Trainees, Attitude, Educational Technology, Mathematics Education, Teacher Education, Digital Learning*

FROM PROMPT TO PUZZLE: LEVERAGING GENERATIVE AI FOR DESIGNING DIGITAL MATHEMATICAL GAMES

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Abstract

Generative Artificial Intelligence (GenAI) has emerged as a transformative technology in education, offering new possibilities for designing engaging, adaptive, and learner-centered instructional resources (Zawacki-Richter et al., 2019; UNESCO, 2023). In mathematics education, digital game-based learning has been recognized as an effective pedagogical approach for promoting conceptual understanding, problem-solving, motivation, and active learner engagement (Plass et al., 2015; Ke, 2016). However, the development of high-quality digital mathematics games often requires substantial pedagogical expertise, creativity, and technical resources. This thematic paper explores the potential of Generative AI as a collaborative design partner in developing digital mathematics games. It proposes a Prompt-to-Puzzle (P2P) Framework, illustrating how educators can employ prompt engineering to generate mathematical puzzles, adaptive challenges, contextualized narratives, intelligent hints, and formative feedback that can be integrated into digital game-based learning environments. The paper discusses the pedagogical opportunities of Generative AI, including rapid content generation, personalization, adaptive learning experiences, and enhanced learner engagement, while critically examining challenges related to mathematical accuracy, ethical considerations, algorithmic bias, copyright, and the indispensable role of teachers in validating AI-generated educational content (Holmes et al., 2022; UNESCO, 2023). The paper deliberates that Generative AI should complement, rather than replace, teachers' professional expertise in educational game design. The proposed framework offers practical directions for researchers, teacher educators, instructional designers, and practitioners seeking to develop next-generation digital mathematics games that support meaningful teaching and learning.

Keywords: *Generative AI, Digital Game-Based Learning, Mathematics Education, Teacher Co-design, Prompt Engineering, Mathematical Puzzles.*

INTEGRATING THE SECI KNOWLEDGE MANAGEMENT MODEL AND GENERATIVE AI FOR AN INNOVATIVE LEARNING PROCESS IN HIGHER SECONDARY SOCIOLOGY PEDAGOGY

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Abstract

Generative AI is increasingly being incorporated into educational processes, creating new possibilities for knowledge development and learning support. Generative AI has emerged as a powerful catalyst for knowledge creation, marking a fundamental shift in contemporary education. The study of sociology requires a perspective grounded in the empirical analysis of social concepts. The SECI Knowledge Management Model, developed by Nonaka & Takeuchi, conceptualizes knowledge creation as a dynamic process in which learners transform their experiential knowledge into explicit concepts and structured schemas, organize this knowledge, and internalize it as part of their cognitive framework. Despite the widespread adoption of generative AI in education, limited research has examined its integration with the SECI Knowledge Management Model in higher secondary sociology pedagogy. This study aims to integrate the SECI Knowledge Management Model with Generative AI and examine its effectiveness in improving academic achievement in Higher Secondary Sociology. A pre-test-post-test control group experimental design was adopted for the study. The sample consisted of 60 Class XII Sociology students, with 30 students assigned to the Experimental Group and 30 to the Control Group. The experimental group received instruction through the integrated SECI Knowledge Management Model and generative AI, whereas the control group was taught using the activity-oriented method. The findings indicated that the students in the experimental group achieved significantly higher academic achievement ($t(58) = 8.743, p < .001$) than those in the control group. The findings suggest that integrating the SECI Knowledge Management Model with generative AI provides an innovative instructional framework for improving the quality of higher secondary sociology education.

Keywords: *Generative AI, SECI Knowledge Management Model, Higher Secondary Sociology Pedagogy, Knowledge Creation, Innovative Learning Process, Academic Achievement.*

THE 3I ARCHITECTURE FOR EDUCATIONAL SCIENCES: A CONCEPTUAL INTEGRATION OF “IN SILICO, IN VITRO AND IN VIVO”

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Abstract

Educational research is increasingly required to produce models that will be able to link theoretical work, experimentation, and real-life education. The concepts of in silico, in vitro, and in vivo (3i) have been implemented in the fields of science and technology; however, they remain largely unexplored with respect to education. The paper offers a novel 3i architecture for educational research, which represents a holistic approach to educational research that makes academic understanding a cohesive framework by integrating computational experimentation and real-world educational practices. The term in silico here refers to the use of contemporary approaches to computer modeling, AI technologies, machine learning, educational data mining, and learning analytics aimed at predicting educational outcomes and creating research hypotheses (Uzundurukan et al., 2025). The term in vitro refers to the controlled experimentation in education, which involves the use of instruction design laboratories, testing prototypes, simulation-based learning and the pilot studies validating educational innovations in controlled settings (Han et al., 2024). Finally, in vivo denotes the implementation of the validated innovations in natural environment (Klein & Hutmacher, 2024) where the learning process is affected by learners' Knowledge construction, behaviour and attitudes in the of real-life educational context. By integrating these three dimensions, the 3i Architecture provides a comprehensive conceptual foundation for interdisciplinary educational research, enhances methodological coherence, and facilitates the translation of educational innovations into practice. The paper explores that conceptual view of integration of 3i in to educational sciences research.

Keywords: Educational Sciences, In Silico, In Vitro, and In Vivo.

GENERATIVE AI AND SELF-REGULATED LEARNING: WHO IS REALLY REGULATING THE LEARNING?

