मौलाना आज़ाद नेशनल उर्दू यूनिवर्सिटी مولانا آزاد نیشنل اردو یونیورسٹی

MAULANA AZAD NATIONAL URDU UNIVERSITY

A Central University, Ministry of Education, Government of India

COMPENDIUM OF ABSTRACTS

A One-Day National Conference

on

Artificial Intelligence and the Future of Teacher Education

आर्टिफिशियल इंटेलिजेंस और शिक्षक शिक्षा का भविष्य مصنوعی ذہانت اور اساتذہ کی تعلیم کا مستقبل

(Hybrid Mode)

04 February 2026

MANUU College of Teacher Education, Bidar (Karnataka)





website: https://manuu.edu.in/University/set/cte-bidar

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The College of Teacher Education, Bidar was established in 2015 to fulfill the teacher education needs of the Urdu-speaking undergraduates in Urdu as a medium of instruction. This college has grown from strength to strength, and it is known in the university for the individual caliber of the teachers and the teaching prowess.



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Sub-Themes:

1. **AI as a Co-Teacher: Redefining Educational Roles in Digital Classrooms**
   Organized by:Dr. Mohd. Talib Ather Ansari
2. **Human-Centered Pedagogy Using AI**
   Organized by: Dr. Mohd. Talib Ather Ansari
3. **TeacherStudentAI Interaction with Collaborative AI**
   Organized by: Dr. Hina Hasan
4. **Personalized Learning through AI: Educating Teachers for Adaptive Education**
   Organized by: Dr. Hina Hasan
5. **Digital Tools in Social-Emotional Learning**
   Organized by: Dr. D. Vishwa Prasad
6. **AI Analytics to Improve Data-Driven Teaching**
   Organized by:Dr. D. Vishwa Prasad
7. **Evaluation Paradigms with AI**
   Organized by: Dr. Bondu Raju
8. **Ethics and Equity in AI-Enhanced Education**
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9. **Building Digital Competence in Teacher Education**
   Organized by: Dr. Naveen Kumar M.
10. **Innovative Curricula for an AI-Driven Academic Environment**
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11. **Supporting Institutional Administration with AI**
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12. **Re-skilling and Up-skilling in Digital Pedagogy**
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13. **Indian Knowledge System and AI**
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14. **Learning Management Systems Using AI**
    Organized by: Dr. Md. Azeem

15. **AI in TLM Production**
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This Compendium of Abstracts

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Published & Printed By:
Maualana Azad National Urdu University
College of Teacher Education
Shaheen Nagar, Shahpur Gate
Bidar (Karnataka) - 585403.

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प्रो. सय्यद ऐनुल हसन, कुलपति
پروفیسر سید عین الحسن، شیخ الجامعہ
Prof. Syed Ainul Hasan, Vice-Chancellor



Message from the Desk of the Vice-Chancellor

The "One Day" National Conference on **"Artificial Intelligence and the Future of Teacher Education"** which is going to be hosted by MANUU, College of Teacher Education, Bidar-Karnataka has my warm regards and best wishes for the organizers and the attendees.

Artificial intelligence is going to be a potential force for changing the educational era. AI has a tremendous opportunity to improve teaching-learning processes in teachers training programme to establish **IKBS (Indian Knowledge-Based Society)** via inclusive digital learning environments and creative pedagogical approaches through the use of AI-enabled contents, individualized instructions, and accurate assessment systems. Integrating Artificial Intelligence with human values, ethics, and professional accountabilities is crucial for attaining the professional excellence in teachers training programme.

This national conference is a welcome initiative that offers academicians, researchers, and particularly teacher educators, to a meaningful forum to discuss the benefits, opportunities, and shortcomings presented by artificial intelligence for impacting the future of teacher education. These academic interests significantly improve the quality and productivity of teachers training programs in accordance with the demands of modern Indian knowledge-based society.

I appreciate the organizing committee and welcome the College of Teacher Education, Bidar, for coordinating this important academic event. I am certain that the debates and conclusions of this conference will be enlightening for the teacher education programme.

With best wishes,

21.01.26

Prof. Syed Ainul Hasan

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प्रो.एसके. इश्तियाक़ अहमद, कुलसचिव
پروفیسر ایس کے اشتیاق احمد، رجسٹرار
Prof. Sk. Ishtiaque Ahmed, Registrar



Message from the Registrar

The National Conference on **"Artificial Intelligence and the Future of Teacher Education,"** whichis going to be hosted by MANUU, College of Teacher Education, Bidar-Karnataka, is an incredible event to fulfil the need of the hour, and it is inspiring.

The vision, dedication, and teamwork that went into planning by the organizers of this conference are absolutely appreciable. In the present scenario, AI is an integral part of our classrooms' learning environment, which includes institutions, and it is fulfilling the learning spaces, transforming the way we learn and grow, especially for teacher educators. We, the research community, must be inspired by this national conference; this is such an amazing opportunity for teacher educators, researchers, and future teachers to unite, collect and exchange the ideas, and dive into discussions on using technology in smart and ethical ways in education. This event is aligned with the vision and mission of NEP-2020, and it's all about empowering educators to shape the current scenario of teacher education.

I really feel that the outcomes of this national conference will lead to new ideas, more collaboration in research and better professional development for teachers and teacher educators.

Prof. Sk. Ishtiaque Ahmed

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Message

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Artificial Intelligence is redefining the contours of education by transforming how teachers teach, learners learn, and institutions function. In teacher education, AI offers powerful possibilities—personalized learning pathways, intelligent assessment systems, data-informed pedagogical decisions, and enhanced inclusivity. However, its true value lies not in replacing teachers, but in empowering them with tools that augment professional judgment, creativity, and human sensitivity.

As we prepare future teachers, it is imperative to integrate AI literacy, ethical awareness, and pedagogical innovation into teacher education programmes. Educators must be equipped not only to use AI-enabled tools, but also to critically evaluate their impact on equity, agency, and learning outcomes. Human values, empathy, and contextual understanding must remain central, with AI serving as an enabler rather than a driver of education.

This national conference is timely and significant, as it provides a platform to reflect, collaborate, and chart a balanced path toward an AI-integrated, human-centric future for teacher education. I congratulate MANUU, College of Teacher Education, Bidar, for this thoughtful initiative and wish the conference meaningful deliberations and lasting academic impact.

Dr. K. Thiyagu
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Message

In the present era, technology is advancing at an unprecedented pace, and it is imperative that today's classroom transactions make effective use of contemporary digital tools. The integration of technology in teaching and learning has become essential, particularly in an age dominated by Artificial Intelligence. As educationists, we hold a positive and progressive outlook towards the inclusion of AI in teacher education programmes.

Teacher educators, in particular, are expected to take the lead by experimenting with and adopting innovative AI-powered tools as part of the teaching–learning process. Continuous try-outs, reflections, and practical applications of AI can significantly enhance pedagogical practices and prepare future teachers to meet the evolving demands of modern education.

In this context, organizing workshops and conferences on emerging areas of AI-powered education plays a crucial role in professional development and academic discourse. Such platforms provide valuable opportunities for sharing knowledge, experiences, and best practices related to AI integration in teacher education.

I sincerely appreciate the College of Teacher Education, Maulana Azad National Urdu University, Bidar, Karnataka, for organizing the One-Day National Conference on "Artificial Intelligence and the Future of Teacher Education" on 04 February 2026. I extend my best wishes to the entire faculty community and the administration for the grand success of this meaningful and forward-looking academic event.



Sincerely

Dr. K Thiyagu

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School of Education and Training

Message from the Dean



On the Occasion of the National Seminar: *"Artificial Intelligence and the Future of Teacher Education"* Organized by MANUU College of Teacher Education, Bidar, Karnataka

It is a distinct honor to address this National Seminar hosted by our College of Teacher Education in Bidar. As we gather in February 2026, the School of Education and Training at Maulana Azad National Urdu University remains at the forefront of pedagogical evolution. This souvenir documents our collective resolve to navigate the intersection of Artificial Intelligence and teacher preparation with both technical foresight and cultural sensitivity.

The "Future of Teacher Education" is now defined by the principles of Education 6.0, a paradigm where AI-driven hyper-personalization creates a ubiquitous learning environment. In strict alignment with India's National Education Policy (NEP) 2020, we are committed to utilizing AI as a bridge for equity. By integrating AI into our curriculum, we fulfill the NEP's vision for the National Educational Technology Forum (NETF), specifically leveraging technology to enhance multilingual instruction and provide high-quality teacher training in regional contexts.

In 2026, our pedagogical focus has matured from basic digital literacy to the mastery of advanced technical frameworks. We are empowering our teacher-trainees with skills in Prompt Engineering, the ethical application of Generative AI, and the use of Multimodal LLMs to create inclusive content. Furthermore, by adopting Learning Analytics (LA), our educators can now implement the "targeted interventions" necessitated by NEP 2020, using predictive data to support every learner's unique trajectory.

Guided by the UNESCO AI Competency Framework, our School ensures that the teachers of tomorrow are not just passive consumers of technology, but ethical architects of digital spaces. We emphasize the importance of data governance and the mitigation of algorithmic bias to ensure that the future of education remains just and inclusive.

I extend my heartfelt congratulations to the Principal, faculty, and staff of CTE Bidar for organizing this timely seminar. To the participants and scholars: may this souvenir serve as an intellectual compass, inspiring you to lead a future where technology amplifies our human potential without ever replacing the essential soul of the teacher.

With best wishes.

Vanaja

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DEPARTMENT OF EDUCATION AND TRAINING

शिक्षा एवं प्रशिक्षण विभाग

Prof. Shaheen Shaikh
Head
Dept.of Education and Training



In an era marked by rapid technological transformation, Artificial Intelligence (AI) has emerged as a powerful force reshaping every dimension of education. particularly The One-Day National Conference on *"Artificial Intelligence and the Future of Teacher Education"* is a timely and intellectually significant initiative that seeks to deliberate on the evolving role of AI in preparing teachers for the classrooms of tomorrow.

Teacher education today must go beyond traditional pedagogical practices and embrace innovation, adaptability, and ethical responsibility. AI offers immense possibilities like personalized learning, adaptive assessment, intelligent feedback systems, and data-driven pedagogical insights, while simultaneously posing important questions related to equity, ethics, and the humanistic foundations of teaching. This conference provides a much needed academic platform to critically examine these opportunities and challenges in a balanced and meaningful manner.

I am confident that this conference will foster rich academic dialogue, interdisciplinary collaboration, and innovative thinking among teacher educators, researchers, policy-makers, and students. The deliberations and outcomes of this conference will contribute significantly to strengthening teacher education programs and to envisioning a future where technology and human values coexist harmoniously in education.

I extend my best wishes to the organizers for their dedicated efforts and hope that the conference will be a resounding success, inspiring participants to contribute thoughtfully to the advancement of teacher education in the age of Artificial Intelligence

Warm Regards,

Prof. Shaheen Shaikh

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DEAN STUDENTS' WELFARE OFFICE / डीन छात्र कल्याण कार्यालय

Prof. Siddiqui Mohd. Mahmood
Dean Students Welfare
Email: dsw@manuu.edu.in

Date: 25/01/2026

I am glad to know that MANUU College of Teacher Education Bidar has organised a national conference on 'Artificial Intelligence and The Future of Teacher Education' and the college intends to bring out a souvenir on the occasion. I really appreciate that the College has been performing well since its inception and the credit goes to all faculty members, non- teaching staff and the students who work dedicatedly by following the university guidelines in letter and spirit

Further, the college has been very fortunate to have a legacy of dynamic principals including the present principal Dr. Talib Ather Ansari

Apart from the routine functions; the college has been undertaking numerous activities of the community development as well.

The college has a very bright history of hosting national level academic events in the form of seminars, conferences and workshops etc.

The theme of the proposed national conference is very much time relevant and in consonance with the various syllabi of Education and also with the spirit of the national Policy of education 2020.

I sincerely wish all the best for a grand success of the conference.

Prof. Siddiqui Mohd. Mahmood
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And Dean Students' Welfare,
MANUU, Hyderabad

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Dr. Mohd Talib Ather Ansari
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Message from the Chair of the Conference



Dr. Mohd. Talib Ather Ansari
(Associate Professor), Principal I/C
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It gives me enormous pleasure to present this pen note for the **One-Day National Conference on "Artificial Intelligence and the Future of Teacher Education,"** organized in **hybrid mode on 04 February 2026** at **MANUU, College of Teacher Education, Bidar, Karnataka–585403**. In today's world of knowledge, artificial intelligence has begun to reshape the teaching and learning scenario of Indian teacher training programs, which includes the teaching, learning, and training processes; evaluation and assessment practices; and professional enhancement for trainee teachers and teacher educators across the world. In this regard, the conference on AI and the future of teacher education aims to provide a national platform for academicians, teacher educators, researchers, and practitioners to deliberate on the emerging role of AI in shaping the future of teacher education. We received a lot of attention from the researchers, teachers, and teacher educators' communities. This event seeks to bridge the gap between theory and practice by highlighting innovative applications of AI and EdTech that enhance pedagogical practices, inclusivity, and quality in teacher education. This event is designed to foster meaningful dialogue on artificial intelligence, edtech, and using digital tools in teacher education programs. Besides this, we may discuss the contemporary themes. Like AI-enabled teaching tools, ethical considerations, personalized learning, digital professional competence for teachers, and alignment with NEP-2020. The hybrid mode of the conference ensures wider participation and accessibility, encouraging scholarly exchange beyond geographical boundaries. We are honoured to have eminent keynote speakers, resource persons, and panelists who will share their insights and experiences, enriching the academic discourse. The enthusiastic participation of faculty members, research scholars, and student teachers reflects a collective commitment toward embracing technological innovations responsibly in teacher education. I sincerely acknowledge the support and guidance of the university authorities, advisory committee, organizing committee members, and all contributors whose dedicated efforts have made this conference possible. I am confident that the deliberations and outcomes of this conference will contribute meaningfully to the advancement of teacher education in the era of artificial intelligence.

Conference Chairperson

M. Talib 27/01/2026

Dr. Mohd. Talib Ather Ansari
प्रभारी प्रधानाचार्य Principal I/C
मानू कॉलेज ऑफ टीचर एजुकेशन – बीदर
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दूरस्थ एवं ऑनलाइन शिक्षा केंद्र مرکز برائے فاصلاتی و آن لائن تعلیم
CENTRE FOR DISTANCE AND ONLINE EDUCATION

One-Day National Conference
on
Artificial Intelligence and the Future of Teacher Education
MANUU College of Teacher Education,
Shaheen Knowledge City, Bidar, Karnataka.
4th February, 2026

Artificial Intelligence (AI) is increasingly influencing all dimensions of education, including teaching, learning, assessment, and academic administration. Teacher education, being central to educational transformation, must adapt to these technological advancements to prepare future-ready educators. In this context, the proposed One-Day National Conference on ***"Artificial Intelligence and the Future of Teacher Education"*** organized by **MANUU College of Teacher Education, Bidar,** on **4th February, 2026**, aims to deliberate on the emerging role of AI in reshaping teacher preparation and professional practices.

Trust the conference will bring together teacher educators, researchers, academicians, and practitioners to discuss AI-enabled pedagogy, digital competencies for teachers, curriculum redesign, assessment through AI tools, and ethical issues related to AI integration in education. Emphasis will be placed on aligning AI-driven innovations with national educational priorities, including NEP 2020.

The lectures and technical sessions of the conference aims to promote academic dialogue, share best practices, and generate insights for strengthening teacher education programmes in the digital age.

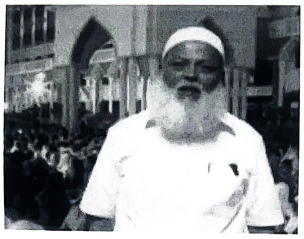
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Message from Dr. Abdul Qadeer



With great pleasure, I know that MANUU, College of Teacher Education, Bidar, Centre is going to organize a one-day national conference on "**Artificial Intelligence and the Future of Teacher Education**." In this regard, I offer my warmest greetings and best wishes for this conference. Artificial intelligence and teacher education have become disruptive forces in the quickly changing field of the Indian education system, which is changing professional development, research methodologies, teaching-learning procedures, and assessment procedures according to the NEP-2020. In order to prepare future teachers and educators for the demands of a knowledge-driven Indian society, it is not only a technological advancement but also a strategic necessity to carefully integrate AI into teacher education programs. These scholarly endeavours through AI are essential to promoting learner-centered getting, learning, and training that are essential for the development of pedagogies, ethical technology use, and research orientation. I am grateful to the CTE Bidar faculty, students, and organizing committee for their hard work in planning and executing this conference. I have no doubt that the discussions and conclusions of this scholarly conference will greatly advance educational research and teacher-education. I hope the conference is a huge success and that everyone who attends finds it to be intellectually stimulating.

Warm regards,

Dr. Abdul Qadeer,

Chairman of the Shaheen Group of Institutions (SGI) Bidar.

Resource Persons/Invited Speakers



Prof. Syed Ainul Hsan
Honorable Vice-Chancellor
Maulana Azad National Urdu University
Hyderabad, Telangana



Prof. SK. Ishtiaque Ahmed
Registrar, Maulana Azad National
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Hyderabad, Telangana

About the Conference

The National Conference on Artificial Intelligence and the Future of Teacher Education is a timely academic event aimed at exploring the transformative role of Artificial Intelligence (AI) in reshaping the landscape of teacher education in the 21st century. This Conference brings together educators, researchers, policy-makers, technologists, and students from across the country to engage in meaningful discussions, share innovative practices, and examine emerging trends at the intersection of AI and education.

Artificial Intelligence and the Future of Teacher Education

The integration of Artificial Intelligence (AI) in teacher education is essential for preparing educators to meet the evolving demands of modern classrooms. AI can personalize learning experiences for trainee teachers, offer real-time feedback, adaptive assessments, and targeted support based on individual learning needs. It also enables access to intelligent tutoring systems, virtual simulations, and data-driven insights that enhance pedagogical strategies. Moreover, by familiarizing future teachers with AI tools and ethical considerations, teacher education programs can help them effectively integrate technology into their classroom practices, improving student engagement and learning outcomes, while maintaining the humanistic core of teaching. The Conference aims to serve as a platform for collaborative thinking, encourage innovation, and it is a step towards a technologically enriched and forward-thinking education system that equips teachers not only to coexist with AI but to thrive alongside it.

Sub-Themes

This Conference aims to explore the dynamic intersections between Artificial Intelligence (AI) and teacher education. Therefore, the following sub-themes provide a broad base and in-depth framework for dialogue and deliberation:

- **AI as a Co-Teacher: Redefining Educational Roles in Digital Classrooms**
- **Human-Centered Pedagogy Using AI**
- **Teacher-Student-AI Interaction with Collaborative AI**
- **Personalized Learning through AI: Educating Teachers for Adaptive Education**
- **Digital Tools in Social-Emotional Learning**
- **AI Analytics to Improve Data-Driven Teaching**
- **Evaluation Paradigms with AI**
- **Ethics and Equity in AI-Enhanced Education**
- **Building Digital Competence in Teacher Education**
- **Innovative Curricula for an AI-Driven Academic Environment**
- **Supporting Institutional Administration with AI**
- **Re-skilling and Up-skilling in Digital Pedagogy**
- **Indian Knowledge System and AI**
- **Learning Management Systems Using AI**
- **AI in TLM Production**

Sub-Themes

Sub-Theme 1:

AI as a Co-Teacher: Redefining Educational Roles in Digital Classrooms

1 AI as a Co-Teacher: Redefining Educational Roles in Digital Classrooms

1.1 A Study on the Role of AI as a Co-Teacher in Digital Education for Degree College Lecturers

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Abstract

The increasing pace of digital advancements has completely altered the education sector as a whole, including institutions of higher education, by introducing Artificial Intelligence as an efficient mechanism to support the teaching-learning process. Recent research has given evidence that more than 90% of collegiate-level teachers are adopting AI-based instruments to improve teaching methods and digital classroom management. The aim of this research is to examine the application, attitude towards, as well as the efficacy of AI-based instruments within degree college lecturers and assess the collaborative role of AI as a teaching aid within digital classrooms. The main aim is to establish the contribution of AI towards teaching efficiency, student engagement, content delivery, and assessment associated with teaching.The research uses a survey methodology, wherein data is collected using structured research questionnaires among lecturers in degree colleges. It is expected that findings will reveal that lecturers view AI as having the potential to supplement conventional classroom training, thereby giving positive results in terms of learning outcomes. It is also expected that the research will reveal the necessity for training in executing AI for maximum effectiveness in a classroom setup.This study is expected to have implications for educators, policymakers, and higher education institutions that seek to effectively deploy AI in teaching practices. The insights obtained from this study can help in informing training programs institutional strategies and decision on the design of AI-enabled learning environments that enhance the quality of teaching and student engagement.