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Abstract

GenAI fast becomes part of everyday students' learning experience. Several tools such as ChatGPT are used by students to think, clarify, receive feedback, solve problems and prepare their academic assignments. While these applications could contribute to making learning more effective, they, at the same time, pose the crucial issue of whether it is the student, GenAI, or both that is regulating the learning process. According to the classic theory of Self-Regulated Learning (SRL), the student is at the center of the learning process in planning, controlling, taking decisions, evaluating, and reflecting on their work. GenAI has already taken over some of these areas. This would mean the possible process of transferring regulatory functions from the learner to the technology. In this conceptual paper, GenAI is analyzed in terms of the three steps of the SRL process: forethought, performance, and reflection. It differentiates between two approaches to the learning process through GenAI. One is when GenAI replaces the process of regulation and the student uses its support for defining what, how, and whether it is correct to learn. The other is when GenAI's role is that of a supportive tool in the student's learning process. This paper contends that the educational function of GenAI relies on the use of AI by the learners and their regulatory work. Thus, task design, prompts design, assistance offered by the teacher and ways of assessment become crucial in preserving learner autonomy.

Keywords: *Generative AI, self-regulated learning, metacognition, and AI-supported learning*

EXPLORING GENERATIVE AI'S ROLE IN MANAGING WORK AND STUDY DEMANDS FOR PART-TIME STUDENTS

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Abstract

Undergraduate life now frequently involves part-time job, and juggling work and school obligations continues to be a cause of stress for this expanding student body. The quick spread of generative AI tools like ChatGPT, Gemini, and Copilot in higher education has created new opportunities to assist working students in more effectively managing their time, coursework, and cognitive load. Using recent empirical and conceptual research on student AI adoption, digital wellness, and workplace productivity, this study explores the growing role of generative AI in improving work-study balance among part-time working undergraduate students. Using recent empirical and conceptual research on student AI adoption, digital wellness, and workplace productivity, this study explores the growing role of generative AI in improving work-study balance among part-time working undergraduate students. The paper argues that generative AI primarily serves as a time-compression and cognitive-offloading resource that can lower the marginal cost of academic tasks for students who must also fulfil employment obligations. It does this by placing the discussion within well-established role-conflict and time-allocation frameworks. It examines data on how students utilize generative AI to organize, draft, summarize, and revise academic work, as well as how these applications result in perceived decreases in stress and burden. The study also examines the dangers of relying too much on generative AI, such as diminished skill development, issues with academic integrity and ethics, and unequal access to dependable tools and internet connectivity, all of which can jeopardize the very equilibrium that the technology is supposed to maintain. The conversation also takes into account contextual and demographic variations in how working and non-working students view the advantages of generative AI, pointing out that the connection between employment status and perceived benefit is more nuanced than a straightforward time-saving story would imply. The study concludes that generative AI has significant but conditional promise for helping part-time working students balance their work and studies, and that in order to properly achieve this potential, institutions, educators, and students themselves must adopt intentional, literacy-based methods.

Keywords: *generative artificial intelligence, work-study balance, part-time working students, higher education, student employment, digital wellbeing*

**ADMIRED TEACHERS AS CATALYSTS FOR RESPONSIBLE
GENERATIVE AI USE AND HOLISTIC PERSONALITY
DEVELOPMENT AMONG UNDERGRADUATE STUDENTS**

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Abstract

The emergence of Generative Artificial Intelligence (GenAI) is transforming teaching, learning, research and academic communication in higher education. Generative AI of generating text, images, ideas, summaries and other forms of content provide undergraduate students with new opportunities for personalized learning, creativity, research assistance and academic engagement (Chen, Chen, & Lin, 2020; Luckin, Holmes, Griffiths, & Forcier, 2016). Teachers who are admired by students because of their knowledge, teaching effectiveness, communication, empathy, motivation, ethical values, innovative practices and ability to inspire can become important human guides in the responsible use of Generative AI. It examines how admired teachers can facilitate personalized learning, research innovation to students interdisciplinary learning and digital literacy while simultaneously nurturing critical thinking, creativity, communication, emotional intelligence, self-confidence, responsibility and independent learning. The paper argues that Generative AI should not replace the teacher's role but should be integrated into a human-centred educational framework in which admired teachers act as mentors, facilitators, ethical role models and critical guides (Bandura, 1986). The paper concludes that the combination of inspiring teachers and responsible Generative AI use can contribute to develop digitally competent, ethically responsible, creative, confident and socially responsible graduates.

Keywords: Admired Teachers, Generative Artificial Intelligence, Personalized Learning.

AI-AUGMENTED MANAGERS: EXPLORING THE ROLE OF GENERATIVE AI IN DEVELOPING CRITICAL THINKING, PROBLEM-SOLVING AND STRATEGIC DECISION-MAKING SKILLS

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Abstract

Generative Artificial Intelligence (GenAI) is reshaping the ways in which students learn, interpret information, address business problems and make decisions. This paper explores the role of GenAI as an augmentation tool for developing three managerial capabilities among business students: critical thinking, problem-solving and strategic decision-making. The paper is positioned within the conference emphasis on Generative AI in teaching and learning, ethical and responsible use, applications across disciplines including Commerce, and future AI literacy and policy frameworks. Instead of positioning GenAI as a replacement for human cognition, this paper proposes an AI-Augmented Managerial Competency Model in which students use GenAI to generate alternatives, challenge assumptions, compare perspectives, simulate business situations and obtain feedback, while retaining human responsibility for verification, judgement and final decisions. Based on a conceptual synthesis of current guidance and research, the paper develops a research framework linking responsible GenAI use with critical thinking, problem-solving and strategic decision-making. It proposes an empirical research design for Business Administration students using a structured questionnaire and scenario-based assessment. The paper contends that the educational value of GenAI is influenced less by how often it is used than by the quality of human-AI interaction, AI literacy, prompt quality, source verification and reflective judgement. The proposed framework offers implications for management educators, institutions and employers seeking to prepare AI-augmented, future-ready managers.