Keywords: *Artificial Intelligence, Co-teaching, Digital Education, Teaching Tools, Higher Education, Lecturer Perception.*

1.2 AI as a Co-Teacher: Redefining Educational Roles in Digital Classrooms

Dr. Kurnool Johny Prasad

Abstract

The rapid integration of Artificial Intelligence (AI) into educational ecosystems has initiated a fundamental shift in pedagogical dynamics, moving beyond simple automation toward a "co-teacher" model. This paper explores the evolving role of AI as a pedagogical partner that redefines traditional instructional boundaries in digital classrooms. By analyzing current adaptive learning platforms and generative AI tools, the research examines how AI augments the human educators capacity through real-time data analytics, personalized feedback loops, and administrative offloading. The study employs a qualitative review of recent digital classroom implementations to identify the shift in the teachers role from a primary information provider to a learning designer and socio-emotional mentor. Findings suggest that while AI excels at scalability and precision in routine cognitive tasks, the human element remains irreplaceable for fostering critical thinking, ethical reasoning, and empathetic engagement. However, the transition to this symbiotic relationship presents significant challenges, including digital equity gaps and the risk of algorithmic bias. This paper concludes by proposing a framework for "Balanced Integration," emphasizing that the successful redefinition of educational roles depends on specialized teacher training and ethical governance. Ultimately, the co-teacher model does not diminish the teacher's authority but enhances instructional efficacy, ensuring a more inclusive and responsive learning environment for the digital age.

Keywords: *Artificial Intelligence, Co-teacher Model, Digital Classrooms, Personalized Learning, Pedagogical Transformation, Human-AI Collaboration, Educational Technology.*

1.3 AI as a Co-Teacher: Redefining Educational Roles in Digital Classrooms

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Abstract

The rapid expansion of Artificial Intelligence (AI) in education has brought a fundamental change in how teaching and learning are organized in digital classrooms.

Rather than replacing teachers, AI is increasingly functioning as a co-teacher that supports instructional planning, assessment, and learner engagement. This paper examines how AI-based tools such as intelligent tutoring systems, automated feedback platforms, and adaptive learning software are reshaping the professional responsibilities of teachers. In technology-supported classrooms, teachers are no longer limited to delivering content; instead, they act as facilitators of learning, mentors of students, and designers of meaningful learning experiences.AI contributes by managing routine and time-consuming tasks such as grading, tracking learner progress, and identifying learning difficulties through data analysis. This allows teachers to focus more on higher-order pedagogical tasks, including critical thinking development, emotional support, and personalized guidance. However, the effectiveness of AI as a co-teacher depends on the ability of educators to understand and control these technologies. Without proper training, teachers may either underuse AI or rely on it without critical judgment.The study highlights the importance of integrating AI literacy, ethical awareness, and digital competence into teacher education programs. When teachers are well prepared, AI can strengthen classroom practice by making learning more responsive, inclusive, and student-centered. The paper concludes that AI, when used as a co-teacher, has the potential to enhance both teaching quality and learner outcomes while preserving the human essence of education.

Keywords: *Artificial Intelligence, Co-Teaching, Digital Classrooms, Teacher Roles, Educational Technology.*

1.4 Ai as a Co-Teacher: Redefining the Role of Education in the Digital Classroom.

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Abstract

The rapid integration of artificial intelligence (AI) into educational environments is transforming traditional teachinglearning dynamics, positioning AI as an effective co-teacher in the digital classroom. This paper explores the evolving role of AI as an instructional partner that complements human educators by enhancing overspecialization, engagement, and instructional efficiency. Unlike conventional educational technologies, AI-driven systems can adapt in real time to learners needs, offering personalized content, instant feedback, and data-informed insights into student progress.

As a co-teacher, AI supports teachers by automating routine tasks such as grading, attendance tracking, and learning analytics, thereby allowing educators to focus on higher-order pedagogical activities, creativity, and student mentorship. The study examines how AI-powered tools such as intelligent tutoring systems, adaptive learning platforms, chat bots, and learning analytic dashboards reshape instructional design and classroom management. It also highlights the pedagogical shift from teacher-centered to learner-centered models facilitated by AI collaboration. Furthermore, the paper addresses critical challenges, including ethical considerations, data privacy, algorithmic bias, and the need for digital literacy among educators and students. Rather than replacing teachers, AI is conceptualized as a collaborative agent that augments human expertise and fosters inclusive, flexible, and scalable learning environments. By redefining the educators role from sole knowledge provider to facilitator and mentor, AI as a co-teacher holds the potential to improve learning outcomes and prepare students for a technology-driven future. The paper concludes by emphasizing the importance of balanced humanAI collaboration, policy support, and professional development to ensure the responsible and effective adoption of AI in digital classrooms.

Keywords: *Artificial Intelligence in Education, AI Co-Teacher, Digital Classroom, Adaptive Learning, Educational Technology, Personalized Learning.*

1.5 Redefining Teacher Identity in AI-Enhanced Classrooms: From Instructor to Learning Facilitator

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Abstract

Today, artificial intelligence is becoming a part of our classrooms. As this happens, teachers are experiencing a big change in how they see themselves and their work. They are shifting from being just content deliverers to becoming learning facilitators. This research explores how teachers' roles and responsibilities are changing in these AI-enhanced environments. Similarly, we also look at how teachers feel about themselves professionally during this transformation. The study examines the psychological, pedagogical, and professional aspects of this change, investigating how

teachers manage the tension between their traditional teaching roles and these new facilitator-oriented practices. The researchers explored something new during conversations and interaction with teachers. There are many teachers who feel that AI will replace them in future. They are worried about losing their job. But as soon as they started using AI tools, they realized these technologies help them. AI takes care of repetitive administrative work and material creation tasks. This frees up their time too. Teachers can now focus more on building relationships with students, offering personalized guidance, and helping develop critical thinking skills. The research identifies important qualities that teachers need now like emotional intelligence, understanding data, technological skills, and ethical thinking in AI environments. This paper also suggests how educational institutions should support teachers in this transformative era. The researchers find out that providing professional development is need of hour. Also, it is essential to create spaces for collaborative decision making. By understanding how teachers are redefining themselves es in these new contexts, this research offers valuable insights for teacher education programs. These insights help prepare educators to become effective facilitators in technology-rich classrooms while also keeping the irreplaceable human touch that makes teaching special.

Keywords: *teacher identity, artificial intelligence, learning facilitation, professional development, AI-enhanced pedagogy, teacher autonomy.*

1.6 AI as a Co-Teacher: Supporting Teachers, Empowering Learners

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Abstract

Artificial Intelligence (AI) is increasingly emerging as a co-teacher in modern educational settings, complementing the role of human educators rather than replacing them. As a co-teacher, AI supports personalized learning by adapting content, pace, and assessment to individual learner needs. It assists teachers in automating routine tasks such as grading, attendance, and content organization, thereby allowing educators to focus more on mentorship, creativity, and emotional support. AI-driven tools

also enable data-informed instruction by analyzing learner performance and providing timely feedback and learning recommendations. Furthermore, AI promotes inclusive education by offering assistive technologies for diverse learners, including those with special educational needs. However, effective integration of AI as a co-teacher requires ethical considerations, teacher training, transparency, and a balanced humanAI partnership. When thoughtfully implemented, AI as a co-teacher can enhance teaching effectiveness, learner engagement, and overall educational quality.

Keywords: *Artificial Intelligence; Co-teaching; Personalized Learning; Educational Technology; Teacher Support.*

1.7 A detail Study on AI as a Co-Teacher: Redefining the Pedagogical Role of Teachers in Technology Enhanced Classrooms

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Abstract

This Research investigates how artificial intelligence driven adaptive platforms analyze student performance in real-time to provide personalized learning pathways, thereby addressing the diverse needs of undergraduate students in complex academic environments. By offloading routine instructional tasks and data analysis to artificial intelligence, faculty can focus on fostering critical thinking, emotional intelligence, and ethical reasoning. However, this transition to technology-enhanced classrooms presents unique challenges, including the need for teacher upskilling, the preservation of human-centric pedagogy, and the mitigation of algorithmic bias. Through a qualitative analysis of current collaborative AI models, this paper argues that the synergy between human intuition and machine precision enhances student agency and academic outcomes. The findings suggest that the future of teacher education lies in embracing a hybrid model where artificial intelligence serves as an analytical partner, allowing teachers to deliver a more nuanced, personalized, and effective educational experience. Ultimately, this study emphasizes that while artificial intelligence can personalize the pace of learning, the teacher remains indispensable in guiding the purpose of learning and values of education.

Keywords: *AI, human Centring, pedagogy, personalized, experience*

1.8 AI as a Co-Teacher: Perceptions of Teacher-Student-AI Collaboration among Indian Pre-Service Teachers

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Abstract

The high pace of Artificial Intelligence (AI) development is changing the landscape of the educational setting offering intelligent tutoring systems, automated assessment tools, and adaptive learning platforms which are gradually taking over tasks traditionally performed by the human instructor. This development has resulted in the concept of an AI as a co-teacher, which implies that teachers, students, and AI systems in the classroom develop a collaborative relationship. Although the current studies have mostly centered on the technological preparedness of in-service teachers, little is done in the conceptualization and emotional reactions of a pre-service teacher-the future educator in relation to this new pedagogical reality especially in the Indian context.

The current research would investigate the perceived views of Indian pre-service teachers towards AI as a co-teacher and its image among them as the way a teacher and a student are going to collaborate in classrooms using AI. Through descriptive survey design, a survey will be conducted on pre-service teachers pursuing B.Ed./D.El.Ed. and M.Ed. programs in Delhi. The self-developed Teacher-Student-AI Perception Scale will be used to assess the perceptions of the participants towards the use of AI as a support tool in the classroom, classroom control, student interaction, emotional attachment, and ethical issues.

The research questions are the following: how pre-service teachers view AI as a co-teacher; the way, in which they conceive the idea of collaboration between teachers, students, and AI; the kinds of benefits and challenges they relate to AI-supported teaching; and whether they view those differently based on demographic and academic factors. Data will be analysed using descriptive statistics and inferential statistics tools like t-tests and ANOVA.

This research goes beyond technical skills and competence to investigate the unfamiliar aspects of professional and relational definitions that pre-service teachers assign to AI by addressing imaginative and perception aspects of AI integration. It is anticipated that the results will be useful in teacher education institutions, curriculum designers and policy makers and reveal the necessity of human-centred, ethically based and pedagogically informed methodologies of AI incorporation. It is critical

to understand how the future educators imagine working with AI so as to develop educational systems that maintain the human, emotional, and moral base of teaching traditions and adopt technological advancement.

Keywords: *Artificial Intelligence in Education; Pre-Service Teachers; AI as Co-Teacher; Teacher- Student-AI Interaction; Digital Pedagogy; Teacher Education.*

1.9 Artificial Intelligence as a Co-Teacher in Teacher Education: Implications for Pedagogy and Practice

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Abstract

The advancement of Artificial Intelligence (AI) has significantly influenced modern-day educational practices, particularly within teacher education. Beyond its conventional role as a technological support tool, AI is increasingly conceptualized as a pedagogical partner or co- teacher that collaborates with human educators in the teaching-learning process. This paper examines the role of AI as a co-teacher in teacher education and discusses its implications for pedagogy and professional practice. Drawing on existing literature, policy documents, and theoretical perspectives on human-centred pedagogy and constructivist learning, the study presents a conceptual analysis of human-AI collaboration in teacher preparation programs. The paper highlights key pedagogical functions of AI co-teaching, including personalized learning support, adaptive instructional delivery, formative assessment, and learning analytics, while emphasizing the importance of human teachers in ethical judgment, emotional engagement, and contextual decision-making. The discussion further explores how AI co-teaching reshapes pedagogical practices, teacher roles, and competency requirements in teacher education. There are critical issues related to teacher autonomy, data privacy, equity, and responsible AI use that are also addressed. The

paper also focuses on AI as a co- teacher rather than a replacement for human educators can enhance instructional effectiveness while preserving pedagogical integrity. The study suggests practical implications for curriculum design, teacher professional development, and policy formulation, contributing to ongoing discourse on future-ready teacher education in AI-enhanced learning environments.

Keywords: *Artificial Intelligence, Co-Teaching, Teacher Education, Pedagogy, Educational Practice*

1.10 Artificial Intelligence as a Co-Teacher in Tourism Education: Preparing Industry-Ready Hospitality Graduates

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Abstract

The tourism and hospitality industry is undergoing rapid transformation driven by digital technologies, automation, and data-driven decision-making. As service models evolve, the skill expectations from tourism graduates have expanded beyond traditional operational competencies to include digital literacy, adaptability, and problem-solving abilities. However, tourism education institutions often struggle to bridge the persistent gap between academic instruction and industry expectations. In this context, Artificial Intelligence (AI) has emerged as a significant enabler in higher education, offering innovative pedagogical possibilities. This paper conceptualizes Artificial Intelligence as a co-teacher in tourism educationone that complements, rather than replaces, human educators. Anchored in teacher education and digital competence frameworks, the paper examines how AI-enabled teaching, experiential learning, and assessment practices can enhance the preparation of industry-ready hospitality graduates. Using a conceptual and analytical approach, the study explores the role of AI in supporting experiential pedagogy, personalized learning, and skill development, while emphasizing the continued importance of human-centred teaching. The paper also discusses challenges related to ethics, equity, digital divide, and teacher preparedness. It concludes by arguing that systematic integration of AI

literacy and digital pedagogy in teacher education programs is essential for responsible and effective use of AI in tourism classrooms.

Keywords: *Artificial Intelligence, Co-Teacher, Tourism Education, Hospitality Graduates, Teacher Education, Digital Competence*

1.11 Beyond Automation: Using Agentic AI as a Co-Teacher to Strengthen Meta-cognitive Strategies in Teacher Education

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Abstract

As AI technology has evolved from input dependent Generative AI to autonomous Agentic AI, which can perceive its environment and adapt with time, the ways in which teachers are trained are evolving too. In future, AI will assist like a co-teacher alongside human teacher. Agentic AI represents a transition from passive software to an active partner in the learning process. By connecting the deep reasoning of LLMs with the real world, these systems go beyond simple content generation. Agentic AI have a sense of digital awareness that allows them to understand the details of a situation, plan, and respond to daily lifes unpredictability with real agility. By leveraging advanced computational techniques and learning from every interaction, these systems can detect a students frustration or curiosity in real time and adapt accordingly.

After reviewing more than 25 articles from 2024 to 2026, it is suggested that, teacher training should emphasize goal-driven learning experiences supported by both agentic AI and human teacher educators. These experiences can adapt to specific objectives and learner needs, improving meta-cognitive strategies. With focused simulation training for each prospective teacher, Agentic AI can assist in planning, monitoring, and evaluating the whole training process.

Innovations like & quot;AI Doubles" and Student Digital Twins (DTS) offer personalized mentoring, while AI-driven hypothesis testing can enhance cognitive flexibility. These tools can effectively help prospective teachers to develop meta-cognitive strategies. Ultimately, teacher education thrives in hybrid environments where educators manage AI- enhanced settings. This combination blends

machine intelligence with human empathy to support deeper learning and foster meta-cognition, which is the crucial practice of & quot;thinking about thinking.

Keywords: *Agentic AI, Meta-cognitive Strategies, Teacher Education.*

1.12 Pixels, Pedagogy, and Progress: AI as a Co-Teacher as Redefining Roles through Responsible AI in Digital Classrooms.

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Abstract

In todays fast-changing digital age, artificial intelligence (AI) reshaping How teaching and learning take place, encouraging educators to rethink transitional classroom roles and methods. This paper, Pixels, Pedagogy, and Progress: AI as a Co-Teacher Redefining Roles through Responsible AI in Digital Classrooms, explores the growing role of AI as a supportive co-teacher that works alongside educators to improve teaching effectiveness, personalize learning experiences, and promote fairness in student outcomes. The study examines how AI-driven tools-such as adaptive learning platforms, intelligent tutoring systems, and real-time assessment technologiescan assist teachers without replacing their essential role. Using a multidisciplinary approach, it highlights key ethical concerns, including data privacy, transparency, and the prevention of bias, emphasizing the need for responsible and thoughtful use of AI in education. Through real-world examples and case studies, the paper shows how AI can handle routine tasks, offer instant feedback, and support differentiated instruction, allowing teachers to focus more on meaningful interactions, critical thinking, emotional support, and creative curriculum planning.

Furthermore, the paper argues that viewing AI as a co-teacher requires educators to develop new skills, such as understanding AI systems, exercising informed judgment, and ensuring ethical use of technology. It proposes a responsible framework for AI adoption that balances innovation with educational values, prioritizing inclusivity, transparency, and continuous human oversight. By positioning AI as a collaborative partner rather than a replacement for teachers, this study advocates for a human-centered approach to digital education. The findings provide practical insights for policymakers, educational leaders, and practitioners seeking to build ethical, effective, and inclusive digital classrooms.

Keywords: *Educational Technology, Pedagogical Transformation, TeacherAI Collaboration, Bias Mitigation, Adaptive Learning Systems, Intelligent Tutoring Systems, Educational Equity.*

1.13 AI as a Co-Teacher: Redefining Educational Roles in Digital Classrooms

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Abstract

The rapid integration of Artificial Intelligence (AI) into education has significantly transformed teachinglearning processes, particularly in digital and blended classrooms. Rather than positioning AI as a replacement for teachers, contemporary educational discourse emphasizes AI as a co-teachera supportive, collaborative agent that enhances pedagogical effectiveness while preserving the humanistic core of teaching. This seminar paper is a reflective and practice-based account of the authors professional work as a teacher, Key Resource Person (KRP), District Resource Person (DRP), and Resource Person in teacher training programs. The paper explores how AI tools were used in lesson planning, assessment design, personalized learning, low-cost and no-cost Teaching Learning Material (TLM) production, and continuous professional development (CPD) of teachers. Drawing from real classroom practices and training experiences aligned with SCERT curriculum frameworks, the paper highlights how AI functions as a co-planner, co-assessor, and co-creator of learning resources. The study underscores the evolving role of teachers in AI-enabled classroomsfrom information providers to facilitators, mentors, and reflective practitioners. It further discusses challenges, ethical considerations, and the need for building digital competence among teachers. The paper concludes that AI, when used thoughtfully and ethically, strengthens teacher agency, supports personalized learning, and redefines educational roles in a balanced and learner-centered manner.