Keywords

Generative AI; AI-augmented managers; critical thinking; problem-solving; strategic decision-making; business education; AI literacy; responsible AI; management education.

--GENERATIVE AI FOR INCLUSIVE K–12 MATHEMATICS EDUCATION: A SYSTEMATIC LITERATURE REVIEW THROUGH THE LENS OF UNIVERSAL DESIGN FOR LEARNING

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Abstract

Generative Artificial Intelligence (GenAI) is increasingly being explored in K–12 mathematics education for personalized explanations, differentiated tasks, problem-solving support, feedback, and the generation of instructional resources. However, evidence concerning its contribution to inclusive and accessible mathematics pedagogy remains fragmented. This systematic literature review examines how GenAI can support inclusive and accessible K–12 mathematics education through the lens of Universal Design for Learning (UDL), focusing on its applications, alignment with UDL principles, reported opportunities and challenges, and conditions for equitable implementation. A systematic literature review will be conducted using Scopus, Web of Science, and ERIC, covering peer-reviewed literature published between 2023 and 2026. Predefined Boolean search strings and inclusion and exclusion criteria will be applied, and the review will be reported according to the PRISMA 2020 framework. Data will be extracted according to publication characteristics, educational context, GenAI applications, learner populations, UDL dimensions, accessibility and inclusion, reported opportunities and challenges, and teacher-related factors. Thematic synthesis will be used to identify patterns across the selected literature. Particular attention will be given to GenAI-supported mathematical representation, engagement, differentiation, personalization, problem-solving, feedback, accessibility, digital equity, mathematical accuracy, learner diversity, AI literacy, teacher competence, and responsible use of AI. The synthesis will inform the development of a GenAI–UDL Inclusive Mathematics Framework (GUIMF) integrating GenAI capabilities with UDL principles, inclusive mathematics pedagogy, accessibility, digital equity, responsible AI, and teacher competence. The review aims to provide an evidence-informed foundation for developing equitable, accessible, and pedagogically responsible GenAI-supported K–12 mathematics learning environments.

Keywords: *Generative Artificial Intelligence; K–12 Mathematics Education; Universal Design for Learning; Inclusive Education; Accessibility; Digital Equity; Systematic Literature Review; Responsible AI*

**GENERATIVE AI IN EDUCATION: A MULTIDISCIPLINARY STUDY
OF HIGHER SECONDARY ECONOMICS STUDENTS;
ACHIEVEMENT IN RELATION TO ACADEMIC STRESS, SCHOOL
ENVIRONMENT, AND PARENTAL MOTIVATION**

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Abstract

Generative Artificial Intelligence (Gen AI) is transforming education through personalized learning, adaptive assessment, and automated feedback. The present study examined the achievement of 750 XI Standard Economics students in relation to academic stress, school environment, and parental motivation. A descriptive survey design was adopted, and students were selected from Government, Government-Aided, and Matriculation Higher Secondary Schools through stratified random sampling. Standardized tools and an investigator-developed Economics Achievement Test were used for data collection. Data were analysed using descriptive statistics, Pearson's correlation, group comparison, and multiple regression analysis. The findings revealed a significant negative relationship between academic stress and achievement, while school environment and parental motivation showed significant positive relationships. Collectively, these variables significantly predicted students' achievement. The findings highlight the potential of Gen AI to support personalized learning, reduce academic stress, improve learning environments, and strengthen parental engagement.

Keywords: *Generative AI, Economics Education, Academic Achievement, Academic Stress, School Environment, Parental Motivation.*

ROLE OF ARTIFICIAL INTELLIGENCE IN OVERCOMING THE ACADEMIC DIFFICULTIES FACED BY HIGHER SECONDARY STUDENTS

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Abstract

This paper examines the role of Artificial Intelligence (AI) in addressing the academic difficulties experienced by higher secondary students, a stage marked by increased curricular complexity, examination pressure, and diverse learning needs. Drawing on the literature, the study explores how AI-enabled tools such as intelligent tutoring systems, adaptive learning platforms, learning analytics, and automated feedback mechanisms support personalized instruction, remedial learning, and self-paced study. The paper also considers common academic difficulties, including conceptual gaps, low motivation, poor time management, and examination anxiety, and analyzes how AI interventions can mitigate these challenges. Alongside the benefits, limitations such as data privacy concerns, unequal access to technology, and the risk of over-reliance on automated systems are discussed. The paper concludes that AI, when integrated thoughtfully alongside teacher guidance, can meaningfully enhance academic outcomes for higher secondary students while cautioning against uncritical adoption.

Keywords: *Artificial Intelligence, higher secondary students, academic difficulties, personalized learning, intelligent tutoring systems, adaptive learning*

A STUDY ON THE IMPACT OF ARTIFICIAL INTELLIGENCE ON STUDENTS' INTEREST IN READING LITERARY WORKS

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Abstract

Reading literary works is an important part of language education. It helps students to improve their vocabulary, imagination, and creativity and thinking ability. In the present situation, Artificial Intelligence has become one of the useful technologies in education. Students use AI tools to understand difficult words, passages, poems, stories and other literary works. It can make learning easier and save time. At the same time, the use of AI may also affect students' reading habits. Some students may depend on summaries and ready-made explanations instead of reading the original literary works. This may reduce their interest in detailed reading and independent thinking. This paper discusses how AI can affect students' interest in reading literary works. It also explains the positive and negative sides of AI and the role of teachers.