Keywords: *Artificial Intelligence, Co-Teacher, Digital Classrooms, Teacher Education, Professional Development, Personalized Learning.*

Sub-Theme 2:
Human-Centered Pedagogy Using AI

2 Human-Centered Pedagogy Using AI

2.1 A Critical Analysis of EdTech and AI Integration in Mathematics Education as a Tool for Aatmnirbhar Bharat

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Abstract

The integration of Artificial Intelligence (AI) in education has increasingly influenced teaching practices by offering intelligent tools that support planning, instruction, assessment, and learner engagement. This paper emphasizes the continued significance of human judgment, empathy, and pedagogical expertise by conceptualizing AI as a supportive tool for human-centered teaching practices rather than as a substitute for teachers. The research paper looks at how AI-enabled applications, like digital teaching aids, learning analytics, automated feedback systems, and adaptive content delivery, can help teachers improve instructional effectiveness while maintaining the human aspects of teaching. It does this by using a conceptual and literature-based approach. The paper emphasizes how AI can facilitate individualized teaching methods, lessen the administrative burden on teachers, and aid in well-informed classroom decision-making. At the same time, it addresses important issues including algorithmic prejudice, data privacy, ethical responsibility, and the danger of being overly reliant on technology. According to the study, instructors must continue to play a key role in the teaching-learning process as mentors, facilitators, and reflective practitioners in order for AI integration to be successful. In order to guarantee the responsible and significant use of AI tools, the report also highlights the necessity of professional development and digital competency among educators. It comes to the conclusion that, when used carefully, AI can be a useful pedagogical support system that enhances human-centered teaching methods and advances inclusive, moral, and successful education.

Keywords: *EdTech, Artificial Intelligence, Mathematics Education, Aatmnirbhar Bharat, Digital Divide, Pedagogical Innovation, Self-Reliance.*

2.2 Artificial Intelligence as a Supportive Tool for Human-Centered Teaching Practices

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Abstract

The integration of Artificial Intelligence (AI) in education has increasingly influenced teaching practices by offering intelligent tools that support planning, instruction, assessment, and learner engagement. This paper emphasizes the continued significance of human judgment, empathy, and pedagogical expertise by conceptualizing AI as a supportive tool for human-centered teaching practices rather than as a substitute for teachers. The research paper looks at how AI-enabled applications, like digital teaching aids, learning analytics, automated feedback systems, and adaptive content delivery, can help teachers improve instructional effectiveness while maintaining the human aspects of teaching. It does this by using a conceptual and literature-based approach. The paper emphasizes how AI can facilitate individualized teaching methods, lessen the administrative burden on teachers, and aid in well-informed classroom decision-making. At the same time, it addresses important issues including algorithmic prejudice, data privacy, ethical responsibility, and the danger of being overly reliant on technology. According to the study, instructors must continue to play a key role in the teaching-learning process as mentors, facilitators, and reflective practitioners in order for AI integration to be successful. In order to guarantee the responsible and significant use of AI tools, the report also highlights the necessity of professional development and digital competency among educators. It comes to the conclusion that, when used carefully, AI can be a useful pedagogical support system that enhances human-centered teaching methods and advances inclusive, moral, and successful education.

Keywords: *Artificial Intelligence; Human-Centered Teaching; Teaching Practices; Digital Education; Teacher Support; Ethical AI.*

2.3 Human-Centered Pedagogy Using Artificial Intelligence in Digital Education

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Abstract

The increasing adoption of Artificial Intelligence (AI) in education has significantly reshaped teaching and learning practices by enabling personalization, automation, and data-driven decision-making. There is growing fear that an over-reliance on technology may compromise the human aspects of education, such as empathy, ethical judgment, and social connection, even while AI offers significant advantages in improving instructional efficiency and student engagement. The idea of human-centered pedagogy utilizing artificial intelligence is examined in this research, with a focus on integrating AI as an augmentative and supportive tool rather than as a teacher replacement. The study investigates how learner-centered and value-based pedagogical approaches might be linked with AI-driven tools, such as adaptive learning systems, intelligent tutoring platforms, and learning analytics, using a conceptual and literature-based methodology. The paper examines the changing role of educators in AI-enhanced classrooms, emphasizing their responsibilities as facilitators, mentors, and architects of significant learning experiences. The paper also covers important issues related to integrating AI, such as algorithmic bias, digital inequality, data privacy, and ethical responsibility. The results highlight how crucial it is for educators to become digitally competent and ethically conscious in order to guarantee the responsible and inclusive application of AI technologies. The study suggests that by promoting individualized, inclusive, and emotionally supportive learning environments while upholding the fundamental human values necessary for education, a balanced, human-centered strategy to AI adoption can improve educational quality.

Keywords: *Artificial Intelligence; Human-Centered Pedagogy; Digital Education; Teacher Education; Ethical AI; Personalized Learning.*

2.4 Artificial Intelligence in Teacher Education: Exploring Its Role in Supporting Human-Centered Pedagogy

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Abstract

Artificial Intelligence (AI) is becoming an important part of modern education and is gradually influencing teacher education as well. This paper explores the role of Artificial Intelligence in teacher education, emphasizing on how it can support human-centered pedagogy, where the teachers role, emotions, values, and ethical judgment remain central to the learning process. Human-centered pedagogy emphasizes understanding students needs, developing strong relationship between teacher and student, encouraging creativity, and promoting inclusive and ethical teaching practices.

This paper explain how AI-based tools such as adaptive learning systems, automated assessment, learning analytics, and virtual teaching assistants can help teachers and prospective teacher. These tools can support personalized learning, provide timely feedback, and reduce routine administrative work. As a result, teachers can spend more time on productive classroom interaction, mentoring students, and creating engaging learning experiences. Instead of replacing teachers, AI can act as a supportive tool that improves their professional practice. At the same time, the paper highlights the need to prepare future teachers to use AI responsibly. Teachers must be skilled to understand the hindrance of AI and to address important ethical concern such as data privacy, fairness, transparency, and possible bias in AI systems. Developing critical thinking and ethical awareness is essential so that teachers can make informed decisions while using AI in educational settings.

The paper concludes that Artificial Intelligence, when used meaningfully and ethically, can strengthen human-centered pedagogy in teacher education. By integrating technological skills with human values, empathy, and reflective practice, AI can help teachers become more effective, responsive, and student-centered in an increasingly digital era.

Keywords: *Artificial Intelligence, Human-centre dpedagogy, Digital era.*

2.5 Human Centered Pedagogy Using AI

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Abstract

The integration of Artificial Intelligence (AI) into education heralds a transformative era, reshaping pedagogical methodologies to meet the demands of a dynamic, technology-driven world. NEP 2020 (GOI, 2020) recommends integrating AI in education to support adaptive learning, inclusive practices, and teacher professional development. Further, UNESCO (2021) emphasizes ethical integration, particularly for protecting learner data and promoting inclusivity. Interestingly, there is growing awareness by leading artificial intelligence researchers and developers that human-centered designs are needed. Equally important is the encouragement of creativity researchers to integrate creativity and emotional support features in AI. The current paper open up new possibilities by introducing high levels of human control as well as automation. It exclusively delineates the AI-TEACH Model proposed by Talha Siddiqui et al (2025) which is built on five interconnected pillars: Transformative Learning, Ethical AI Practices, Adaptive Learning, Collaborative Environments, and Holistic Development. Each pillar is designed to address the specific aspects of AI integration in pedagogy, ensuring a balanced and comprehensive approach. Additionally, the paper emphasizes human-centered pedagogy using artificial Intelligence (AI) prioritizes learner needs and ethical issues over technological efficiency. It treats AI as a supportive tool which enhances human interaction, creativity and emotional involvement in the process of education. Simply put, AI acts as a mediator in cognitive, emotional, and ethical dimensions of learning, not a replacement for teachers.

Keywords: *Human-centered pedagogy; Transformative Learning; Ethical AI Practices; Adaptive Learning; Collaborative Environments; Emotional and ethical dimensions.*

2.6 Human-Centered Pedagogy in AI-Enhanced Education: A Systematic Literature Review

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Abstract

The rapid integration of artificial intelligence (AI) into educational contexts has generated an expanding body of research focused on intelligent tutoring systems, learning analytics, and automated instructional support. However, much of this literature remains technologically driven, offering limited pedagogical grounding and insufficient attention to human agency in teaching and learning processes. In response, this systematic literature review synthesizes and critically examines extant research on human-centered pedagogy in AI-enhanced education, with a particular focus on how pedagogical principles, teacher roles, and learner agency are conceptualized and enacted in AI-supported learning environments. Following established systematic review protocols (PRISMA), this study reviews 70 peer-reviewed journal articles indexed in the Scopus database. Through a rigorous thematic synthesis, the review identifies dominant pedagogical orientations underpinning human-centered AI education, including learner-centered design, collaborative humanAI interaction, adaptive scaffolding, and ethical-reflective pedagogy. The findings further reveal how teachers are re positioned from content transmitters to pedagogical orchestrators, mediators, and ethical gatekeepers in AI-augmented classrooms, while learners are increasingly framed as co-constructors of knowledge rather than passive recipients of algorithmic instruction. Importantly, the review highlights persistent tensions between automation and pedagogical autonomy, personalization and equity, and efficiency and meaningful learning, thereby exposing critical gaps in current theorization and empirical practice. Building on these insights, the study proposes an integrative conceptual framework that positions human-centered pedagogy as a dynamic interaction among teachers, learners, and AI systems, mediated by pedagogical intent, contextual sensitivity, and ethical considerations. By offering a coherent synthesis of fragmented research, this review contributes to ongoing debates on responsible and pedagogically grounded AI adoption in education. The findings provide actionable implications for teacher education, curriculum design, and policy development, while outlining future research directions to advance human-centered, ethically informed, and pedagogically robust AI-enhanced learning environments.

Keywords: *Human-centered pedagogy; Artificial intelligence in education; AI-enhanced learning; Teacher roles; Learner agency; Ethical AI in education; System-*

atic literature review.

2.7 Human-Centered Pedagogy in the Age of Artificial Intelligence: Balancing Technology with Human Values

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Abstract

The rapid integration of Artificial Intelligence (AI) in education has transformed teachinglearning processes, raising important questions about the role of human values in digital classrooms. This paper explores the concept of human-centered pedagogy using AI, emphasizing the need to balance technological advancement with empathy, ethics, and learner well-being. Rather than replacing teachers, AI is viewed as a supportive tool that enhances pedagogical effectiveness by enabling personalized learning, timely feedback, and inclusive practices. Human-centered pedagogy ensures that AI-driven educational environments remain learner-focused, respecting individual differences, emotional needs, and cultural contexts.The study highlights how AI can assist educators in designing adaptive learning experiences while preserving the teachers role as a mentor, facilitator, and emotional guide. Digital tools powered by AI can support differentiated instruction, formative assessment, and social-emotional learning, provided they are implemented thoughtfully. At the same time, concerns related to data privacy, bias, equity, and ethical use of AI demand critical attention. Teachers must be equipped with digital competence and ethical awareness to effectively integrate AI into classroom practices without compromising human interaction.The paper concludes that a human-centered approach to AI in education is essential for creating meaningful, inclusive, and ethical learning environments. Teacher education programs must focus on developing both technological proficiency and humanistic values to ensure that AI serves as an enabler of holistic education rather than a substitute for human judgment and care.

Keywords: *Artificial Intelligence, Human-Centered Pedagogy, Teacher Education, Ethical AI, Personalized Learning, Digital Education, Inclusive Teaching.*

2.8 Human-Centered Pedagogy in the Age of Artificial Intelligence: Building Digital and AI Competence in Teacher Education

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Abstract

The rapid integration of Artificial Intelligence (AI) into educational contexts has significantly transformed teachinglearning processes, raising important questions about the role of teachers and the nature of pedagogy. While AI offers powerful tools for personalization, assessment, and instructional support, teaching remains fundamentally a human-centered practice grounded in empathy, ethical judgment, and social interaction. In this context, teacher education must move beyond technical exposure to digital tools and focus on developing meaningful digital and AI competence among future teachers. This paper examines the relevance of human-centered pedagogy in the age of Artificial Intelligence and emphasizes the need to prepare teachers who can integrate AI responsibly without compromising human values. It conceptualizes digital and AI competence as the ability to critically, ethically, and pedagogically engage with AI-supported educational environments rather than merely operate technological systems. The paper further discusses how teacher education programmes can incorporate AI awareness, pedagogical decision-making, and ethical sensitivity to support future-ready teachers. By foregrounding the human dimensions of teaching alongside technological advancement, the paper argues for a balanced and reflective approach to AI integration in teacher education. Such an approach is essential for preparing teachers who can harness the benefits of AI while sustaining the relational, moral, and professional foundations of education.

Keywords: *Human-Centered Pedagogy, Artificial Intelligence (AI) in Education, Digital Competence, AI Competence, Teacher Education.*

2.9 Human-Centered Pedagogy Using Artificial Intelligence: Implications for Teaching and Learning under NEP 2020

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Abstract

The increasing integration of Artificial Intelligence (AI) in education has significantly transformed pedagogical practices, assessment methods, and learning environments. While AI offers opportunities for personalization, efficiency, and accessibility, it also raises concerns about dehumanization, ethical use, and learner choices. In response, human-centered pedagogy emphasizes values such as empathy, inclusivity, creativity, and holistic development. These principles are strongly embedded in Indias National Education Policy (NEP) 2020, which advocates learner-centric, flexible, and technology-enabled education. This paper explores the concept of human-centered pedagogy using AI and examines its implications for teaching and learning under the NEP 2020 framework. Adopting a conceptual and analytical approach, the study reviews existing literature on AI in education, human-centered learning theories, and policy documents related to NEP 2020. The paper highlights that AI tools when ethically and pedagogically alignedcan enhance personalized learning, inclusive education, formative assessment, and teacher effectiveness. It also discusses the evolving role of teachers and addresses ethical challenges such as data privacy, algorithmic bias, and over-reliance on automation. The study concludes that AI should function as a supportive pedagogical tool rather than a substitute for human interaction, and recommends policy guidelines, teacher capacity-building, and ethical frameworks for the effective implementation of human-centered pedagogy using AI in Indian education.

Keywords: *Human-centered pedagogy, Artificial Intelligence, NEP 2020, learner-centered education.*

2.10 Human-Centered Pedagogy Using Artificial Intelligence in Modern Education

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Abstract

Human-centered pedagogy using AI refers to the development of artificial intelligence as a support tool in teaching and learning process, that priorities needs, values, emotions, creativity and thinking of learners. It keeps teachers and students at the centre, not technology. More individualized, flexible, and captivating educational experiences are produced when artificial intelligence technology are included into teaching and learning processes. AI-driven pedagogy promotes student autonomy and differentiated instruction by utilizing resources like learning analytics, intelligent tutoring systems, and real-time feedback mechanisms. This method turns conventional classrooms into dynamic spaces that encourage motivation, self-regulated learning, and greater comprehension. This approach highlights the significance of educators working as pedagogical designers, ethical advisors, and community builders by framing AI as a supportive scaffold that improves the teacher-student relationship. By enabling students to establish goals, monitor progress, and remark on results, AI-driven pedagogy facilitates differentiated instruction, real-time feedback, and the formation of self-regulated learning habits. It is crucial to align AI tools with educational objectives so that they complement human instruction rather than take its place. The future of AI in education is not set in stone; stakeholders can guarantee that technology advances our common humanity, enhancing the educational environment and fostering holistic development for all students by deliberately making value-driven decisions.

Keywords: *Human-Centered Pedagogy, Artificial Intelligence, student-Centered learning, Personalized learning.*

2.11 Human-Centered Use of Artificial Intelligence in Teacher Education in India

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Abstract

Artificial Intelligence (AI) is slowly becoming a part of education, including teacher education. Teacher training programmes need to use new technology while keeping the human side of teaching safe. The National Education Policy (NEP) 2020 also highlights the importance of values, ethics and teacher responsibility. This paper studies the use of AI in teacher education from a human-centered approach.

The paper explains how AI can help future teachers by providing learning support, quick feedback and digital teaching materials. At the same time, it clearly states that AI cannot replace teachers. Teaching needs emotions, understanding and personal connection with students. Therefore, teachers must remain central to the teachinglearning process.

The paper also talks about important issues related to AI, such as data safety, unequal access to technology and too much dependence on digital tools. These problems are more serious in the Indian context, where many teacher education institutions face resource limitations. The study concludes that AI can be useful in teacher education only when it is used carefully and responsibly. Proper training and ethical awareness can help future teachers use AI in a meaningful way while respecting human values and students needs.

Keywords: *Artificial Intelligence, Teacher Education, Human Values, Ethics, NEP 2020.*

2.12 Reclaiming Human Agency: A Journey of Pedagogical Reflexivity in the Age of Automated Instruction

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Abstract

The speedy growth of automated instructional systems (AIS) has transformed experiences of teaching, learning and decision-making in educational spaces. Though, artificial intelligence (AI) promises efficiency, personalization and scalability but it also raises important questions about the place of human judgment, professional autonomy and ethical responsibility in pedagogy. This paper reflects on the idea of human agency(HA) in the context of increasingly automated instruction and argues that teacher education must consciously reclaim and reassert the human dimensions of teaching.

Using pedagogical reflexivity (PR) as a conceptual lens, the paper explores how teachers and teacher educators convey their role within AI-mediated environment. Instead of placing automation as a replacement for human expertise, the study views it as a context that demands deeper reflection on values, intentions and relationships in teaching. Based on the available literature on reflective insights and illustrative practices from teacher education, this paper highlights the significance of reflexive thinking (RT) in sustaining professional identity and ethical pedagogical choices.

The paper concludes that the future of teacher education lies not in resisting or opposing the use of technology in teaching but in cultivating the reflective practition-

ers who can engage themselves critically with automated systems so that reclaiming human agency could become a pedagogical journey that balances technological support with moral judgment, contextual understanding and relational teaching practices.

Keywords: *Artificial Intelligence (AI), Pedagogical Reflexivity (PR), Reflexive Thinking (RT), Human Agency (HA).*

2.13 The role of Artificial Intelligence in Teacher Education from an Andragogical point of Imparting Education.

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Abstract

Artificial Intelligence is a great technology that has revolutionized teaching.It is not only the field of teaching even every learning spree is linked with artificial intelligence though it has its own pitfalls it is definitely a boon for the adult learners who wants to use blended and flipped classrooms and also various technological applications to make learning easier and faster. Hard work is replaced by smart work due to Artificial Intelligence and its fruits are many.With a click even without typing just by voice over without worrying about the grammar and spelling an adult can access information in whatever sphere he is interested from different angles.All the Andragogical principles have become a reality with AI.

Keywords: *AI, Andragogy,Teacher Education.*

2.14 The Emergence of a New Professional Identity for Teachers in Human-Centered AI-Integrated Classrooms

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Abstract

The rapid integration of Artificial Intelligence (AI) into educational settings compels a fundamental re-examination of the teacher's professional identity. This qualitative study investigates how practicing K-12 educators conceptualize and navigate their evolving roles within classrooms dedicated to human-centered pedagogy while actively employing AI tools. Framed within a constructivist paradigm, data was gathered through in-depth, semi-structured interviews with 15 teachers across diverse subject areas and grade levels, all identified as early adopters of AI. Thematic analysis reveals a significant professional identity transition, moving beyond traditional models of knowledge transmission or facilitation towards a more complex and integrative role, conceptualized here as the Pedagogical Orchestrator. This emergent identity comprises three core, interrelated dimensions: the Design Architect, who intentionally curates and aligns AI tools with humanistic learning objectives; the Facilitator of Critical Dialogue, who mediates student-AI interaction to cultivate discernment and metacognition; and the Empathetic Analyst, who interprets AI-generated data through a lens of relational understanding to support holistic student development. Findings indicate that this identity shift is characterized by both a sense of empowerment and profound tension, as teachers negotiate new competency demands, ethical ambiguities, and the ongoing imperative to affirm the irreplaceable human elements of teaching practice. The study concludes that deliberate support for this professional evolution is essential to realizing a symbiotic, rather than substitutive, future for AI in education, ensuring technology augments rather than undermines the relational core of teaching and learning.