Keywords: *Artificial Intelligence, Reading Interest, Literary Works, Students, Literature Education*

MAPPING ALEXITHYMIA, NOMOPHOBIA, AND SOCIAL BEHAVIOUR THROUGH A GENERATIVE AI-ASSISTED THEMATIC REVIEW

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Abstract

The increasing integration of smartphones into everyday communication, learning, and social interaction has generated growing interest in the psychological consequences of mobile-phone dependence. Alexithymia, characterized by difficulties in identifying and describing feelings, nomophobia, defined as anxiety or discomfort associated with being unable to access or use a mobile phone, and social behaviour represent interconnected areas of relevance to psychological and educational research. However, research examining these constructs is often dispersed across studies of emotional processing, problematic smartphone use, technology-related anxiety, and interpersonal behaviour. This paper presents a Generative AI-assisted thematic review designed to map the conceptual and empirical relationships among alexithymia, nomophobia, and social behaviour. The review proposes a structured workflow involving database searching, article selection, eligibility screening, data extraction, preliminary Generative AI-assisted coding, human verification, theme development, critical synthesis, and research-gap identification. The thematic synthesis is organized around emotional processing difficulties, smartphone-related dependence and anxiety, digital coping and emotional regulation, and changes in social interaction and connectedness. Existing meta-analytic evidence indicates a substantial positive association between alexithymia and problematic mobile-phone or smartphone use, while nomophobia is widely reported among university populations. The paper argues that Generative AI can support research innovation by accelerating literature organization and preliminary thematic analysis, but it should not replace researcher judgment. Consistent with international guidance on responsible AI, human oversight, transparency, privacy protection, and accountability should remain central to AI-assisted research. The review contributes an interdisciplinary framework linking psychology, social behaviour, education, and Generative AI-assisted research practice.

Keywords: *Alexithymia; Nomophobia; Social Behaviour; Generative AI; Thematic Review; Smartphone Use; Educational Resear*

AI-AUGMENTED WRITING ASSISTANCE IN HIGHER EDUCATION: BRIDGING LANGUAGE PROFICIENCY AND PEDAGOGICAL INNOVATION

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Abstract

The integration of Artificial Intelligence (AI) and Natural Language Processing (NLP) technologies into higher education has emerged as a transformative force in academic writing instruction. This thematic paper explores the role of AI-augmented writing assistance tools in addressing persistent challenges faced by non-native English undergraduates in higher education institutions. Drawing upon theoretical frameworks including the Cognitive Process Model, Self-Regulated Strategy Development (SRSD) and the Technology Acceptance Model (TAM), this paper examines how AI-powered platforms such as Grammarly, ChatGPT, ProWritingAid and QuillBot can scaffold writing development across multiple dimensions including grammatical accuracy, coherence, lexical resource and task achievement. The paper argues that AI-augmented tools serve as cognitive scaffolds that enhance rather than replace human instruction, offering scalable, personalized feedback while preserving the essential role of natural intelligence in creative and critical thinking. By synthesizing existing literature and empirical evidence, this paper contributes to the growing discourse on ethical AI integration in pedagogy, aligning with National Education Policy 2020 and Sustainable Development Goal 4 objectives for equitable, inclusive quality education.

Keywords: *AI-augmented writing, academic writing, higher education, natural language processing, writing proficiency, pedagogical innovation, non-native English learners*

தமிழ் துறையில் கற்பித்தலில் AI பயன்பாடு

சா.சுலேத்குரியா
கல்வித்துறை
அன்னை தெரசா மகளிர் பல்கலைக்கழகம்
விருந்தினர் விரிவுரையாளர்

ஆய்வுச் சுருக்கம்

செயற்கை நுண்ணறிவானது கல்வித் துறையில் தமிழ் கற்பித்தலுக்கு தொடக்கப் பள்ளிகளில் கதைகள் மற்றும் பாடல்கள் கற்பிக்கவும், உயர்நிலைப் பள்ளியில் இலக்கணம் அறிந்து கொள்ளவும், கல்லூரி நிலையில் மொழிபெயர்ப்புக்கும் விளக்கங்கள் அறிந்து கொள்ளவும் பயன்படுகிறது என்பதனை இவ்வாய்வின் மூலம் காண முடிகிறது.

DESIGN AND DEVELOPMENT OF ML AND STOCHASTIC FORECASTING TECHNIQUES FOR ARACHIS HYPOGAEA PRODUCTION IN TAMIL NADU

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Abstract

Arachis hypogaea production (Groundnut) is an important oilseed crop, and reliable production forecasts are useful for agricultural planning, resource allocation, food security and policy formulation. The present study examines the long-term dynamics of groundnut production in India and develops a time-series forecasting model using annual production data for the period 1966–2025. Autocorrelation and partial autocorrelation functions were examined to identify the dependence structure of the series, followed by the Augmented Dickey–Fuller test to assess stationarity. Several autoregressive moving average (ARMA) specifications were considered and compared using model selection criteria. The results indicated significant autocorrelation in the production series, with the first-order autocorrelation being 0.7223. The Augmented Dickey–Fuller test with a constant produced a test statistic of -2.3396 with a p -value of 0.1595, indicating insufficient evidence to reject the unit-root null hypothesis at conventional significance levels. Among the candidate models, the ARMA (1,6) model provided the best overall performance based on the reported adjusted R -squared and information criteria. The model explained approximately 71.3% of the variation in the observed production series. Forecasts from 2026 to 2035 indicated a decline in production during 2026–2031, followed by a recovery from 2032 onward. The forecast increased from approximately 842,618 tonnes in 2026 to 946,467 tonnes in 2035. These findings demonstrate the usefulness of time-series modelling for assessing future groundnut production patterns and provide quantitative information that may support agricultural planning and policy decisions.

Keywords: ACF, PACF, ARMA, Groundnut Production, Gretl

GENERATIVE AI IN TEACHER EDUCATION: ITS IMPACT ON PEDAGOGICAL SKILLS, LESSON PLANNING AND LEARNING ENGAGEMENT AMONG B.Ed. STUDENT-TEACHERS

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Abstract

The rapid emergence of Generative Artificial Intelligence (GenAI) is creating new possibilities for teacher education, particularly in lesson planning, pedagogical decision-making, formative assessment, resource development and learner engagement. This study examines the perceived and practice-oriented impact of GenAI on pedagogical skills, lesson-planning competence and learning engagement among B.Ed. student-teachers. A mixed-method quasi-experimental design is proposed for implementation in a teacher-education institution. A sample of 80 B.Ed. student-teachers may be divided into an experimental group and a comparison group, with the intervention incorporating structured GenAI activities for eight weeks. Data may be collected using a GenAI Pedagogical Competency Scale, a lesson-plan evaluation rubric, an engagement questionnaire and reflective interviews. The proposed analysis includes descriptive statistics, reliability analysis, independent/paired sample tests, effect size and thematic analysis. The study is expected to show that guided GenAI use can strengthen student-teachers' ability to generate differentiated learning activities, formulate learning objectives, design formative assessment and reflect on teaching decisions. However, responsible implementation requires verification of AI outputs, privacy protection, academic integrity, bias awareness and continued teacher oversight. The paper proposes a practical GenAI integration model for B.Ed. programmes and argues that AI should augment, rather than replace, the professional knowledge and agency of teachers. Since the empirical phase is proposed rather than completed in this manuscript, no fabricated participant results or statistical findings are reported.

Keywords

Generative Artificial Intelligence; Teacher Education; B.Ed.; Student-Teachers; Pedagogical Skills; Lesson Planning; Learning Engagement; AI Literacy; Intelligent Tutoring; Responsible AI.

PERSONALIZED LEARNING THROUGH GENERATIVE AI: OPPORTUNITIES AND CHALLENGES

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Abstract

Personalized learning has emerged as an important approach to addressing learner diversity, individual differences, learning pace, interests, abilities and educational needs. The rapid development of Generative Artificial Intelligence (GenAI) has created new possibilities for making personalized learning more adaptive, interactive and accessible. Unlike traditional digital learning systems that primarily provide pre-designed content, generative AI can dynamically generate explanations, examples, questions, feedback, learning activities and other educational resources according to the needs of individual learners. This paper examines the opportunities and challenges associated with the use of generative AI for personalized learning, particularly in higher education. It discusses how GenAI can support adaptive content generation, individualized feedback, learning pathways, differentiated instruction, language support, learner engagement, assessment and self-directed learning. The paper also highlights major challenges, including inaccurate AI-generated content, algorithmic bias, privacy and data protection, academic integrity, overdependence on AI, the digital divide, reduced human interaction and the need for teacher oversight. The paper proposes a Human-Centred GenAI Model for Personalized Learning based on six principles: learner-centredness, adaptability, human oversight, ethical responsibility, inclusivity and continuous evaluation. It concludes that GenAI has considerable potential to transform personalized learning, but its educational value depends on responsible implementation, teacher competence, institutional support and the development of AI literacy among learners and educators.

Keywords: *Generative AI, Personalized Learning, Adaptive Learning, Artificial Intelligence, Higher Education, AI Literacy, Educational Technology, Learning Analytics*

GENERATIVE AI IN EDUCATIONAL RESEARCH: FROM LITERATURE REVIEW TO SCHOLARLY COMMUNICATION

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Abstract

Generative Artificial Intelligence (GenAI) has emerged as a transformative technology with significant implications for education and research. Its ability to generate, summarize, organize and transform information has introduced new possibilities across the educational research cycle, ranging from identification of research problems and literature review to research design, data analysis, academic writing and scholarly communication. Generative AI tools can assist researchers in developing research questions, identifying keywords, synthesizing literature, preparing research instruments, analysing qualitative and quantitative data, improving academic language and communicating research findings to diverse audiences. However, the increasing use of GenAI also raises concerns regarding accuracy, hallucination, fabricated references, bias, plagiarism, authorship, privacy, intellectual property and research integrity. This paper examines the applications and challenges of GenAI in educational research and proposes a human-centred approach to AI-assisted scholarship. The paper argues that GenAI should be regarded as an assistive technology rather than a substitute for researchers' intellectual judgement. Human verification, methodological rigour, ethical responsibility and transparency must remain central to AI-assisted research. The paper concludes that the future of educational research depends not merely on the availability of powerful AI tools but on researchers' ability to use them critically, responsibly and ethically.