Keywords: *Teacher professional identity, artificial intelligence in education, human-centered pedagogy, pedagogical orchestrator, qualitative research, technology integration.*

2.15 Artificial Intelligence And The Future Of Teacher Education: Balancing Technological Innovation With Humanistic Pedagogy

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Abstract

The rapid advancement of Artificial Intelligence (AI) has begun to redefine the contours of education across the globe, including the field of teacher education. As classrooms evolve into digitally enriched learning spaces, teacher education institutions are compelled to rethink traditional pedagogical models and integrate intelligent technologies in meaningful ways. This paper explores the emerging role of AI in teacher education, focusing on its potential to personalize learning, enhance pedagogical decision-making, and support reflective teaching practices. At the same time, it critically examines ethical concerns, issues of equity, and the risk of over-technologization that may undermine the human essence of teaching. Drawing upon contemporary educational discourse and contextualizing AI within the Indian educational framework, the study emphasizes the need for a human-centered approach where AI functions as a supportive co-teacher rather than a replacement for educators. The paper also highlights the relevance of the Indian Knowledge System (IKS) in guiding ethical and value-based integration of AI in teacher education. It concludes by advocating for balanced, inclusive, and culturally rooted AI-driven teacher education programs that prepare future teachers to thrive in technologically advanced yet human-sensitive learning environments.

Keywords: *Artificial Intelligence, Teacher Education, Human-Centered Pedagogy, Digital Competence, Indian Knowledge System.*

Sub-Theme 3:
Teacher - Student AI Interaction with Collaborative AI

3 TeacherStudentAI Interaction with Collaborative AI

3.1 A Study Teacher Student AI Trriad Redefining Collaborative Mentorship Through AI-Driven Adaptive Learning in Undergraduate Education

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Abstract

The integration of Artificial Intelligence (AI) in education is transforming traditional pedagogical approaches, necessitating a reevaluation of collaborative mentorship models in undergraduate education. The objective of present research is the TeacherStudentAI triad, focusing on how AI-driven adaptive learning systems can redefine collaborative mentorship. AI technologies offer personalized learning experiences, real-time feedback, and data-driven insights, enabling tailored support for students. However, the role of teachers and the nature of student engagement must be recalibrated to maximize the potential of AI. The present research is a descriptive research design for the study purpose 101 students were taken as sample who are under graduate students from college located in the western suburban i.e. Andheri to Borivali. This study investigates the interplay between teachers, students, and AI systems, examining how AI augments mentorship, alters classroom dynamics, and impacts student outcomes. Through a mixed-methods approach involving surveys, questioner, and face to face interaction to undergraduate students of colleges. The research identifies best practices for leveraging AI to enhance collaborative learning environments. The finding of study revealed that under- graduate college students highlight the potential of AI to facilitate more effective, data-informed mentorship while emphasizing the irreplaceable role of human educators in guiding and inspiring students. The study concludes with recommendations for educators, policymakers, and Ed Tech developers on integrating AI tools to foster adaptive, student-centered learning ecosystems.

Keywords: *AI-Driven Adaptive Learning, Collaborative Mentorship, TeacherStudentAI Triad, Undergraduate Education, Personalized Learning, EdTec.*

3.2 Effective Human-AI Collaboration for Productivity and Efficiency in Digital Classrooms

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Abstract

The integration of Artificial Intelligence (AI) in education is transforming traditional teaching paradigms, necessitating a reevaluation of human-AI collaboration in digital classrooms. This paper examines existing literature on AI co-teachers and proposes to enhance productivity and efficiency. By analyzing case studies and theoretical models, we identify key factors influencing successful collaboration, including role redefinition, adaptive curriculum design, and teacher training. Our findings suggest that strategic human-AI partnership can optimize learning outcomes, and we provide recommendations for educators and policymakers to harness AIs potential in education.

Keywords: *Technology, Learning Outcomes, Curriculum Design, Teacher Training.*

3.3 Artificial Intelligence and Mathematics Learning at the Preparatory Level: Teachers Perspectives

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Abstract

The integration of Artificial Intelligence (AI) in school education has brought significant changes in teachinglearning practices, particularly in mathematics educa-

tion.The growing use of Artificial Intelligence (AI) in education has influenced teaching practices across school subjects, including mathematics. This paper examines Artificial IntelligenceBased Teaching of Mathematics at the Preparatory Level with the aim of understanding how AI-supported tools affect classroom pedagogy from the teachers perspective. The main objective of the study is to explore the perceived changes in teaching strategies, classroom interaction, and instructional support resulting from the use of AI in preparatory level mathematics classrooms. A qualitative descriptive research method was employed for the study. The population consisted of mathematics teachers teaching at the preparatory level, and a purposive sampling technique was used to select fifteen teachers who had experience using AI-supported digital tools in their mathematics instruction. Data were collected through semi-structured interviews via Email and Google Form (Closed & Open-ended responses), which enabled in-depth discussion of teachers classroom practices, instructional decision-making, and challenges associated with AI integration. The study highlights the potential of AI to support mathematics pedagogy at the preparatory level and provides insights that may guide educators and policymakers in the meaningful integration of AI in school mathematics teaching.

Keywords: *Artificial Intelligence, Mathematics Learning, Preparatory Level, Teachers Perspectives, Semi-Structured Interview.*

3.4 Collaborative AI in TeacherStudent Interactions: A Descriptive Exploration

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Abstract

AI is not just transforming education but also shaping our philosophy of AI enhanced teaching and learning through collaborations among teachers, students, and AIin dynamically triadic relationships to promote co-creation, real time feedback, and inclusive practices. This paper refers to an exploratory study of Teacher Student AI interactions mediated through collaborative AIenabled tools, drawing on secondarysources including academic papers, case studies and the development of industry to 2026. Based on thematic analysis, the paper investigates central applications suchas intelligent tutoring systems (e.g., adaptive tools such as Duolingo and Century Tech), AI-facilitated joint lesson design dashboards and balanced group participation analytics.

Important outcomes show an improvement in interaction dynamics when AI technology is used in a neutral mediation capacity, hence facilitating critical thinking, creativity, and personalized support, aligning with Sustainable Development Goals. Strengths include decreased burdens on teachers, increased engagement of students through chatbots and brainstorming tools, and scalability in developing learning programs together. There are, however, concerns regarding threats of private data in collaborative spaces, inequity in access, over reliance, and training teachers in effectively managing AI.

The study highlights the importance of education sector implementation of collaborative AI in a well-balanced form to maximize triadic results while keeping human factors intact. Future studies are proposed to remain ethical while focusing on validations for preserving transformative capacities of triadic education.

Keywords: *AI, Education, Interaction, Teachers, Students.*

3.5 Collaborative Artificial Intelligence and TeacherStudentAI Interaction

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Abstract

In the present digital age, artificial intelligence has brought profound changes in the field of education, leading to innovative paradigms of teaching and learning for educators and learners. The traditional teacherstudent relationship is now evolving into a three-dimensional model in which teachers, students, and AI together make the teachinglearning process more effective, flexible, and collaborative. AI is not merely a software tool; rather, it enables machines to perform human-like intelligent tasks such as learning, reasoning, and problem solving.Collaborative AI is an intelligent system that goes beyond merely providing information and actively engages with both teachers and learners. In this model, the teachers role is that of a guide, motivator, and ethical regulator. Teachers design lesson plans, clearly define learning objectives, and ensure the balanced and appropriate use of AI in educational contexts. Students, as active participants in this process, develop self-learning abilities, curiosity, problem-solving skills, and creative thinking. From an educational perspective, this model is grounded in constructivist and socio-cultural learning theories.Artificial intelligence assists teachers in time-saving tasks such as daily lesson planning, question generation, providing quick responses, and formative feedback.

This support enables teachers to focus more on learner guidance, higher-order teaching, ethics, and value-based education. AI thus functions as a teaching assistant for educators.Artificial intelligence offers personalized and experiential learning, allowing students to learn at their own pace and level. It helps in understanding complex concepts and in project planning as well. Students can use AI chatbots (such as ChatGPT) to enhance and refine their academic work.

Keywords: *Collaborative Artificial Intelligence, TeacherStudentAI Interaction.*

3.6 Integrating Collaborative AI in Higher Education: Challenges and Opportunities

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Abstract

Artificial intelligence (AI) has been a topic of growing interest and investigation in various fields, including higher education.The objective of the study was to identify the challenges associated with the integration of collaborative artificial intelligence in higher education and examine the opportunities it offers for enhancing teaching, learning, and academic collaboration. This study was conducted on in-dept documentary review method followed by qualitative approach.The integration of collaborative artificial intelligence in higher education presents both promising opportunities and complex challenges that require systematic investigation. Also, the study explores key challenges such as technological readiness, faculty competence, ethical concerns, data privacy, infrastructural limitations, and resistance to pedagogical change. At the same time, the study highlights significant opportunities including personalized learning, enhanced student engagement, improved collaborative learning experiences, academic support for teachers and students, and data-driven decision-making in higher education institutions. The findings of the study underscore that while collaborative AI has the potential to transform higher education by fostering interactive and inclusive learning environments, its successful integration depends on institutional preparedness, policy support, ethical governance, and capacity building among stakeholders.

Keywords: *Integration of Artificial Intelligence, Generative AI, Collaborative Learning, Higher Education.*

3.7 TeacherStudentAI Interaction in Digital Learning Environments

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Abstract

In today's digital learning environments, not only the role of teacher and student is important, but Artificial Intelligence (AI) has also become a strong partner. The topic "TeacherStudentAI Interaction in Digital Learning Environments" focuses on understanding how the interaction between teachers, students, and AI is making the learning process more effective, interactive, and personalized. Digital tools such as smart apps, AI tutors, chatbots, learning management systems, and adaptive learning platforms allow students to learn at their own pace and according to their individual needs. The main purpose of this study is to understand the interaction between teachers, students, and AI and to see how this interaction improves learning motivation, understanding, and performance. It also aims to highlight the changing role of teachers, where they are not just instructors but also guides and facilitators who effectively utilize AI tools. Furthermore, this study demonstrates how the use of AI creates personalized learning experiences for students by understanding their individual needs. The findings clearly show that when teachers and AI work together, student engagement increases significantly. AI provides students with instant feedback, identifies their weak areas, and provides practice material tailored to their level. This gives slow learners confidence and allows fast learners to progress at their own pace. For teachers, AI becomes a support system that reduces their workload and gives them more time for quality interaction with students. Overall, this study shows that TeacherStudentAI interaction creates a collaborative model where technology does not replace learning but strengthens it. This model provides an effective direction for future education where human interaction and smart technology combine to create a high-quality learning experience.

Keywords: *TeacherStudent Interaction, Artificial Intelligence in Education, Digital Learning Environment, Personalized Learning, Smart Technology in Teaching.*

3.8 TeacherStudentAI Interaction with Collaborative AI: A Multidisciplinary Perspective

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Abstract

The convergence of artificial intelligence and education has given rise to collaborative AI systems that actively participate in teaching and learning processes. This chapter examines TeacherStudentAI interaction as a triadic, socio-technical framework where AI functions as a collaborative partner rather than a substitute for human intelligence. Drawing from educational theory, engineering system design, and management practices, the chapter analyzes interaction models, pedagogical benefits, system architectures, ethical challenges, and implementation strategies. The discussion emphasizes responsible, human-centered AI integration to enhance learning outcomes, instructional efficiency, and institutional effectiveness.

Keywords: *adaptive learning, instructional efficiency, and institutional effectiveness.*

3.9 Artificial Intelligence Importance in Teaching and learning

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Abstract

Artificial Intelligence (AI) has become a rapidly growing field of research, with significant advancements in recent years. This paper provides an overview of the current state of AI, its applications, and its potential impact on various aspects of society. We discuss the opportunities and challenges associated with AI, including its potential to improve healthcare, education, and transportation, as well as its potential risks, such as job displacement and bias. We also examine the implications of AI on ethics, governance, and human-AI collaboration. Our analysis suggests that AI has the potential to bring about significant benefits, but it is crucial to address the challenges and risks associated with its development and deployment.

Keywords: *Artificial Intelligence, Teaching, Learning, Challenges.*

Sub-Theme 4:
Personalized Learning through AI: Educating Teachers for Adaptive Education

4 Personalized Learning through AI: Educating Teachers for Adaptive Education

4.1 AI Tools in Education: Opportunities for Teacher Educators within the Framework of National Education Policy-2020

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Abstract The integration of Artificial Intelligence (AI) tools in education has gained significant attention under the framework of Indias National Education Policy (NEP) 2020. It emphasizes digital empowerment and innovative teaching practices. The present empirical study examines the opportunities of AI tools in education from the perspective of teacher educators. A descriptive survey method will be employed to collect data; the likely sample will be 150 teacher educators working in different teacher education institutions. The use of a questionnaire will be for data collection. The objectives of the study are to analyze the awareness, usage, and perceived opportunities of AI tools among teacher educators with respect to gender, locality (rural and urban), and medium of instruction. The collected data are analyzed using appropriate descriptive statistical techniques such as mean, standard deviation, t-test, and percentage analysis. The findings of the study reveal that teacher educators generally hold a positive perception toward the use of AI tools in teaching learning processes. The significant variations will be observed in the perception of AI opportunities based on gender, locality, and medium of instruction. The study emphasizes that AI tools can enhance personalized learning, assessment practices, and professional development of teacher educators. The results indicate the need for systematic training and policy-level support to effectively integrate AI tools in teacher education in addressing the vision of NEP 2020.

Keywords: *Artificial Intelligence Tools, Teacher Educators and National Education Policy 2020.*

4.2 AI-Enabled Adaptive Learning in STEM Teacher Education: Insights from Existing Studies

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Abstract

The rapid integration of Artificial Intelligence in education has significantly transformed teaching and learning processes, particularly through adaptive and personalized learning approaches. In STEM (Science, Technology, Engineering, and Mathematics) education, where learners exhibit diverse cognitive abilities, learning paces, and conceptual challenges, preparing teachers for adaptive pedagogy has become increasingly important. This paper examines the role of Artificial Intelligence-enabled adaptive learning in STEM teacher education through an analysis of existing research studies, policy documents, and educational reports. Adopting a secondary data approach, the study explores how Artificial Intelligence tools such as intelligent tutoring systems, learning analytics, and virtual laboratories contribute to enhancing teacher preparedness, instructional flexibility, and formative assessment practices. The findings indicate that Artificial Intelligence-supported adaptive learning environments enable STEM teachers to design personalized learning pathways, identify learner misconceptions, and make data-informed pedagogical decisions. However, the review also highlights key challenges, including limited Artificial Intelligence integration in teacher education curricula, infrastructural disparities, and ethical concerns related to data privacy and algorithmic bias. The paper underscores the need for curriculum redesign, targeted professional development, and policy support to strengthen Artificial Intelligence literacy and adaptive teaching competencies among STEM educators. The study concludes that strategically integrating Artificial Intelligence into STEM teacher education can play a crucial role in developing responsive, inclusive, and future-ready teachers capable of addressing diverse classroom needs.

Keywords: *Artificial Intelligence, STEM Teacher Education, Adaptive Learning, STEM Educators.*

4.3 Artificial Intelligence and the Changing Role of Teacher Educators

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Abstract

Artificial intelligence (AI) is bringing about widespread changes in education systems worldwide, necessitating significant shifts in the roles and responsibilities of teacher trainers. We need to effectively utilize this artificial intelligence in our teacher training programs as well. The responsibility of teacher trainers has traditionally been to provide pre-service and in-service teachers with pedagogical knowledge, subject matter expertise, and classroom management skills.The integration of AI technologies in education has expanded this role far beyond traditional teaching methods. Its use will increase rapidly in the coming years, requiring significant changes to our educational curriculum and infrastructure. Therefore, it is crucial to develop a comprehensive proposal for how artificial intelligence can be incorporated into teacher education programs to enhance the professional identity and competencies of teacher trainers and enable them to effectively utilize AI in their teaching. This will allow us to adapt our education system in a timely manner.Teacher educators are also required to interpret learning analytics, guide reflective practices using AI-generated insights, and model responsible AI use in instructional settings. While AI offers opportunities to enhance efficiency and personalization, it also raises concerns related to data privacy, algorithmic bias, professional autonomy, and equity, which teacher educators must address proactively. This paper examines how Artificial Intelligence is reshaping the professional identity, competencies, and functions of teacher educators in contemporary teacher education programs.

Keywords: *Artificial Intelligence, Teacher Educators, Teacher Education & Changing Professional Roles.*

4.4 Beyond the Algorithm: Personalized Learning and Teacher Preparation in AI-Enabled Classrooms

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Abstract

Artificial intelligence is revolutionizing education by enabling personalized learning experiences tailored to individual student needs. Yet, a critical paradox emerges: while AI systems grow increasingly sophisticated, many teachers remain unprepared to harness their potential. This research addresses the urgent question of how teacher education must evolve to transform educators from traditional instructors into facilitators of AI-augmented adaptive learning environments.

Keywords: *Artificial Intelligence, Personalized Learning, Teacher Professional Development, Adaptive Education, Educational Technology Integration.*

4.5 Bridging the Digital Divide: A Mixed-Methods Study on Teacher Preparedness for AI Integrated Personalized Learning Environments

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Abstract

As Artificial Intelligence (AI) increasingly permeates the educational landscape, the promise of truly personalized, adaptive learning is becoming technically feasible. However, the successful integration of these systems relies heavily on the preparedness of educators to navigate, interpret, and facilitate AI-driven instruction. This study employs a mixed-methods convergent design to evaluate the current state of teacher readiness for AI-integrated personalized learning environments. Quantitative data were collected via a survey of 347 K-12 teachers across 45schools, assessing competencies across five key domains: Data Literacy, AI Ethics, Pedagogical Integration, Technical Operation, and Student Support. Concurrently, qualitative insights were gathered through semi-structured interviews with 28 teachers and 8 administrators. Results indicate a significant "preparedness gap": while 78% of participants expressed high enthusiasm for AI's potential to personalize learning, only 22% demonstrated functional proficiency in interpreting AI-generated analytics. The study identifies three primary barriers to implementation: lack of practical professional development (PD), ethical concerns regarding data privacy, and the "black box" nature of algorithmic decision-making. Furthermore, the findings suggest that traditional, one-size-fits-all PD models are ineffective for AI adoption. Instead, this paper proposes a situated, mentorship-based framework for teacher education that

prioritizes algorithmic literacy and human-in-the-loop pedagogy. These findings have immediate implications for policy-makers and curriculum designers aiming to foster adaptive education systems that empower rather than replace the teacher.

Keywords: *Artificial Intelligence, Personalized Learning, Teacher Professional Development,Adaptive Education, TPACK Framework, Algorithmic Literacy.*

4.6 Developing Teachers for AI-Enabled Personalized Learning in Adaptive Classrooms

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Abstract

Today's classrooms showcase a diverse array of student differences, including variations in ability, interests, learning speed, and socio-cultural backgrounds. Conventional teaching methods, which often employ standardized approaches, struggle to effectively accommodate this diversity. Consequently, personalized learning has gained attention as a valuable strategy for meeting individual educational needs. In recent years, the increasing To meet the needs of a diverse classroom is a concern for every educator, for which the personalized learning has emerged as a transformative approach to address individual learning differences. Technology has significantly expanded opportunities for education system and the most rapidly evolving is Artificial Intelligence (AI) that alone is able to facilitate adaptive content delivery, provides immediate feedback, conducts adaptive assessments and can generate data-driven insights.However, the effective application of AI- based personalized learning depends largely on how teachers are prepared to understand, effectively engaged and ethically integrate these technologies into their classroom practices. This paper attempts to examine the significance of integration of AI in teacher education for better personalized learning in adaptive classrooms.Furthermore the pressing issues like inequality in accessing of digital resources, lack of proper technical training and rigid structure of some teacher education institutions are also addressed in this paper. These challenges are particularly relevant for institutions operating in diverse and resource constrained settings. For better proficiency in adaptive classrooms the teaching instructions should go in parallel with the educational strength of AI in an ethical manner. The study suggests the implementation of an equilibrium approach that emphasize human centred decisions should go close in hand with technological

support in order to achieve an efficient AI based personalized learningthrough proper training of teachers in teacher education programs and to consider AI-driven tools as supportive measures instead of replacing the existing teachers.