Keywords: *Generative AI, Educational Research, Literature Review, Academic Writing, Scholarly Communication, Research Ethics, Artificial Intelligence.*

LIFELONG LEARNING IN THE AI ERA: OPPORTUNITIES, CHALLENGES AND STRATEGIES FOR AN INCLUSIVE FUTURE

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Abstract

Artificial Intelligence (AI) is transforming education, employment, industries and everyday life at an unprecedented pace. The rapid development of generative AI, automation, intelligent learning systems and digital platforms has changed the knowledge and skills required for personal and professional success. In this context, lifelong learning has emerged not merely as an educational concept but as an essential requirement for individual adaptability, employability and social inclusion. This article examines the changing nature of lifelong learning in the AI era, focusing on opportunities, emerging challenges and strategies for developing an AI-ready learning society. The article argues that AI should not be viewed only as a technology that replaces human capabilities but also as a powerful tool for expanding access to personalised, flexible and continuous learning. At the same time, the digital divide, AI literacy gaps, misinformation, privacy concerns, ethical issues and potential employment displacement require systematic interventions. The article proposes an inclusive lifelong learning framework based on AI literacy, digital skills, reskilling, upskilling, critical thinking, human-centred competencies and accessible learning ecosystems. It concludes that the future of lifelong learning depends on creating a balanced partnership between human intelligence and artificial intelligence.

Keywords: *Lifelong Learning, Artificial Intelligence, AI Literacy, Digital Skills, Reskilling, Upskilling, Adult Education, Employability, Digital Inclusion*

MEASURING COMMERCE TEACHERS' READINESS TO ADOPT GENERATIVE AI FOR LESSON PREPARATION: A QUANTITATIVE SURVEY

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Abstract

*The rapid integration of Generative Artificial Intelligence (GenAI) in education presents both opportunities and challenges for teachers, particularly in specialized disciplines like Commerce. This study measures the readiness of Commerce teachers to adopt GenAI for lesson preparation and identifies the key barriers hindering its integration. Employing a quantitative survey design, data were collected from 100 Commerce teachers across government, aided, and matriculation schools using a standardized readiness scale. The findings reveal that the majority of teachers (67%) exhibit a moderate level of readiness, with Technical Readiness emerging as the weakest dimension, where only 14% reported high competence. Psychological Readiness was comparatively higher (21% high), indicating a significant "attitude-skill gap"—teachers are willing to adopt AI but lack the necessary skills and institutional support. Differential analysis using *t*-tests and ANOVA revealed no statistically significant differences in readiness based on gender, location (rural/urban), or type of institution, suggesting that the barriers to AI adoption are universal and not demographic-specific. The study concludes that targeted interventions—including hands-on technical training, institutional support systems, awareness programs, structured integration frameworks, and peer learning communities—are essential to enhance AI readiness among Commerce educators. These findings have significant implications for educational policymakers, teacher training institutions and school administrators in developing strategies to foster responsible and effective AI integration in Commerce pedagogy, ultimately contributing to a more innovative and future-ready educational environment.*

Key Words: *Commerce Teachers, Readiness to Adopt, Generative AI and Lesson Preparation*

ARTIFICIAL INTELLIGENCE: AN OVERVIEW WITH SPECIAL REFERENCE TO INDIAN EDUCATION

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force across various sectors, with education being one of the most promising domains for its application. This thematic paper provides a comprehensive overview of AI, tracing its historical evolution, fundamental concepts and key technologies that enable intelligent systems. The paper examines the unique context of AI integration in Indian education, highlighting government initiatives, policy frameworks and the transformative potential of intelligent technologies in addressing educational challenges. Drawing upon the foundational understanding of intelligence, the paper explores how AI tools and technologies—including machine learning, natural language processing, robotics and expert systems—are reshaping educational practices. The analysis reveals that while AI offers significant opportunities for personalized learning, enhanced teacher capacity and equitable access, it also presents challenges related to infrastructure, teacher training and ethical considerations. The paper concludes by emphasizing the need for a balanced, context-sensitive approach to AI integration in Indian education, aligning with the vision of the National Education Policy 2020.

Keywords: *Artificial Intelligence, Education, Indian Education System, Intelligent Systems, Natural Language Processing, Machine Learning*

ARTIFICIAL INTELLIGENCE: A BOON OR BANE FOR IMPROVING READING HABITS IN THE CONTEXT OF THE 21ST CENTURY

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Abstract

Artificial Intelligence (AI) has become an important part of education in the 21st century and has influenced the way students access, understand, and engage with reading materials. Reading habits play an important role in developing knowledge, comprehension, critical thinking, language skills, and lifelong learning. AI-based tools can provide learners with quick access to information, personalized reading materials, explanations, summaries, vocabulary support, and interactive learning experiences. At the same time, excessive dependence on AI may reduce independent reading, critical thinking, concentration, and the willingness to explore original texts. Therefore, AI can be considered both a boon and a bane in improving reading habits. This paper examines the relationship between AI and reading habits in the context of the 21st century, focusing on its positive and negative effects. It also discusses strategies for using AI responsibly and effectively to support meaningful reading. The paper emphasizes that AI should be used as a supportive educational tool rather than as a replacement for independent reading and thinking. A balanced and purposeful use of AI can help learners develop better reading habits while maintaining their ability to think, understand, evaluate, and learn independently.