Keywords: *Artificial Intelligence, Personalized Learning, Teacher Education, Digital Resources, Adaptive Classrooms.*

4.7 Enhancing Foundational Literacy and Numeracy through the Micro-Teaching Pedagogical Approach

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Abstract

Micro-teaching is an effective pedagogical approach for improving the teaching of literacy and numeracy skills in a foundational stage of learning. Although there are efforts to give teaching the concepts attainment of foundational literacy and numeracy (FLN) by providing teachers with improved instructional strategies, classroom practice, and professional development opportunities to address the gaps in preparedness, instructional strategies, and classroom practice during the foundational stage. Achieving FLN proficiency continues to be a challenge. Through an exploration of the role of micro-teaching interventions in relation to instructional effectiveness, including focused lesson planning and skill development, provision of immediate feedback, and reflection on practice. This theoreticalpaper reveals how micro-teaching is going to be an effective instructional approach for achieving FLN. The paper discusses the benefits of implementing the micro-teaching approach for achieving foundational literacy and numeracy, and it also discusses the challenges faced by teachers in the micro-teaching approach. This paper discusses some future directions of microteaching and suggestions for teachers on how to implement this microteaching approach in FLN classrooms. It suggests how structured micro-

teaching cycles provide teachers with the opportunity to provide developmentally appropriate, learner-centered, interactive FLN instruction in a variety of ways (i.e., activity-based, formative assessment, and contextualized varieties of instruction). In summary, micro-teaching interventions have a positive impact on the clarity of instruction provided by the teacher, the degree of student engagement, the development of the foundational literacy and numeracy skills of students, and the overall quality of instruction provided by the teacher. This paperacknowledges that systematic integration of micro-teaching into the pre-service and in-service teacher training will lead to enhanced capacity for FLN instruction in the future.

Keywords: *Micro-Teaching,Foundational Literacy and Numeracy, Pedagogical Approach.*

4.8 Leveraging AI to Support Personalized and Active Learning in Pre-Service Teacher Education Programs

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Abstract

As technology advances, schools need teachers who understand 21st-century skills and strong connection with education. Teacher educators must use computer-based teaching methods. This topic is important if we want to prepare teachers for modern classrooms. This study looks at how Artificial Intelligence (AI) can help future teachers. Specifically, it explores how AI can help teachers understand the teaching, learning process, transforming culture for the next generation. Teachers play a big role and shape how students perceive diversity and inclusion.Artificial Intelligence (AI) does have challenges,but despite these challenges, AI can still be very helpful for teacher training. AI creates Active learning, high engagement and hands

on learning experiences. According to constructivism, people build knowledge actively,if they learn by interacting with their environment. AI creates a digital yet experiential learning environment, that encourage thinking and reflecting. The research study shows how AI works for teaching learning and develop understanding for future teachers. AI provides active learning, pedagogical skills, problem solving, fostering digital literacy and immediate feed back.It develops skills to prepared for real-world interactive learning experiences as compared to traditional methods. This article helps teachers with technological sound, individualised teaching & learning and reduces biases. It also encourages meaningful interactions, deeper understanding, fostering creativity and active learning.

Keywords: *Artificial Intelligence, Active Learning,21st-century skills, Pre-Service Teachers.*

4.9 Personalized English Learning through Artificial Intelligence (AI)

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Abstract

The term artificial intelligence (AI) denotes to a computer-based model of human intelligence that acts as human. One of the factors that is driving the fourth industrial revolution, is artificial intelligence (AI), which has huge potential in education, especially English learning andteaching at both schools and higher education levels. AI technologies present unique solutions that enhance language learning experiences. They also cater to individual student needs and give tailored feedback. AI-driven adaptive learning systems tailor lessons by evaluating students' preferred learning styles, along with identifying their strengths and areas for improvement. This research employs a qualitative method to comprehensively investigate AIs integration into English language learning and teaching. Furthermore, the study analyses different AI technologies such as EnglishCentral, Quizizz, Kahot, Busuu, Google Translate, Text to Speech (TTS), EnglishAble, Orai, Elsa, Chatbot, Duolingo, Neo platforms, Grammarly, ProWritingAid, and Smarteach. It also discusses the challenges of using AI in personalized English language learning.

Keywords: *Artificial Intelligence, Language Learning, Technology, Industrial Revolution,Personalized Learning.*

4.10 Personalized Learning Through AI: Educating Teachers for Adaptive Education

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Abstract

Artificial Intelligence (AI) is rapidly changing the education system since it allows creating personalized learning environments based on the personal needs, preferences, and speed of individual learners. Individualized learning with the assistance of AI has become a popular topic throughout the world because of its capacity to drive the participation level of a learner, academic outcomes, and self-regulated learning. Nonetheless, AI-based personalization does not always rely on the level of technological advancement, but, above all, on the skill of teachers to comprehend, interpret, and use AI-based information as a pedagogical tool. In this paper, an analysis of personalized learning using AI will be presented with specific consideration of teaching adaptive education. Based on the existing learning theories, the current research, and the practices that are being introduced, the paper discusses the topic of AI-enabled systems to assist in adaptive instruction, the fluctuating role of a teacher in an AI-mediated classroom, and the abilities educators need to acquire in an effort to promote personalized learning successfully. The paper also suggests a professional development model that is designed to train teachers on how to use AI tools in a responsible, ethical, and pedagogical manner. The major issues, such as privacy of data, biased algorithms, fair access, and opposition on the part of teachers are discussed in a critical manner. The paper finds that AI-facilitated personalized learning has a potential significant role in enhancing adaptive education as long as teachers, through proper training, support, and empowerment to exercise professional judgment with intelligent systems.

Keywords: *Artificial Intelligence; Personalized Learning; Adaptive Education; Teacher Education; Professional Development; Instructional Technology.*

4.11 Personalized Learning through AI: Opportunities and Challenges for Teacher Education in India

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Abstract

Personalized learning has emerged as a transformative approach in education, aiming to address the diverse learning needs, abilities, and learning pace of individual learners. The integration of Artificial Intelligence (AI) into teacher education holds substantial potential to strengthen personalized learning through adaptive content delivery, intelligent assessment systems, real-time feedback, and data-driven instructional decision-making. In the Indian context, teacher education institutions continue to face challenges such as large classroom sizes, heterogeneous learner groups, limited resources, and varying levels of digital literacy. In this scenario, AI-enabled personalized learning presents significant opportunities to enhance teaching effectiveness and learner engagement. This conceptual paper examines the opportunities and challenges associated with the adoption of AI-driven personalized learning in teacher education in India. It critically analyses the role of AI tools in supporting pre-service and in-service teachers in designing learner-centred pedagogical strategies, promoting inclusive education, and strengthening professional competencies. The paper also explores the application of AI in learning management systems, adaptive assessment models, and continuous professional development of teachers. Simultaneously, the study highlights key challenges related to ethical considerations, data privacy and security, algorithmic bias, the digital divide, infrastructural constraints, and the need for adequate training and policy support for educators. Emphasis is placed on adopting a balanced, human-centred approach to AI integration that complements, rather than replaces, the role of teachers. The paper concludes by suggesting strategic measures for the effective implementation of AI-driven personalized learning in teacher education, focusing on capacity building, ethical governance frameworks, and institutional readiness. It seeks to contribute to the ongoing academic discourse on the future of teacher education in India in the era of Artificial Intelligence.

Keywords: *Artificial Intelligence, Personalized Learning, Teacher Education, Digital Pedagogy, Indian Education System.*

4.12 Personalized Learning through AI: Educating Teachers for Adaptive Education

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Abstract

Artificial Intelligence (AI) is gradually becoming an integral part of educational practice, influencing the way teaching, learning, and assessment are carried out in schools. While AI offers opportunities for personalized learning and adaptive instruction, its effective use in classrooms largely depends on teachers awareness, understanding, and practical engagement with AI-based technologies. The present study examines teachers awareness and usage of Artificial Intelligence through a survey approach, explores the importance of AI in education, identifies key areas where AI supports teaching, assessment, and classroom management, and discusses the negative factors associated with its use in educational settings. A descriptive survey was conducted using an online questionnaire administered to school teachers from different subject backgrounds. The findings indicate that most teachers possess a basic level of awareness of AI and use certain digital tools that incorporate AI features, particularly for assessment and content delivery. However, the use of AI for deeper pedagogical purposes, such as personalized learning and adaptive instruction, remains limited. Artificial Intelligence plays an important role in education by supporting individualized learning, improving assessment practices, reducing teachers administrative workload, and promoting inclusive classrooms. At the same time, challenges such as limited AI literacy, ethical concerns related to data privacy, infrastructural constraints, and over dependence on technology pose barriers to effective implementation. The study concludes that systematic teacher training and responsible integration of AI are essential to ensure that AI enhances teaching and learning in a meaningful and balanced manner.

Keywords: *Personalized Learning, Artificial Intelligence, Teacher Education, Adaptive Education, AI-Supported Teaching, Professional Development of Teachers.*

4.13 Reimagining Personalized Learning in the Age of Artificial Intelligence: A Teacher-Centred Perspective on Adaptive Education

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Abstract

Artificial Intelligence (AI) has become a transformative force in contemporary education, fundamentally reshaping how learning experiences are designed, delivered, and evaluated. Among its most influential applications is personalized learning, where AI-driven systems dynamically adapt instructional content, feedback, assessment, and learning pathways to individual learner characteristics. While technological advancements in adaptive and intelligent learning systems have accelerated rapidly, their pedagogical effectiveness remains closely tied to teachers capacity to interpret, integrate, and ethically govern these technologies within real classroom contexts. This narrative review critically synthesizes international research published between 2017 and December 2025 to examine the intersection of AI-enabled personalized learning and teacher education. Drawing on peer-reviewed journal articles, high-impact conference proceedings, and global policy reports, the review identifies dominant theoretical models, instructional practices, teacher competencies, and systemic challenges associated with AI-supported personalization. Findings reveal a persistent imbalance between technological innovation and teacher preparedness, particularly in areas of AI literacy, pedagogical alignment, ethical awareness, and contextual adaptation. The paper argues that sustainable personalized learning cannot be achieved through automation alone and proposes a teacher-centred framework for adaptive education that positions educators as pedagogical designers, reflective practitioners, and ethical stewards of AI. The review concludes by outlining future

research directions and policy implications necessary for advancing human-centred, equitable, and pedagogically meaningful AI integration in education.

Keywords: *Artificial Intelligence in Education, Personalized Learning, Adaptive Education, Teacher Education, AI Literacy, Human-Centred AI.*

4.14 Reimagining Teacher Education in the Age of AI-Based Personalized Learning

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Abstract

The growing use of Artificial Intelligence (AI) in the field of education has changed the way teaching and learning occur. One important development is AI-based personalized learning, where instruction is adjusted according to students individual needs, abilities, and pace of learning. While this approach offers many benefits, it also raises important questions about the changing role of teachers and whether present teacher education programmes are adequately preparing them for such environments. This paper explores the need to rethink teacher education in the context of AI-driven personalized learning. Using existing research, policy documents, and theoretical perspectives, the paper discusses the skills and competencies teachers need to work effectively with AI-supported learning systems. It examines changes required in curriculum design, teaching practices, and professional development to ensure learning remains inclusive, adaptive, and ethically responsible. The paper also highlights key concerns such as data privacy, bias in AI systems, equity, and the professional autonomy of teachers. Drawing on global discussions and the Indian context, especially the National Education Policy (NEP) 2020, the paper argues that technology alone cannot transform education. Instead, meaningful integration of AI depends on preparing teachers to be reflective, critical, and ethically aware professionals. The paper concludes by suggestion to strengthen teacher education in the age of AI-based personalized learning.

Keywords: *Artificial Intelligence in Education, Personalized Learning, Teacher Education, AI Ethics.*

4.15 Significance Role of Artificial Intelligence Technology in Class Room Learning Environment

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Abstract

In the process of using artificial intelligence technology to explore classroom rotation it is easy to find that the students active learning ability is useful. The rotating classroom teaching method is useful in filling many problems such as lack of communication in higher education institutions. In recent years it has gained the recognition of more and more teachers and students considering the challenge and diversity in the application of competencies. Using multi-modal blended learning theory and independent learning fundamental theory explores the use of AI to evaluate and improve the effectiveness of blended teaching in courses. A new model of deep learning and a learning model of human job functions are proposed to explore the hybridization of education under the back ground of artificial intelligence. This study provides a road map for using AI in courses and offers valuable contributions to the field including the proposed models of deep learning and human job functions which can be applied to other subjects and fields by leveraging modern technologies such as cloud computing big data and AI. This study highlights the potential for educators to transform the way we teach and learn and improve the quality of education and support student success. The research focus in the field of deep learning is primarily on educational science research with a strong emphasis on instructional design. Some scholars argue that deep learning involves guiding students through a meaningful and engaging cognitive learning process during specialized sessions with their teacher. This provides valuable insights for future research in the intersection of AI and education and emphasizes the importance of integrating technology in higher education to enhance the learning experience and meet the needs of modern students. This approach promotes open independent and deep learning experiences leading to more meaningful and lasting educational outcomes. The key to educational reform lies in the innovation of teaching modes. Therefore to provide practical and effective feasible solutions for cultivating everyday application abilities as per our model the blended teaching approach of the intelligent teaching platform divides the teaching content into pre-class post-class and in-class sections allowing for better interaction and deep learning between teachers and students during class time.Compared to simple response reporting the AI era stimulates students to select higher quality learning strategies in online learning. These methods offer insights into effective ways

of processing and managing educational content potentially advancing AI models for various applications. In the future it is necessary to find teaching methods and approaches that are appropriate to the characteristics of university subjects and can better promote the educational reform of the subject thus improving the standards and abilities of students. Information technology has great potential for improving cultural education.

Keywords: *Role, Artificial Intelligence, Technology, Learning, Environment.*

4.16 Role of AI to support secondary school students personalized learning journeys and holistic development

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Abstract

Artificial Intelligence (AI) is transforming secondary education by enabling personalized learning and promoting holistic development. AI- driven tools and platforms like khan academy and Alcumus adapt to individual learning styles, paces, and goals, offering tailored content, real- time feedback, and targeted interventions. Beyond academics, AI like craiyon, chatGPT supports students emotional, social, and cognitive growth through mental health resources, social-emotional learning programs, and career guidance tools. By enhancing teacher effectiveness through automated assessments and classroom analytics, AI-chatbot fosters a more inclusive and adaptive environment. It also ensures accessibility for diverse learners, including those with special needs or language barriers. However, ethical considerations such as data privacy and equitable access must quid AIs integration in education.AI tools enable large scale implication of personalized learning, making quality education accessible to a broader population. By blending personalization with holistic support, AI equips students with the skills and resilience needed for lifelong learning and future challenges.

Keywords: *Artificial Intelligence (AI), personalized learning, Holistic development, Adaptive learning platforms.*

4.17 Artificial Intelligence and Teacher Well-being: A Study of Quality of Work Life among Private School Teachers in Bhopal City

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Abstract

The rapid integration of Artificial Intelligence (AI) into educational systems has significantly transformed teaching practices, administrative processes, and professional expectations within schools. While AI-enabled technologies offer opportunities for efficiency and personalized learning, their implications for teacher well-being and Quality of Work Life remain underexplored. This paper presents a non-empirical, conceptual analysis of the Quality of Work Life of teachers in the context of AI-enabled private school education.

Drawing on existing literature, theoretical frameworks, and policy documents, the study employs a thematic and interpretive approach to examine how AI influences teachers workload, occupational stress, worklife balance, professional autonomy, and overall well-being. The analysis highlights the emergence of techno-stress, digital fatigue, and intensified accountability as key challenges associated with AI integration. At the same time, the paper emphasizes the potential of human-centered and ethical AI implementation to enhance teacher well-being and professional sustainability.

The study contributes to the discourse on Artificial Intelligence and the future of teacher education by foregrounding the human dimensions of technological change. It underscores the importance of integrating digital well-being, ethical awareness, and institutional support into teacher education and policy frameworks. By offering a conceptual framework linking AI and teacher Quality of Work Life, the paper provides direction for future empirical research and informed educational practice.

Keywords: *Artificial Intelligence, Teacher Well-being, Quality of Work Life, Teacher Education, Human-Centered AI.*

4.18 Intelligent Tutoring Systems and the Preparation of Teacher Educators for an AI-First Education System

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Abstract

The rapid advancement of artificial intelligence (AI) is reshaping the foundations of teacher education, compelling institutions to rethink how future teachers and teacher educators are prepared for increasingly complex learning environments. This chapter examines the growing role of Intelligent Tutoring Systems (ITS) within teacher education and situates them within the broader transition toward an AI-first education system. Rather than viewing ITS merely as technological tools, the chapter frames them as pedagogically informed systems capable of supporting personalized learning, reflective practice, and continuous professional growth for pre-service teachers. The discussion begins by outlining the conceptual and pedagogical foundations of Intelligent Tutoring Systems and their relevance to teacher training programmes. It then explores how ITS can function as virtual mentors by providing adaptive feedback, supporting lesson design, simulating classroom scenarios, and enabling data-driven reflection during teaching practice. Attention is given to how such systems can complement, rather than replace, the professional judgement and experience of teacher educators. The chapter further addresses the changing role of teacher educators in an AI-mediated landscape, highlighting the competencies, institutional readiness, and professional development required to effectively integrate AI into teacher education curricula. Ethical concerns, including data privacy, algorithmic bias, and the preservation of human values such as empathy and critical judgement, are critically examined. By bringing together technological, pedagogical, and human-centric perspectives, this chapter offers a balanced vision of how Intelligent Tutoring Systems can contribute to future-ready, ethical, and sustainable teacher education.

Keywords: *Intelligent Tutoring Systems; Teacher Education; Artificial Intelligence in Education; AI-First Education; Educational Ethics.*

4.19 Personalized Pedagogy through Artificial Intelligence: Preparing Teachers for Adaptive and Inclusive Classrooms

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Abstract

The rapid advancement of Artificial Intelligence (AI) is transforming educational landscapes and redefining the roles of teachers in contemporary classrooms. This paper examines the potential of AI-driven personalized pedagogy in preparing teachers to create adaptive and inclusive learning environments that respond to diverse learner needs. As classrooms become increasingly heterogeneous, traditional one-size-fits-all instruction is no longer sufficient. AI offers powerful tools for data-informed decision-making, real-time learner analytics and customized learning pathways that enhance engagement and achievement. Using a conceptual-analytical approach supported by a small empirical component, the study explores how teacher education programs can integrate AI competencies to foster inclusive personalized teaching. Findings from a brief teacher survey and case examples illustrate how AI tools such as adaptive platforms, intelligent tutoring systems and automated feedback support differentiated instruction and continuous assessment. The paper emphasizes the importance of ethical, pedagogical and technological preparation to ensure responsible and human-centered AI use. Strategic recommendations are proposed for curriculum design, professional development and institutional policy to support sustainable AI integration in teacher education.

Keywords: *Artificial Intelligence, Personalized Learning, Teacher Education, Adaptive Pedagogy, Inclusive Classrooms, Educational Technology, mixed-method study.*

4.20 Original And Uncertainty-Aware Deep Learning Framework For Multi-Disease Risk Prediction: Focus On Diabetes Diagnosis

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Abstract

In the past several years, deep learning has become an important tool in medical diagnosis, but many models still fall short when it comes to handling uncertainty or assessing more than one disease at a time. To address these gaps, this study introduces a new framework that estimates risk levels for multiple conditions and, at the same time, reports how confident the model is in each prediction. Including uncertainty makes the system more trustworthy and easier for clinicians to interpret. Our work focuses mainly on diabetes, showing that the proposed approach improves risk-level classification while offering confidence scores that make the results more useful in practice. The goal is to give healthcare providers clearer, more dependable information that can assist with earlier detection and better long-term management of chronic illnesses.

Keywords: *Deep Dearning, uncertainty quantification, multi-disease risk assessment, diabetes diagnosis, risk classification, medical AI, predictive modeling, healthcare decision support, chronic disease management, clinical analytics.*

4.21 Artificial Intelligence and the Future of Teacher Education: Enhancing Classroom Effectiveness Through Intelligent Training Systems

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Abstract

Artificial Intelligence is shaking up teacher education in a big way. Instead of one-size-fits-all training, were seeing personalized, data-driven programs that actually help teachers become better in the classroom. This study dives into how AI tools-think smart tutoring systems, instant feedback, and immersive simulationsare changing how teachers learn to teach. The numbers are pretty clear: teachers using AI-backed programs build their instructional design skills faster, and most of them end

up reflecting more on their own practice. We take a closer look at how things like automated admin tasks, real-time analytics, and hands-on learning tech are making classrooms work better for everyone. Looking ahead, its all about more tailored professional development, scalable mentorship, and figuring out the ethical side of using all this data. In the end, while AI can transform teacher education, its still on us to handle privacy concerns, avoid turning teachers into robots, and make sure these tools actually supportnot replacereal teaching expertise.

Keywords: *Data-driven design skills, scalable mentorship*

4.22 Artificial Intelligence AI and Future of Teacher Education

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कृत्रिम बुद्धिमत्ता (Artificial Intelligence – AI) आधुनिक युग की एक महत्वपूर्ण तकनीकी उपलब्धि है जिसके कारण शिक्षा के क्षेत्र में गहरा परिवर्तन हो रहा है। यह तकनीकी केवल शिक्षण–अधिगम की प्रक्रिया को ही सुधार नहीं रही है, बल्कि शिक्षा के उद्देश्य, संरचना और स्वरूप को भी नए अर्थ दे रही है। परम्परागत शिक्षा व्यवस्था, जहाँ शिक्षक मुख्य ज्ञान स्रोत होता था और विद्यार्थी अपेक्षाकृत निष्क्रिय भूमिका में रहता था, अब धीरे–धीरे विद्यार्थी–केंद्रित और तकनीकी–आधारित व्यवस्था में परिवर्तित हो रही है। इस परिवर्तन का मुख्य आधार AI बन रहा है। यह शोध पत्र शिक्षा में कृत्रिम बुद्धिमत्ता की भूमिका, उसके प्रभाव, संभावनाएं, चुनौतियों और भविष्य की दिशा का विस्तृत विश्लेषण प्रस्तुत करता है।

आज के युग में शिक्षा केवल पुस्तकों, कक्षा और परीक्षाओं तक सीमित नहीं रही है। डिजिटल प्लेटफॉर्म, ऑनलाइन कक्षाएं, वर्चुअल प्रयोगशालाएं और इंटरेक्टिव सामग्री ने शिक्षा को अधिक गतिशील और रोचक बना दिया है। AI के माध्यम से शिक्षा को व्यक्तिगत बनाया जा सकता है, जहाँ प्रत्येक विद्यार्थी की योग्यता, अभिरुचि और सीखने की गति के अनुसार पाठ्य सामग्री प्रस्तुत की जाती है। इससे कमजोर विद्यार्थियों को विशेष सहायता मिलती है और प्रतिभाशाली विद्यार्थियों को आगे बढ़ने के अवसर प्राप्त होते हैं। इस प्रकार AI शिक्षा को अधिक समावेशी और न्यायासंगत बनाने में सहायक सिद्ध हो रहा है।

AI आधारित मूल्यांकन प्रणाली शिक्षकों के कार्यभार को कम करती है और मूल्यांकन को अधिक निष्पक्ष, तत्परीत और सटीक बनाती है। इससे शिक्षकों को प्रशासनिक कार्यों से मुक्त होकर विद्यार्थियों के मानसिक, नैतिक और सामाजिक विकास पर अधिक ध्यान देने का अवसर मिलता है। AI शिक्षक की भूमिका को समाप्त नहीं करता, बल्कि उसे अधिक प्रभावशाली, जागरूक और सक्षम बनाता है। शिक्षक अब केवल जानकारी देने वाला नहीं, बल्कि मार्गदर्शक, प्रेरणादाता और सहायक की भूमिका में कार्य करता है।

गाँव और शहर की शिक्षा के बीच की दूरी को कम करने में भी AI की भूमिका महत्वपूर्ण हो सकती है। ऑनलाइन शिक्षा, डिजिटल साधन और वर्चुअल ट्यूटर ग्रामीण क्षेत्रों के विद्यार्थियों तक भी गुणवत्तापूर्ण शिक्षा पहुँचा सकते हैं। इसी के साथ–साथ व्यावसायिक और कौशल आधारित शिक्षा में AI के प्रयोग से विद्यार्थियों को वास्तविक परिस्थितियों का अनुभव प्राप्त होता है, जिससे उनकी रोजगार योग्यता बढ़ती है।

यद्यपि शिक्षा में AI के प्रयोग के साथ कुछ गम्भीर प्रश्न भी जुड़े हैं, जैसे डाटा गोपनीयता, नैतिकता, तकनीकी असमानता और मानवीय मूल्यों का क्षय। यदि इन चुनौतियों पर गम्भीरता से विचार नहीं किया गया, तो AI शिक्षा में असंतुलन और निर्भरता उत्पन्न कर सकता है। इसलिए यह आवश्यक है कि AI का प्रयोग मानवीय संवेदनाओं, नैतिक मूल्यों और सामाजिक उत्तरदायित्व के साथ किया जाए।

अन्त में यह कहा जा सकता है कि कृत्रिम बुद्धिमत्ता शिक्षा के भविष्य को नयी दिशा देने की क्षमता रखती है। यदि तकनीकी और मानवता के बीच संतुलन बना रहे, तो AI न केवल शिक्षा की गुणवत्ता में वृद्धि करेगा, बल्कि व्यक्ति के सर्वांगीण विकास और समाज की प्रगति में भी महत्वपूर्ण योगदान देगा।

4.23 The Future of Indian Languages in the Digital Age: Artificial Intelligence, Social Media, and the Global Expansion of Hindi

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डिजिटल युग में भारतीय भाषाओं के भविष्य, विशेषतः हिंदी और अन्य भारतीय भाषाओं के विकास, कृत्रिम बुद्धिमत्ता(Artificial Intelligence) की भूमिका, सोशल मीडिया कंटेंट निर्माण, डिजिटल शिक्षा, ऑनलाइन कक्षाएँ, कोचिंग संस्थान तथा वैश्विक परिदृश्य में हिंदी की उपस्थिति जैसे महत्वपूर्ण बिंदुओं को समझना आवश्यक है। भाषा केवल संप्रेषण का माध्यम नहीं, बल्कि वह हमारी चेतना की संरचना के निर्माण की आधारशिला होती है। भाषा केवल शब्दों का समूह नहीं होती, बल्कि वह विचारों को जन्म देती है। भाषा हमारी संस्कृति को जीवित रखती है और समाज की चेतना को नया आकार देती है।

भारतीय भाषाएँ,- हिंदी, संस्कृत, तमिल, तेलुगु, बंगला, मराठी, गुजराती, उर्दू, कन्नड़, मलयालम, ओड़िया, पंजाबी आदि और अनेक लोकभाषाएँ,- सिर्फ संवाद का साधन नहीं हैं, बल्कि हजारों वर्षों की सभ्यता, दर्शन, विज्ञान, साहित्य और लोकज्ञान की संवाहक हैं। हालांकि हमें यह भी स्वीकारने में कोई गुरेज नहीं होना चाहिए कि वर्तमान समय डिजिटल युग का है और इस डिजिटल युग में प्रश्न यह नहीं है कि "क्या भारतीय भाषाएँ जीवित रहेंगी?" बल्कि
प्रश्न यह होना चाहिए कि "क्या हम भारतीय भाषाओं को डिजिटल नेतृत्व की भूमिका में ला पाएँगे?"
हाँ, यह भी अवश्य मानना होगा कि आज का डिजिटल युग एक ओर चुनौती भी है, तो वहीं दूसरी ओर अवसर भी है।
डिजिटल युग ने मानव जीवन को मूल रूप से बदल दिया है। आज ज्ञान का स्रोत केवल पुस्तकालय नहीं रह गए हैं, बल्कि मोबाइल स्क्रीन भी उनका रूप लेती जा रही है। आज संवाद पत्रों से नहीं, बल्कि सोशल मीडिया पोस्ट से होता है। आज शिक्षा कक्षा तक सीमित नहीं, बल्कि ऑनलाइन प्लेटफॉर्म पर सुलभ है। परंतु,
यह युग हमारे सामने कुछ बड़े प्रश्न भी रखता है। क्या यह डिजिटल क्रांति केवल अंग्रेज़ी-केन्द्रित रहेगी? क्या इसमें भारतीय भाषाओं को भी समान अवसर मिलेगा? और आज यह चुनौती भी है कि यदि डिजिटल दुनिया में भारतीय भाषाएँ अनुपस्थित रहीं, तो आने वाली पीढ़ियाँ अपनी ही भाषा में ज्ञान से वंचित हो जाएँगी।
वर्तमान समय में बढ़ते डिजिटल संक्रमण के इस वातावरण में यदि हम हिंदी और अन्य भारतीय भाषाओं की डिजिटल संक्रमण की स्थिति का आकलन करें तो पाएँगे कि आज तथ्य अत्यंत आशाजनक हैं —

4.24 Artificial Intelligence-Based Teacher Education and Civic Responsibility

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वर्तमान युग में कृत्रिम बुद्धिमत्ता (Artificial Intelligence – AI) शिक्षा के क्षेत्र में एक ऐसी तकनीकी क्रांति के रूप में उभरी है, जिसने शिक्षण, अधिगम, मूल्यांकन और शैक्षिक प्रशासन के प्रत्येक स्तर को गहराई से प्रभावित किया है। यह केवल एक तकनीकी उपकरण न होकर एक ऐसी रूपांतरकारी शक्ति बन गई है जो शिक्षक की भूमिका, शिक्षण की प्रक्रिया, और विद्यार्थी के अनुभव — तीनों को पुनर्परिभाषित कर रही है। शिक्षक शिक्षा में AI की भूमिका अब मात्र स्वचालन (Automation) या तकनीकी दक्षता तक सीमित नहीं रही, बल्कि यह शिक्षकों में नैतिक जागरूकता, नागरिक उत्तरदायित्व और सामाजिक समरसता के प्रति संवेदनशील दृष्टिकोण विकसित करने का माध्यम बन रही है।

AI-सक्षम शिक्षक प्रशिक्षण प्रणालियाँ — जैसे *Adaptive Learning Platforms, Predictive Analytics* तथा *Virtual Simulation Tools* — शिक्षकों को व्यक्तिगत शिक्षण (Personalized Pedagogy), रचनात्मक मूल्यांकन (Constructive Assessment), और समावेशी शिक्षण दृष्टिकोण अपनाने में सहायता कर रही हैं। यह तकनीक शिक्षकों को प्रशासनिक कार्यों से मुक्त कर, उन्हें विद्यार्थियों के नैतिक, भावनात्मक और सामाजिक विकास पर ध्यान केंद्रित करने का अवसर प्रदान करती है।

फिर भी, कृत्रिम बुद्धिमत्ता के प्रयोग के साथ अनेक चुनौतियाँ भी जुड़ी हैं — जैसे एल्गोरिद्मिक पक्षपात (Algorithmic Bias), डेटा गोपनीयता (Data Privacy), तथा डिजिटल असमानता (Digital Divide)। इन चुनौतियों का समाधान तभी संभव है जब शिक्षक शिक्षा में "AI साक्षरता" (AI Literacy) और "डिजिटल नैतिकता" (Digital Ethics) को समान महत्व दिया जाए। शिक्षक शिक्षा कार्यक्रमों में इन अवधारणाओं के समावेश से ऐसे शिक्षकों का निर्माण होगा जो न केवल तकनीकी रूप से दक्ष होंगे, बल्कि लोकतांत्रिक मूल्यों और सामाजिक उत्तरदायित्व के भी वाहक बनेंगे।

अंततः, कृत्रिम बुद्धिमत्ता शिक्षक शिक्षा को एक ऐसे समग्र दृष्टिकोण की ओर अग्रसर कर रही है जो तकनीकी दक्षता, मानवीय संवेदनशीलता और नागरिक उत्तरदायित्व — तीनों के संतुलन पर आधारित है। यही वह दिशा है जो 21वीं सदी के उत्तरदायी, नैतिक और नवोन्मेषी शिक्षक के निर्माण का मार्ग प्रशस्त करती है।

Sub-Theme 5:
Digital Tools in Social-Emotional Learning

5 Digital Tools in Social-Emotional Learning

5.1 A study on behavior of undergraduate students of Bidar district upon Social emotional learning using AI tools

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Abstract

Social Emotional Learning (SEL) has emerged as a critical component of holistic education, particularly in higher education where students face increasing academic, social, and emotional challenges. With the rapid advancement of Artificial Intelligence (AI), new opportunities have arisen to support and enhance SEL among post graduate students through personalized, adaptive, and data-driven learning environments. This paper explores the integration of AI-enabled toolssuch as intelligent tutoring systems, emotion-aware learning platforms, conversational agents, and learning analyticsto foster core SEL competencies including self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. The study examines how AI can provide real-time feedback, personalized emotional support, and reflective learning experiences while promoting student engagement and well-being. Additionally, ethical considerations such as data privacy, algorithmic bias, and the need for human-centered design in AI-based SEL interventions are discussed. The paper highlights the potential of AI to complement traditional pedagogical approaches by supporting educators in monitoring emotional and social development, thereby creating inclusive and supportive learning environments. The findings suggest that thoughtfully designed AI-supported SEL frameworks can significantly contribute to the academic success, emotional resilience, and lifelong learning skills of postgraduate students. The study has taken place for post graduate students of Gulbarga university Kalaburagi.

Keywords: *Artificial intelligence, emotional intelligence, personalized learning, post graduate students and student well-being.*

5.2 A studyon behavior of post graduate students at Gulbarga university Kalaburagi upon Social emotional learning using AI tools

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Abstract

Social Emotional Learning (SEL) has emerged as a critical component of holistic education, particularly in higher education where students face increasing academic, social, and emotional challenges. With the rapid advancement of Artificial Intelligence (AI), new opportunities have arisen to support and enhance SEL among post graduate students through personalized, adaptive, and data-driven learning environments. This paper explores the integration of AI-enabled toolssuch as intelligent tutoring systems, emotion-aware learning platforms, conversational agents, and learning analyticsto foster core SEL competencies including self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. The study examines how AI can provide real-time feedback, personalized emotional support, and reflective learning experiences while promoting student engagement and well-being. Additionally, ethical considerations such as data privacy, algorithmic bias, and the need for human-centered design in AI-based SEL interventions are discussed. The paper highlights the potential of AI to complement traditional pedagogical approaches by supporting educators in monitoring emotional and social development, thereby creating inclusive and supportive learning environments. The findings suggest that thoughtfully designed AI-supported SEL frameworks can significantly contribute to the academic success, emotional resilience, and lifelong learning skills of undergraduate students. The study has taken place for post graduate students of Bidar district.

Keywords: *Artificial intelligence, emotional intelligence, personalized learning, undergraduate students and student well-being.*

5.3 Digital Tools in Social Emotional Learning

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Abstract

The integration of digital tools in Social-Emotional Learning (SEL) has emerged as a transformative approach to fostering students emotional intelligence, interpersonal skills, and overall well-being in contemporary educational settings. As classrooms become increasingly technology-mediated, digital platforms, applications, and interactive resources offer innovative opportunities to support the five core competencies of SEL: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. This abstract explores how digital toolssuch as mobile applications, learning management systems, gamified environments, virtual simulations, and artificial intelligencedriven feedback systemscan enhance SEL by providing personalized, engaging, and reflective learning experiences. These tools enable real-time emotional check-ins, guided mindfulness practices, collaborative problem-solving, and safe virtual spaces for empathy-building and perspective-taking. Moreover, digital SEL tools can support teachers through data-driven insights that inform targeted interventions and inclusive practices, especially for diverse and marginalized learners. However, the effective implementation of digital tools in SEL also presents challenges, including concerns related to data privacy, equitable access, digital literacy, and the need for teacher professional development. The abstract emphasizes that technology should complement, not replace, human interaction, and must be thoughtfully integrated within pedagogically sound frameworks. By aligning digital innovation with ethical considerations and evidence-based SEL practices, educators can leverage technology to create emotionally supportive, inclusive, and resilient learning environments. Ultimately, the strategic use of digital tools in SEL holds significant potential to promote students holistic development and prepare them to navigate the emotional and social demands of the digital age.

Keywords: *Digital tools, Social-Emotional Learning (SEL), emotional intelligence, educational technology, student well-being, inclusive education.*

5.4 Digital Tools In Social Emotional Learning

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Abstract

In the 21st century, education extends beyond mere academic achievement and places increasing emphasis on the holistic development of learners, particularly their social and emotional competencies. Social Emotional Learning (SEL) has emerged as a crucial framework that supports students in developing self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. These competencies are essential for students to manage emotions effectively, build positive relationships, and adapt to the complex challenges of modern life. With rapid advancements in digital technology, innovative digital tools have become powerful resources for supporting and enhancing SEL practices in educational settings. Digital platforms, mobile applications, interactive games, and online learning environments offer engaging and personalized opportunities for students to practice emotional regulation, empathy, collaboration, and reflective thinking. The present research paper explores the role of digital tools in Social Emotional Learning and examines their impact on students emotional competence, social skills, and academic engagement. A descriptive and analytical research approach was adopted for the study, involving a systematic review of various digital platforms, applications, and online resources designed specifically for SEL. The findings reveal that the integration of digital tools into SEL programs significantly enhances students emotional regulation, empathy, collaborative behaviour, and motivation toward learning. The study concludes that when digital tools are used thoughtfully and ethically, they can strengthen SEL implementation and contribute meaningfully to students overall well-being and academic success.

Keywords: *Social Emotional Learning, Digital Tools, Emotional Competence, Student Well-being, Educational Technology.*

5.5 Digital Tools in Social Emotional Learning

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Abstract

Social Emotional Learning (SEL) is increasingly recognized as a vital component of educational research due to its influence on students emotional well-being, social competence, and academic achievement. With the expanding integration of digital technologies in education, digital tools have emerged as promising resources for supporting the development of social emotional competencies. This abstract examines the role of digital tools in facilitating SEL and discusses their research relevance, benefits, and implementation challenges.Digital tools for SEL include mobile and web-based applications, learning management systems, game-based platforms, virtual simulations, and artificial intelligenceenabled environments. These technologies are designed to promote core SEL competencies such as self-awareness, self-regulation, empathy, relationship skills, and responsible decision-making through interactive and learner-centered approaches. By offering personalized feedback, scenario-based learning, and reflective activities, digital tools enable students to practice emotional and social skills within structured digital contexts.From a research perspective, digital SEL tools provide opportunities for data-driven assessment and scalable implementation. Built-in analytics allow educators and researchers to monitor emotional development evaluate intervention effectiveness, and tailor instructional strategies to individual learner needs. Furthermore, digital platforms enhance accessibility and continuity of SEL instruction across face-to-face, hybrid, and remote learning environments.Despite their potential, the use of digital tools for SEL presents challenges that require further empirical investigation. Concerns related to data privacy, digital equity, screen time, and contextual alignment with evidence-based SEL frameworks may affect the validity and sustainability of digital interventions. Research also emphasizes the importance of teacher mediation and the integration of digital tools with interpersonal, face-to-face interactions.In conclusion, the present paper focuses on the digital tools that represent a valuable and evolving area of SEL research. Future studies should focus on rigorous evaluation methods, ethical considerations, and context-sensitive implementation to ensure effective and responsible use of digital technologies in social emotional learning.