Keywords: *Artificial Intelligence (AI), Reading Habits, 21st Century, Education, Digital Learning, Independent Reading, Critical Thinking.*

ROLE OF ARTIFICIAL INTELLIGENCE IN IMPROVING CURRICULAR AND CO-CURRICULAR ACTIVITIES IN SCHOOL EDUCATION

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Abstract

Artificial Intelligence (AI) is emerging as an important technological innovation capable of transforming school education by supporting teaching, learning, assessment, curriculum planning and student participation. Its significance extends beyond conventional classroom instruction to co-curricular activities such as sports, arts, debates, clubs, cultural programmes and project-based learning. This paper examines the role of AI in improving curricular and co-curricular activities in school education. It discusses how AI can facilitate personalised learning, intelligent assessment, lesson planning, content creation, learning analytics, student collaboration and creative expression. AI-based tools can also assist teachers in identifying students’ interests and providing opportunities for participation according to their abilities. However, effective implementation requires attention to data privacy, equity, teacher preparedness, academic integrity, bias and excessive dependence on technology. Recent international frameworks emphasise human-centred, ethical and responsible use of AI in education. The paper concludes that AI should complement teachers rather than replace them and should be integrated with pedagogical objectives to promote holistic, inclusive and meaningful student development.

Keywords: *Artificial Intelligence, school education, curriculum, co-curricular activities, personalised learning, AI literacy, educational technology*

ROLE OF AI IN IMPROVING TAMIL COMMUNICATION: A THEMATIC STUDY

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Abstract

Artificial Intelligence (AI) has emerged as an important technological development with significant implications for language communication and education. Tamil, one of the world's classical languages, has increasingly entered the digital environment through Unicode, speech technologies, machine translation, natural language processing (NLP), and generative AI. This paper examines the role of AI in improving Tamil communication through a thematic study of its major applications and educational possibilities. The study focuses on themes such as Tamil speech recognition, text generation, translation, grammar and spelling support, personalized language learning, pronunciation improvement, accessibility, and digital content creation. AI can help learners practise Tamil communication, receive immediate feedback, develop vocabulary, improve writing, and interact with language-learning systems. Recent research also identifies benefits such as personalized learning, learner engagement, writing development, accessibility, and assessment efficiency in Tamil language education. However, challenges remain, including limited high-quality Tamil linguistic datasets, inadequate technological infrastructure, teacher preparedness, algorithmic bias, privacy concerns, and the possibility of inaccurate AI-generated language. Therefore, AI should be used as a supportive tool rather than as a replacement for human communication and linguistic expertise. The study concludes that responsible, culturally sensitive, and human-centred AI development can contribute significantly to the preservation, promotion, and modernization of Tamil communication.

Keywords: *Artificial Intelligence, Tamil Communication, Natural Language Processing, Speech Recognition, Language Learning, Generative AI.*

ROLE OF ARTIFICIAL INTELLIGENCE IN OVERCOMING THE DIFFICULTIES IN PRACTICE TEACHING

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Abstract

Practice teaching is an important component of teacher education. It provides student teachers with opportunities to apply theoretical knowledge in real classroom situations. However, student teachers may face several difficulties such as classroom management, lesson planning, lack of teaching resources, time management, assessment, individual differences among learners, and lack of confidence. Artificial Intelligence (AI) can support student teachers in overcoming many of these difficulties. AI tools can assist in lesson planning, preparation of teaching materials, personalized learning, assessment, classroom activities, and reflective practice. This paper discusses the role, benefits, applications, challenges, and responsible use of AI in practice teaching. AI should be considered as a supportive tool rather than a replacement for teachers.

Keywords: *Artificial Intelligence, Practice Teaching, Student Teachers, Lesson Planning, Classroom Management, Teacher Education.*

Seasonal Dynamics of Physicochemical Factors and Commercially Important Macroalgal Diversity along the Gulf of Mannar Coast, India

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Abstract

The present investigation aimed to assess the diversity and distribution of marine macroalgae at three stations, Seeniappa Dharga, Mandapam and Light house area of Kilakarai, along the Gulf of Mannar coast region. The study was conducted from July 2023 to June 2024, covering four seasons: pre-monsoon, monsoon, post-monsoon, and summer. Physicochemical parameters, including atmospheric temperature, surface seawater temperature, pH, salinity, and conductivity, were analysed. A total of 72 seaweed species belonging to 42 genera were recorded, comprising 26 species of Rhodophyceae, 24 species of Phaeophyceae, and 22 species of Chlorophyceae. Species richness was highest during the monsoon season (56 species), followed by pre-monsoon (43) and post-monsoon (30). Dominant taxa included Sargassum, Caulerpa, Gracilaria corticata, Enteromorpha, Padina, Ulva, and Halimeda. Atmospheric temperature ranged from 26.5°C to 33.6°C, while surface seawater temperature ranged from 26.5°C to 32.7°C. Salinity ranged from 28.5 to 34.2 ppt, pH from 7.98 to 8.45, and conductivity from 43.5 to 52.8 $\mu\text{S}/\text{cm}$. The study revealed marked spatial and seasonal variation in macroalgal diversity in relation to physicochemical conditions and provides baseline information on the distribution and seasonal occurrence of commercially important seaweeds along the Gulf of Mannar coast, supporting their sustainable utilization and management.

Keywords: Marine macroalgae, Seaweed diversity, Biodiversity, Gulf of Mannar, Salinity, Seasonal variation

GAMIFICATION IN INCLUSIVE STEM CLASSROOMS: ANALYZING ENGAGEMENT AND LEARNING OUTCOMES

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Abstract

The main objective of this study is to investigate the impact of gamification on student engagement and learning outcomes within inclusive STEM classrooms, specifically focusing on how these strategies benefit students with diverse learning needs. This systematic literature review analyzes existing research on the integration of gamification in inclusive STEM classrooms to determine its effects on student engagement and learning outcomes, particularly for students with diverse learning needs. The review synthesizes findings from studies published between 2018 and 2025, examining pedagogical approaches that utilize game mechanics (e.g., points, badges, leaderboards, narratives) to differentiate instruction and enhance accessibility in science, technology, engineering, and mathematics education. A key focus is the identification of specific gamification design elements that successfully mitigate traditional barriers to participation for students requiring educational support. The synthesis of evidence consistently suggests that gamified interventions positively impact student engagement and motivation across heterogeneous groups, promoting higher levels of persistence and sustained interest in STEM topics. While evidence for direct, significant improvement in standardized learning outcomes is more mixed, the review identifies a strong correlation between high engagement in gamified environments and improved conceptual understanding and application skills. The findings underscore the potential of gamification as an equitable pedagogical strategy for fostering inclusive and supportive STEM learning environments. The paper concludes by identifying critical gaps in current research, notably the need for more longitudinal studies and a clearer framework for measuring the long-term efficacy and transferability of learning in gamified inclusive settings.