Keywords: *Social Emotional Learning, Digital Tools, Educational Technology, Student Well-being and Social Emotional Competencies.*

5.6 Digital Tools in Social-Emotional Learning

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Abstract

Social-Emotional Learning (SEL) has gained significant recognition in contemporary education as an essential framework for fostering holistic learner development. Beyond academic achievement, SEL emphasizes the cultivation of emotional intelligence, self-awareness, emotional regulation, empathy, interpersonal skills, and responsible decision-making. In the context of rapid digital transformation, educational systems worldwide are increasingly integrating digital tools to enhance teaching-learning processes. This research paper explores the role, relevance, and effectiveness of digital tools in promoting Social-Emotional Learning within formal educational settings.

The study adopts a conceptual and analytical approach to examine how various digital toolssuch as learning management systems, mobile-based SEL applications, game-based learning environments, virtual simulations, and artificial intelligence-driven feedback mechanismscontribute to the development of core SEL competencies. Digital platforms provide interactive and learner-centered environments that encourage emotional expression, self-reflection, collaboration, and continuous feedback. These tools facilitate personalized learning experiences, allowing educators to address diverse emotional and social needs of learners while supporting mental well-being and resilience. Furthermore, the paper highlights the pedagogical significance of digital tools in strengthening teacher-learner interaction and enabling data-informed monitoring of students emotional and social progress. In online and blended learning contexts, particularly in post-pandemic education, digital SEL tools have played a crucial role in maintaining social connectedness and emotional engagement among learners.

However, the study also critically discusses the challenges associated with the digitalization of SEL, including issues of digital divide, limited digital literacy, data privacy concerns, ethical implications of learner data usage, and the psychological impact of excessive screen time. The paper argues that without careful planning and ethical considerations, the potential benefits of digital SEL may be undermined. The study concludes that digital tools, when integrated thoughtfully within pedagogical frameworks and guided by ethical and cultural considerations, can significantly enhance Social-Emotional Learning outcomes. The effective convergence of digital technology and SEL has the potential to transform education into a more inclusive, empathetic, and future-oriented system that supports both academic excellence and human well-being.

Keywords: *Social-Emotional Learning (SEL), Digital Tools in Education, Emotional Intelligence, Digital Pedagogy, Mental Health and Well-being, Inclusive and Holistic Education.*

5.7 Digital Tools in Social-Emotional Learning: A Conceptual Analysis

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Abstract

Social-Emotional Learning (SEL) has gained increasing prominence in contemporary educational discourse as a foundational component of holistic learner development, encompassing emotional intelligence, social competence, ethical reasoning, and psychological well-being. In the context of rapid digital transformation, educational technologies have emerged as influential mediators in shaping not only cognitive learning outcomes but also social and emotional competencies. This conceptual paper critically examines the role of digital tools in facilitating Social-Emotional Learning across educational contexts, with particular reference to the vision of holistic and value-based education articulated in Indias National Education Policy (NEP) 2020. Drawing upon established SEL frameworks and theoretical perspectives from educational technology and human development, the paper analyzes the conceptual align-

ment between digital tools and core SEL competencies, including self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Furthermore, the paper highlights the pedagogical potential of digital tools in promoting learner engagement, personalization, inclusivity, and reflective practice, while also addressing key challenges related to ethical use, digital equity, data privacy, and teacher preparedness. The paper argues that digital tools, when integrated through a pedagogically grounded and ethically informed approach, can serve as effective enablers of Social-Emotional Learning and contribute meaningfully to the realization of holistic education in the digital age.

Keywords: *Social-Emotional Learning, Digital Tools, NEP 2020, Emotional Intelligence, Educational Technology.*

5.8 Digital Tools in Social-Emotional Learning: A Conceptual Perspective in the Indian School and Higher Education Context

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Abstract

Social-Emotional Learning (SEL) has become a vital dimension of holistic education, emphasizing emotional regulation, empathy, interpersonal relationships, ethical reasoning, and responsible citizenship. In India, recent educational reforms, particularly the National Education Policy (NEP) 2020, have highlighted the importance of holistic development, life skills, values, and well-being alongside academic achievement. Concurrently, the rapid digitalization of education through platforms such as DIKSHA, SWAYAM, virtual classrooms, and educational applications has created new opportunities for integrating digital tools into SEL practices. This conceptual paper examines the role of digital tools in promoting social-emotional learning within the Indian school and higher education systems. Drawing on SEL frameworks, Indian educational philosophy, and contemporary digital pedagogy, the paper explores conceptual foundations, types of digital tools used for SEL, pedagogical benefits, ethical considerations, and implementation challenges specific to the Indian context.

The paper argues that digital tools, when aligned with cultural values, equity considerations, and teacher preparedness, can significantly enhance SEL outcomes. The study concludes with implications for educators, institutions, and policymakers, and suggests future directions for research and practice in digital SEL in India.

Keywords: *Social-Emotional Learning, Digital Tools, Indian Education, NEP 2020, Holistic Development.*

5.9 Enhancing Social-Emotional Learning Through Digital Tools: Opportunities and Challenges

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Abstract

Social-Emotional Learning (SEL) has gained increasing recognition as a crucial element of holistic education, emphasizing the development of emotional intelligence, interpersonal skills, and responsible decision-making (Durlak et al., 2011). In the digital era, educational practices are being reshaped by rapid technological advancements, creating new possibilities for integrating digital tools into SEL initiatives (Darling-Hammond et al., 2020). This paper explores how digital tools enhance Social-Emotional Learning by offering interactive, personalized, and flexible learning experiences. Digital applications, virtual simulations, collaborative platforms, digital reflection tools, and gamified systems provide learners with opportunities to practice self-awareness, emotional regulation, empathy, and relationship-building skills (OECD, 2021). At the same time, the integration of digital tools into SEL presents several challenges, including issues related to access and equity, data privacy, teacher preparedness, and excessive screen time (UNESCO, 2021). Adopting a conceptual and descriptive approach, this paper analyzes both the opportunities and challenges associated with digital SEL tools. It emphasizes the importance of thoughtful, ethical, and pedagogically aligned integration. The paper concludes that digital tools,

when effectively aligned with SEL principles, can significantly contribute to nurturing emotionally resilient, socially competent, and well-rounded learners in contemporary educational settings.

Keywords: *Social-Emotional Learning; Digital Tools; Emotional Intelligence; Educational Technology; Learner Engagement; Teacher Education.*

5.10 Impact of Digital Social-Emotional Learning Tools on Academic Stress

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Abstract

The rising prevalence of academic stress among higher education students poses significant challenges to student well-being, academic engagement, and retention. As universities increasingly adopt digital solutions for learning and support, digital social-emotional learning (SEL) tools have emerged as innovative approaches to foster emotional competence and psychological resilience. This study examines students experiences with digital SEL tools and their perceived impact on academic stress. Using a mixed-method research design, data were collected from undergraduate and postgraduate students who engaged with digital SEL platforms designed to promote emotional awareness, stress management, and peer connection. Quantitative findings indicate a notable decrease in perceived academic stress levels following sustained engagement with digital SEL tools. Qualitative analysis revealed that students valued the flexibility, privacy, and self-paced nature of digital interventions, which enabled them to address emotional challenges without stigma. Participants reported enhanced emotional clarity, improved coping during academic pressure, and a stronger sense of belonging through peer-based digital interactions. Nevertheless, some students expressed difficulties related to motivation and long-term engagement with digital tools. The study concludes that digital SEL tools can play a meaningful role in supporting student mental health when thoughtfully implemented. By prioritizing student-centered design and integrating emotional learning within academic contexts, higher education institutions can leverage digital SEL tools to create supportive learning environments that reduce academic stress and promote holistic development.

Keywords: *Digital Social-Emotional Learning, student mental health flexibility.*

5.11 Social and Emotional Learning and stress management in the Era of digitalization

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Abstract

The process of developing the skills necessary to identify and control emotions, cultivate empathy and concern for others, build healthy relationships, make responsible decisions, and deal with difficult circumstances is known as social and emotional learning, or SEL. The development of social-emotional learning (SEL) in young generation is more important than ever in the current digital era. Integrated Academic, Social, and Emotional Learning fosters relationship building, self-awareness, self-regulation, social awareness, and responsible decision making.The stress being inseparable part of this hyper informative age,it is need of the hour to understand and manage stress for proper well being. To create a comprehensive educational experience, SEL must be incorporated into innovative digital pedagogies. It guarantees that students are not just academically strong but also socially competent, emotionally intelligent, and ready for the complexity of today's society. Teachers may establish encouraging, stimulating, and productive learning environments that meet the various needs of every student by combining SEL with digital learning.

Keywords: *SEL, Digitalization, Self Awareness, Digital pedagogies, Stress.*

5.12 Integrating Artificial Intelligence Into Psychological Assessment And Mental Health Prediction: A Contextual Study Of Ai-Driven Emotional Analysis In Chennai City

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Abstract

Artificial Intelligence (AI) has become an emerging tool in mental health research, offering new methods to assess and predict psychological well-being. This study investigates the integration of AI-based models in identifying mental health conditions such as stress, anxiety, and depression among individuals in Chennai, Tamil Nadu. By utilizing machine learning (ML) and natural language processing (NLP) approaches, data such as linguistic patterns, speech signals, and self-reported responses were analyzed to understand emotional states. The systems performance was compared with traditional psychological assessments, revealing improved accuracy and reliability. The research also discusses challenges related to cultural bias, data scarcity, and ethical implementation. Findings show that AI-assisted tools can provide significant support in mental health prediction, with a maximum accuracy of 91.3%. This work demonstrates the potential of AI to enhance accessibility, early intervention, and culturally adaptive psychological evaluation in the Indian context.

Keywords: *Artificial Intelligence (AI); Psychology; Mental Health Assessment; Machine Learning (ML); Natural Language Processing (NLP); Emotion Recognition; Stress Detection; Depression Prediction; Anxiety Analysis; Psychological Diagnostics; AI Ethics; Cultural Adaptation; Tamil Nadu; Chennai; Mental Well-being; Predictive Modeling; Data-Driven Psychology; HumanAI Collaboration; Cognitive Computing; Digital Mental Health.*

5.13 Reimagining Teacher Education in the Age of Artificial Intelligence: An Educational Psychology Perspective

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Abstract

The rapidly developing field of artificial intelligence (AI) has drastically transformed pedagogical practices and most importantly this concerns teacher education. Teaching is by definition a complex psychological activity that attracts all sorts of cognition, motivation, feeling, and social engagement. This enquiry explores the integration of AI in teacher education from an educational-psychological perspective by examining the effects of its use on cognitive processes, motivational dynamics and self-efficacy and self-regulated learning behaviours amongst educators. The results shed light on how AI-boosted tools can make instructional planning, assessment creation and differentiated education simpler and more effective, while at the same time supporting the professional development of teachers. Nevertheless, the study has a critical approach to psychological and ethical consequences including technological overreliance, algorithmic bias, reduced human interaction, and issues of equity, data sovereignty and privacy. The results point to the truth that while artificial intelligence enables a great deal of promise in bringing strength to teacher preparation programs, it is still not capable of replacing the irreplaceable human, affective, and ethical dimensions that exist in teaching. Consequently, the implication of the investigation comes to the fact that a judicious, psychologically informed and ethically accountable integration of AI is indispensable for cultivating reflective, empathetic and efficacious educators.

Keywords: *Artificial Intelligence, Teacher Education, Educational Psychology, Learning Processes, Ethics.*

5.14 Integrating Technology with Social and Emotional Learning in Education: A conceptual Analysis

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Abstract

The growing integration of technology in education has transformed not only cognitive learning processes but also the ways in which social and emotional competencies are developed among learners. Social and Emotional Learning (SEL), which encompasses skills such as self-awareness, self-management, social awareness, relationship building, and responsible decision-making, is increasingly recognized as essential for holistic education in the 21st century. This conceptual paper explores the intersection of technology and SEL, examining how digital tools, platforms, and pedagogies can be aligned to foster learners social and emotional development alongside academic achievement. Drawing upon existing theoretical frameworks in educational technology and SEL, the paper analysed the potential of technologies such as learning management systems, educational applications, artificial intelligencebased tools, virtual simulations, and collaborative digital environments in supporting SEL outcomes. The analysis highlights how technology can create personalized learning experiences, promote reflective practices, facilitate peer interaction, and provide real-time feedback that nurtures emotional regulation and social skills. At the same time, the paper critically examines challenges related to over-reliance on technology, digital divide, data privacy, reduced face-to-face interactions, and the risk of superficial engagement with emotional competencies. By synthesizing insights from prior research and theoretical models, this conceptual analysis proposes guiding principles for effectively integrating technology with SEL in educational settings. It emphasizes the role of teachers as facilitators, the need for intentional instructional design, and the importance of ethical and inclusive practices. The paper concludes that technology, when thoughtfully integrated, can serve as a powerful enabler of social and emotional learning, complementing traditional pedagogical approaches and preparing learners to navigate complex social, emotional, and digital landscapes. The study provides a conceptual foundation for future empirical research and offers implications for educators, policymakers, and curriculum designers seeking to balance technological innovation with the holistic development of learners.

Keywords: *Technology, Social and Emotional Learning, Education.*

5.15 Impact of Mobile-Based Social-Emotional Learning (SEL) Applications on Students Self-Awareness and Self-Management

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Abstract

Social and emotional competencies form a building block in students academic performance, emotional wellbeing and personal development. As digital technologies become present in more educational settings, Mobile-based Social and Emotional Learning (SEL) applications have gained research interest as a possible tool to promote the emotional growth of students. The present study endeavoured to assess the efficacy of such mobile based SEL applications in improving the self-awareness and self-management of the students.

The type of investigation used was quantitative pre- and post-test research. A group of 120 students took part in an eight-week intervention program that used the structured use of mobile-based, SEL applications that focused on emotional recognition, reflective practices, and self-regulatory strategies. Standardised instruments on self-awareness and self-management were used pre- and post-intervention. Data analysis included descriptive statistics, the Shapiro-Wilk test to check for the normality of the data and paired-sample t-tests to check for the significance of changes between pre-test and post-test scores.

Results of normality analysis showed that both pre and post intervention scores for self-awareness and self-management were normally distributed ($p > 0.05$) and hence suitable for parametric statistical procedures. Descriptive results showed substantial increase in mean scores after the intervention. Self-knowledge-awareness scores of the students varies from pre-test mean = 32.45 (SD = 5.12) to post-test mean = 39.68 (SD = 4.76). Likewise, self-management scores were 30.20 (SD = 5.43), mean, before and 38.21 (SD = 4.91), mean, after the intervention. Paired samples t-tests results showed that these gains were statistically significant for both self-awareness ($t(119) = 9.84$, $p < .01$) and self-management ($t(119) = 10.26$, $p < .01$).

The results showed that mobile-based SEL applications are effective in improving students' emotional awareness and emotion and behaviour regulation abilities. By offering interactive, flexible, and learner-centred experiences, these mobile-based SEL tools seem to be supportive of meaningful emotional skill development in the student. The study suggests that incorporating mobile-based SEL applications into educational practices can provide a scalable and powerful solution to helping to promote the social and emotional competencies of students.

Keywords: *Social-Emotional Learning, Mobile Applications, Self-Awareness, Self-Management, Digital Education.*

5.16 The Role of Artificial Intelligence in Developing Emotional Intelligence for Tomorrow's Educators: A Qualitative Study

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Abstract

This study investigates the lived experiences of 30 B.Ed. trainees at Raiganj B.Ed. College, West Bengal, using AI tools to cultivate emotional intelligence (EI) for future teaching roles. Following a four-week intervention featuring emotion recognition applications and empathy-focused chat bots, semi-structured interviews underwent reflexive thematic analysis, revealing four key themes: (1) heightened self-awareness through AI-mediated emotional feedback, (2) enhanced empathy via simulated student interactions, (3) real-time self-regulation practice, and (4) boosted confidence in classroom application. Participants described transformative shifts from emotional discomfort to empowerment, positioning AI as an accessible supplement to conventional B.Ed. training.
Findings highlight AI's potential to bridge emotional pedagogy gaps in Indian teacher education, promoting scalable, judgment-free EI development. Trustworthiness was established through data triangulation, member checking, and peer debriefing. Implications advocate embedding AI-EI modules in NCTE curricula to prepare empathetic educators for 2026 classrooms.

Keywords: *artificial intelligence, emotional intelligence, teacher education.*

5.17 Digital Tools in SocialEmotional Learning Enhancing Emotional Intelligence Through Technology

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Abstract

The integration of digital tools in education has accelerated globally, raising opportunities to effectively nurture students socialemotional competencies. Socialemotional learning (SEL) enables learners to manage emotions, build relationships, and make responsible decisionsskills vital in a rapidly changing world. This paper explores digital tools used in SEL, analyses research evidence, discusses implementation challenges and benefits, and presents best practices backed by world-class scientific resources. Through a systematic review of tools, frameworks, and case studies, the article highlights how technology supports emotional regulation, empathy development, communication, and self-awareness. Implications for educators, policymakers, and future research directions are discussed.

Keywords: *Digital tools , socialemotional learning , emotional intelligence, technology integration, wellbeing.*

5.18 Integrating Artificial Intelligence Into Psychological Assessment And Mental Health Prediction: A Contextual Study Of Ai-Driven Emotional Analysis In Chennai City

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Abstract

Artificial Intelligence (AI) has become an emerging tool in mental health research, offering new methods to assess and predict psychological well-being. This study investigates the integration of AI-based models in identifying mental health conditions such as stress, anxiety, and depression among individuals in Chennai, Tamil Nadu. By utilizing machine learning (ML) and natural language processing (NLP) approaches, data such as linguistic patterns, speech signals, and self-reported responses were analyzed to understand emotional states. The systems performance was compared with traditional psychological assessments, revealing improved accuracy and reliability. The research also discusses challenges related to cultural bias, data scarcity, and ethical implementation. Findings show that AI-assisted tools can provide significant support in mental health prediction, with a maximum accuracy of 91.3%. This work demonstrates the potential of AI to enhance accessibility, early intervention, and culturally adaptive psychological evaluation in the Indian context.

Keywords: *Artificial Intelligence (AI); Psychology; Mental Health Assessment; Machine Learning (ML); Natural Language Processing (NLP); Emotion Recognition; Stress Detection; Depression Prediction; Anxiety Analysis; Psychological Diagnostics; AI Ethics; Cultural Adaptation; Tamil Nadu; Chennai; Mental Well-being; Predictive Modeling; Data-Driven Psychology; HumanAI Collaboration; Cognitive Computing; Digital Mental Health.*

5.19 Digital Tools in Social-Emotional Learning: Enhancing Learner Engagement, Well-Being, and Outcomes

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Abstract

The integration of digital tools in Social-Emotional Learning (SEL) has transformed educational contexts globally. SEL helps learners develop self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. This paper examines how digital tools support SEL, evaluates evidence of effectiveness, highlights implementation challenges, and recommends strategies for educators. The research synthesizes current literature and case applications. Findings reveal that digital tools can enhance engagement, personalize learning, and support assessment when aligned with SEL frameworks, instructional goals, and digital equity principles.