Keywords: Gamification, Inclusive Education, STEM

GENERATIVE AI AND THE FUTURE OF TEACHING–LEARNING ECOSYSTEMS

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Abstract

Generative artificial intelligence is rapidly moving from the periphery to the centre of educational practice, reshaping not only individual classrooms but the broader teaching–learning ecosystem within which learners, educators, institutions, curricula, technologies, and communities interact. This thematic paper examines generative AI through an ecosystem lens, arguing that its most significant effects will be felt not in isolated tools or single lessons but in the shifting relationships among the actors and structures that together constitute education. The paper begins by outlining what is meant by a teaching–learning ecosystem and why systems thinking is necessary to understand AI's educational impact. It then explores how generative AI is reshaping the roles of learners and educators, the design of curriculum and assessment, the governance responsibilities of institutions, the infrastructure demands placed on technology systems, and the expectations of the wider community and labour market. The paper further considers emerging risks at the ecosystem level, including systemic inequities, the homogenization of knowledge, institutional dependency on commercial AI vendors, and the erosion of trust in credentials and assessment. Rather than treating these as isolated technical problems, the paper argues that they require coordinated, ecosystem-level responses spanning pedagogy, policy, infrastructure, and professional development. The paper concludes by outlining a forward-looking vision of a resilient, human-centred teaching–learning ecosystem in which generative AI is deliberately governed and pedagogically integrated to expand educational opportunity without compromising the relational, ethical, and critical foundations of learning.

Keywords: *Generative AI, teaching–learning ecosystem, educational technology, systems thinking, future of education, institutional policy.*

CULTIVATING MINDFUL TEACHERS: THE ROLE OF MINDFULNESS IN TEACHER EDUCATION

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Abstract

Teaching is widely recognized as one of the most emotionally demanding professions, and rising rates of teacher stress, burnout, and attrition have prompted researchers and teacher educators to search for sustainable approaches to educator well-being. This thematic conference paper examines the role of mindfulness in teacher education by synthesizing empirical and conceptual literature across four interrelated themes: (a) mindfulness as a mechanism for reducing teacher stress and burnout, (b) the relationship between mindfulness, emotional regulation, and self-compassion, (c) the influence of mindful teaching on classroom climate and instructional practice, and (d) strategies for embedding mindfulness training within pre-service and in-service teacher preparation programs. Drawing on the Prosocial Classroom Model (Jennings & Greenberg, 2009) and a growing body of intervention research, the paper argues that mindfulness functions not merely as a stress-management technique but as a foundational disposition that supports teachers' social-emotional competence, resilience, and pedagogical presence. The paper also considers methodological limitations in the current evidence base and offers implications for teacher education curricula, policy, and future research. Cultivating mindful teachers, the paper concludes, requires intentional, sustained, and contextually embedded approaches rather than isolated workshops.

Keywords: *mindfulness, teacher education, teacher well-being, emotional regulation, professional development*

EQUIPPING TOMORROW'S CLASSROOMS: AN ANALYSIS OF PROSPECTIVE TEACHERS' CAREER READINESS AND WORKPLACE SKILLS

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Abstract

The quality of education is fundamentally shaped by teachers who possess not only strong pedagogical knowledge but also essential employability competencies required for the dynamic demands of modern classrooms. This study examines the career readiness and workplace skills of prospective teachers enrolled in a teacher education programme. Adopting a normative survey method, the study employed purposive sampling to select 50 second-year B.Ed trainees as the sample. Data were collected using a self-developed "Scale for Career Readiness and Workplace Skills," comprising 45 statements across eight dimensions: Digital Literacy and Technology Integration, Critical Thinking and Problem-Solving, Communication and Collaboration, Creativity and Innovation, Adaptability and Flexibility, Global and Cultural Awareness, Emotional Intelligence and Social Skills, and Self-Direction and Lifelong Learning. The tool demonstrated high reliability with a Cronbach's Alpha coefficient of 0.87. Findings revealed that the majority of prospective teachers demonstrated Proficient and Excellent levels of career readiness and workplace skills across most dimensions, with 46% classified as Proficient and 24% as Excellent in their overall preparedness. While competencies such as critical thinking, communication, collaboration, adaptability, emotional intelligence, and lifelong learning were notably strong, digital literacy and technology integration, though satisfactory, emerged as an area requiring further enhancement. The study concludes that teacher education programmes significantly contribute to developing competent, adaptable, and future-ready educators; however, sustained emphasis on technology integration and practical skill development is essential to strengthen overall professional preparedness for the evolving educational landscape.

Keywords: *Prospective Teachers, Career Readiness, Workplace Skills, Employability, Teacher Education, Digital Literacy, Critical Thinking, Communication, Collaboration, Adaptability, Emotional Intelligence, Lifelong Learning.*