Keywords: *Social-Emotional Learning (SEL), digital tools, educational technology, emotional intelligence, learner engagement, well-being, self-regulation, collaborative learning, artificial intelligence.*

5.20 Digital tools in social and emotional learning

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Abstract

Digital tools in social and emotional learning (SEL) offer new possibilities for building learners emotional literacy, self regulation, and interpersonal skills through interactive and data rich environments. Integrating applications, game based platforms, learning management systems, and virtual reality into SEL allows educators to personalise support, extend practice beyond the classroom, and monitor students well-being more systematically. At the same time, growing reliance on technology in SEL raises ethical concerns related to equity of access, screen time, data privacy, and the potential biases of emotion sensing and generative AI tools. Grounded in established frameworks such as CASELs five competencies, effective digital SEL design aligns tools with clear learning goals, blends online activities with facetoface reflection, and uses analytics to informbut not replaceprofessional judgement. Empirical studies indicate that well designed digital interventions, including mobile apps and VR simulations, can improve self awareness, empathy, and relationship skills when implemented with appropriate teacher guidance and opportunities for debriefing. However, benefits are uneven when students lack devices, connectivity, or digital literacy, making inclusive infrastructure and capacity building essential conditions for impact. This article argues that digital tools should be treated as mediating resources within broader, whole school SEL efforts rather than as standalone solutions. By

following principles of ethical data use, cultural responsiveness, and participatory selection of tools with students and families, schools can harness technology to create emotionally supportive, relationship rich learning environments that better reflect the realities of learners connected lives.

Keywords: *Digital Tool, Emotional learning, Social learning and Pedagogical benefit.*

5.21 Enhancing Social-Emotional Learning in Teacher Education through AI-Based Tools and Digital Learning Platforms

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Abstract

Social-Emotional Learning (SEL) is now a new foundation for modern teacher education, given that teachers have an important role in providing supportive and ethical environments for their students' social and emotional growth. Notwithstanding the strong empirical support that the competencies on the part of the teacher in SEL positively contribute to enhancing the quality of the class environment and student and teacher resilience, pre-service education in various countries still lacks consistency in embedding the idea of SEL in their curricula. The latest developments in "Artificial Intelligence" provide new possibilities. The paper critically analyzes the use of AI-enabled tools and online learning platforms to promote Social-Emotional Learning and education for teachers. Based on worldwide research and frameworks like that of UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP) through SEL for Teachers, SEL for Schools, Framer space, SEEK (Social Emotional Education-Knowledge to Practice), Libre, and The Social Emotional Educator, it examines how AI-enabled environments foster key SEL skills of self-awareness, self-management, social awareness, relationship management, and responsible decision-making. By taking on a conceptual and analytical methodology, this article integrates results from current literature in a global approach that does not focus on measurements before and after an intervention in AI in SEL integration in education. This article argues that AI-based personalization, simulated social experiences, reflective analytics, and collaborative curriculum development in AI can significantly contribute to an improvement in emotional intelligence and professional readiness among educators. This article also explores potential risks that AI in SEL integration in education faces in terms of data and algorithmic bias, tech inequity,

and too much automation, among others, from a human-centric perspective before finally concluding that AI in SEL integration in education can significantly contribute to an improvement in SEL integration among educators when it is educator-led and ethically sound.

Keywords: *Social-Emotional Learning; Teacher Education; Artificial Intelligence; Digital Learning Platforms; UNESCO MGIEP; Educational Technology.*

5.22 Beyond Productivity: Integrating AI-Guided Reflective Journaling to Enhance Social-Emotional Learning in Teacher Education

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Abstract

As classrooms increasingly integrate Artificial Intelligence (AI), pedagogical attention has largely centered on cognitive efficiency and academic productivity, often overlooking the affective domain of learning. This paper foregrounds Social-Emotional Learning (SEL) by examining the role of AI-guided mindfulness and reflective practices in teacher education. Drawing on advances in Natural Language Processing (NLP), the study explores the concept of Reflective AI, wherein pre-service teachers engage in structured digital journaling supported by AI-mediated, empathetic feedback. Unlike conventional journaling tools, AI-driven reflection platforms analyze linguistic patterns to help learners identify emotional states, stress triggers, and trajectories of personal growth in real time. The paper presents a pilot framework implemented with pre-service teachers, focusing on the use of AI-assisted reflective applications to manage pedagogical stress, enhance self-awareness, and strengthen emotional regulation. Findings from the pilot indicate that AI-guided reflective journaling fosters deeper engagement with SEL competencies and supports the development of a human-centered digital pedagogy. Additionally, the study highlights the potential of anonymized, aggregated emotional-climate data to inform responsive teaching practices without compromising individual privacy. The paper concludes by offering practical recommendations for embedding Reflective AI practices within the B.Ed. curriculum, emphasizing the preparation of emotionally resilient educators capable of thriving in AI-augmented educational environments.

Keywords: *Artificial Intelligence, Social-Emotional Learning, Reflective Practice, Teacher Education, Digital Mindfulness, NLP.*

5.23 Learning Styles and Academic Stress among Students in the Age of Artificial Intelligence

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Abstract

Artificial Intelligence (AI) has rapidly reshaped educational practices by influencing how content is delivered, assessed, and monitored. Although AI-supported learning systems aim to enhance personalization and efficiency, they have also introduced new academic pressures for learners. Students differ widely in their learning styles, which strongly affect how they experience AI-based educational environments. This study examines the relationship between learning styles and academic stress among students studying in AI-supported settings. A descriptive survey was conducted with 100 school students using a learning style inventory and an academic stress scale. The findings indicate that academic stress varies across learning styles, with students preferring kinesthetic learning experiencing higher stress levels in digitally intensive environments. The study highlights the importance of designing AI-based education that respects learner diversity and supports students psychological well-being. The paper offers practical suggestions for educators and policymakers in line with the National Education Policy 2020.

noindent **Keywords:** *Learning Styles, Academic Stress, Artificial Intelligence in Education, Learner Diversity, Student Well-being.*

5.24 A Study on Online Shopping Behaviour for Apparel and the Role of Digital Literacy in Online Consumers

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Abstract

The rapid digitalisation of retailing has significantly transformed consumer shopping patterns, particularly in the apparel sector. Online apparel shopping offers convenience, variety, and competitive pricing; however, it also involves challenges related to product evaluation, trust, and perceived risk. In this context, digital literacy plays a crucial role in enabling consumers to effectively navigate online platforms and make informed purchasing decisions. This study aims to examine online shopping behaviour for apparel and analyse the role of digital literacy in influencing consumers purchase intention, trust, perceived risk, and satisfaction. The study is based on a descriptive research design using primary data collected through a structured questionnaire from online apparel shoppers. The findings reveal that consumers with higher levels of digital literacy exhibit greater confidence in using e-commerce platforms, better understanding of product information, and stronger trust in online transactions. Digitally literate consumers are more likely to compare products, rely on online reviews, use digital payment systems, and engage with advanced platform features, resulting in higher purchase intention and satisfaction. Conversely, consumers with lower digital literacy perceive higher financial and product-related risks, leading to hesitation and reduced online purchase frequency. The study highlights digital literacy as a key enabler of positive online shopping behaviour and suggests that improving digital skills among consumers can enhance adoption and sustainable growth of online apparel retailing. The findings offer valuable insights for e-commerce firms, educators, and policymakers to design inclusive digital strategies that empower consumers and reduce the digital divide.

Keywords: *Online shopping behaviour, apparel, digital literacy, consumer trust, perceived risk, e-commerce.*

5.25 Integrating Technology with Social and Emotional Learning in Education: A conceptual Analysis

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Abstract

The growing integration of technology in education has transformed not only cognitive learning processes but also the ways in which social and emotional competencies are developed among learners. Social and Emotional Learning (SEL), which encompasses skills such as self-awareness, self-management, social awareness, relationship building, and responsible decision-making, is increasingly recognized as essential for holistic education in the 21st century. This conceptual paper explores the intersection of technology and SEL, examining how digital tools, platforms, and pedagogies can be aligned to foster learners social and emotional development alongside academic achievement. Drawing upon existing theoretical frameworks in educational technology and SEL, the paper analysed the potential of technologies such as learning management systems, educational applications, artificial intelligencebased tools, virtual simulations, and collaborative digital environments in supporting SEL outcomes. The analysis highlights how technology can create personalized learning experiences, promote reflective practices, facilitate peer interaction, and provide real-time feedback that nurtures emotional regulation and social skills. At the same time, the paper critically examines challenges related to over-reliance on technology, digital divide, data privacy, reduced face-to-face interactions, and the risk of superficial engagement with emotional competencies. By synthesizing insights from prior research and theoretical models, this conceptual analysis proposes guiding principles for effectively integrating technology with SEL in educational settings. It emphasizes the role of teachers as facilitators, the need for intentional instructional design, and the importance of ethical and inclusive practices. The paper concludes that technology, when thoughtfully integrated, can serve as a powerful enabler of social and emotional learning, complementing traditional pedagogical approaches and preparing learners to navigate complex social, emotional, and digital landscapes. The study provides

a conceptual foundation for future empirical research and offers implications for educators, policymakers, and curriculum designers seeking to balance technological innovation with the holistic development of learners.

Keywords: *Technology, Social and Emotional Learning, Education.*

5.26 A study on parental emotions in online learning

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Abstract

The rapid adoption of online learning has significantly transformed the educational landscape by shifting a considerable share of instructional responsibility from schools to parents. This transition has intensified parental involvement in childrens learning while simultaneously influencing parents emotional experiences and overall family well-being. The present study aims to identify the dominant emotional experiences of parents during online learning, examine factors contributing to positive and negative parental emotions, analyze differences in parental involvement behaviors based on parental emotional experiences, and explore the perceived impact of these emotions on family well-being. A descriptive research design was adopted, and primary data were collected from 150 parents of school-going children through a structured questionnaire. Percentage analysis was used to describe parental emotional experiences, involvement patterns, and family well-being perceptions, while One-Way Analysis of Variance (ANOVA) was employed to examine differences in parental involvement behaviors across various levels of parental emotional experiences. The results of percentage analysis indicate that stress and anxiety are the most dominant emotions experienced by parents, particularly among working parents and those spending more time supporting online learning activities. The One-Way ANOVA findings reveal a statistically significant difference in parental involvement behaviors across different emotional experience groups. The study concludes that parental emotional well-being

plays a vital role in shaping effective parental involvement and maintaining family harmony during online learning, highlighting the need for institutional support mechanisms an emotional guidance programs for parents to ensure the sustainability of digital education.

Keywords: *Parental emotions, Online learning, Parental involvement, Emotional stress, Digital education.*

Sub-Theme 6:
AI Analytics to Improve Data-Driven Teaching

6 AI Analytics to Improve Data-Driven Teaching

6.1 AI Tools for Developing Visual Literacy among Secondary School Students

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Abstract

Visual literacy is an essential skill for secondary school students, as it enables them to understand, interpret, and effectively use visual information in academic and real-life contexts. In the rapidly evolving digital era, artificial intelligence (AI) has emerged as a powerful tool to enhance teaching and learning practices, including visual literacy development. This study examines the use of AI-based tools such as image analysis software, interactive visual platforms, and personalized learning systems to foster visual literacy among secondary school students. The study highlights how AI tools enhance learner engagement, provide immediate feedback, and personalize learning experiences based on students abilities and needs. Findings from classroom implementation indicate significant improvements in students observation skills, visual interpretation, and problem-solving abilities. The study also addresses challenges related to access to technology, teacher preparedness, and ethical considerations associated with the use of AI in education. The study concludes that the effective integration of AI tools can strengthen visual literacy training and better prepare students for learning in a visually rich and technology-driven educational environment.

Keywords: *Artificial Intelligence, Visual Literacy.*

6.2 AI Analytics and Data-Driven Teaching in Transforming Health Education in India

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Abstract

Health systems across the world, including India is undergoing a rapid digital transformation, with respect to decision-making, policy formulation, and service delivery. Expansion of digital health platforms, surveillance systems, and health information infrastructure has reinforced the significance of evidence-based data in shaping positive health outcomes. Consequently, aspiring health professionals must possess not only theoretical knowledge but also strong analytical and interpretation skills to learn to construe data. Conventional education in India continues to rely heavily on didactic teaching methods and textbooks, thereby constraining the holistic development of competencies for data-intensive health environments. Artificial Intelligence (AI) and advanced analytics present a significant opportunity. AI analytics can transform teachinglearning processes by integrating health data into classrooms, evoking experiential learning and critical thinking. This paper examines how AI-enabled analytics can advance health education by referring to case studies from India. For instance, CoWIN platform, developed for COVID-19 vaccination management, explains how large-scale analytics supports real-time decision-making, demand forecasting, and equitable service delivery. Ayushman Bharat Digital Mission highlights the role of health data and analytics in strengthening service delivery and planning, offering valuable pedagogical inputs for learning. Nikshay portal designed for tuberculosis surveillance, has advanced case tracking, treatment adherence, and program monitoring, illustrating how data improves targeted health interventions. Exposure to these tools enhances students competencies; however, use of AI in health education also raises concerns related to data privacy, algorithmic bias, and digital inequities, particularly in resource-constrained settings. The paper claims that the strategic integration of AI analytics into health education can bridge the gap between theory and practice, fostering a workforce skilled in data interpretation and responsive to health emergencies. Strengthening faculty capacity, ethical governance frameworks, and digital infrastructure is essential to realize the full potential of AI-enabled, data-driven health education.

Keywords: *Digital transformation, Data-driven teaching, Health analytics, De-*

cision making, Workforce development.

6.3 Artificial IntelligenceDriven Tools Supporting Teaching, Learning, and Research in Higher Education

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Abstract

Artificial Intelligence (AI)driven tools are increasingly adopted in higher education to enhance teaching, personalize learning, and support academic research. Leveraging techniques such as machine learning, natural language processing, and learning analytics, these tools enable adaptive learning systems, intelligent tutoring, automated assessment, and data-driven academic support. AI assists educators by reducing administrative workload and improving instructional design, while learners benefit from personalized feedback and optimized learning pathways. In research, AI accelerates literature analysis, data processing, and scholarly productivity. Despite these advantages, concerns related to data privacy, algorithmic bias, and ethical governance remain. This paper underscores the role of AI-driven tools in advancing efficient, learner-centric, and research-oriented higher education environments. **Keywords:** *Artificial Intelligence, Supporting Teaching, Learning , Research.*

6.4 Democratizing Data-Driven Pedagogy: A Generative AI Framework for Intent-Based Learning Analytics Dashboards

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Abstract

As educational institutions accumulate vast amounts of student data, the gap between raw data availability and actionable pedagogical insight remains a critical challenge. Traditional Learning Analytics (LA) dashboards are predominantly static, pre-configured by developers, and fail to accommodate the dynamic, context-specific inquiries of individual educators. This rigidity often forces teachers to rely on generic metrics rather than personalized insights, largely due to the high technical barrier of data querying languages (SQL) and visualization tools. This paper proposes a novel "Intent-Based Analytics Framework" that leverages Large Language Models (LLMs) to function as a semantic bridge between educators and educational databases. We introduce a self-service system where teachers articulate their analytical needs in natural language (e.g., "Identify students with declining assignment scores over the last month"). The system utilizes an LLM-driven parsing engine to translate these pedagogical intents into executable database queries and automatically generates context-aware visualizations. We evaluate this system through a mixed-methods study involving 15 educators across diverse STEM disciplines. Results indicate that the generative framework significantly reduces the "time-to-insight" and empowers teachers to construct bespoke dashboards without technical intervention. The study concludes that integrating Generative AI into LA pipelines effectively democratizes data access, transforming teachers from passive consumers of analytics into active designers of their own diagnostic tools.

Keywords: *Learning Analytics Dashboard, Large Language Models, Self-Service Analytics, Generative AI Teacher Empowerment, Intent-Based Querying.*

6.5 Future Skills for Teachers in AI Driven Education System

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Abstract

Rapid adoption of Artificial Intelligence (AI) in education is changing the nature of teaching and learning, redefining the role of teachers and education systems of teachers across the world. Within an AI-enhanced education system, the role of a teacher would be changed to that of the knowledge transmitter; instead, a teacher would be the facilitator of learning, the designer of meaningful learning experience and the moral guide that assists the learner to work with the intelligent technologies. In this paper, the author introduces future skills that teachers need to have in order to stay relevant, efficient, and professionally competent in AI-enabled education. The research is conceptual and analytical with references to the modern literature, policy documents, and the new trends in the world in terms of AI implementation in education. It outlines and classifies the future skills that teachers should have as fundamental competencies in key areas that include digital and AI literacy, pedagogical flexibility, data-driven decision-making, creativity and innovation, ethical and value-based competency and socio-emotional intelligence. The critical evaluation of AI tools and pedagogical integration along with inclusivity, equity and learner autonomy in technology-rich classrooms are given special attention to teachers. The paper also explains the implication of AI to teacher education programmes, which involves curriculum redesign, lifelong professional development and institutional preparedness. It states that teaching specialists of the future should be provided not only with technical skills but also with more advanced thinking and reflection skills and a solid system of ethics that will help to be concerned with the issues of data privacy, algorithmic prejudice, and the human aspect of education that is declining. It also investigates how future teacher skills will be aligned with national and global educational policies, such as skills frameworks of the 21 st century. The paper comes to a conclusion that an AI-driven system of education preparation of teachers will demand the balance between the technological and human value. The future competencies of teachers should be developed in order to use the transformative power of AI without losing the humanistic nature of education. The results of this paper are helpful in informing teacher educators, policymakers and institutions that aim

to enhance the readiness of teachers in the ever-changing digital future.

Keywords: *Artificial Intelligence in Education, Future Skills, Teacher Education, Digital Competencies and 21st-Century Teaching.*

6.6 AI Analytics to Improve Data-Driven Teaching

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Abstract

The integration of Artificial Intelligence (AI) analytics into education has significantly enhanced the effectiveness of data-driven teaching practices. AI analytics enables educators to collect, process, and interpret large volumes of student data to improve instructional strategies, personalize learning experiences, and enhance academic outcomes. This study examines the role of AI analytics in supporting data-driven teaching by exploring its key components, applications, benefits, and challenges. Using a conceptual and analytical approach, the paper discusses how AI-based learning analytics tools assist teachers in decision-making, early identification of learning difficulties, personalized instruction, and continuous assessment. The study also highlights ethical considerations, data privacy concerns, and implementation challenges in educational institutions. The findings suggest that AI analytics, when applied responsibly and supported by proper training and governance frameworks, can transform traditional teaching into a more adaptive, equitable, and evidence-based practice. This paper contributes to existing literature by providing a comprehensive overview suitable for educators, policymakers, and researchers seeking to understand the pedagogical potential of AI-driven analytics in modern education.

Keywords: *AI analytics, Data-driven teaching, Learning analytics, Personalized learning, educational technology, Predictive analytics.*

6.7 Beyond Prompt Engineering: Developing Critical Literacy through Dialogic Interaction with Collaborative AI

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Abstract

The rapid integration of generative artificial intelligence in educational settings has necessitated a shift from basic functional proficiencyoften termed "prompt engineering"toward a deeper, more robust framework of critical AI literacy. This research explores the transition from linear command-based usage to a triadic, dialogic interaction involving the teacher, the student, and the collaborative AI agent. While prompt engineering focuses on technical output, dialogic interaction emphasizes the iterative process of inquiry, skepticism, and co-construction of knowledge. This study employs a qualitative case study methodology to examine how students engage with AI as a "Socratic interlocutor" rather than a mere information retrieval tool. Preliminary findings suggest that when AI is positioned as a collaborative peer, students demonstrate higher levels of metacognitive awareness and evaluative judgment. However, the success of this interaction is heavily dependent on the teachers role as a pedagogical orchestrator who scaffolds the "tension" between AI-generated content and human intuition.1 The paper further discusses the "Third Agent" phenomenon, where the AIs social presence influences the power dynamics of the classroom. Results indicate that fostering critical literacy through dialogue helps mitigate risks of algorithmic bias and over-reliance. The study concludes with a proposed framework for "Reflective Co-Intelligence," offering educators actionable strategies to move beyond syntax-driven prompting toward meaningful, critical engagement that prepares students for an AI-augmented workforce.

Keywords: *Collaborative AI, Critical AI Literacy, Dialogic Learning, Teacher-StudentAI Triad, Metacognition, Pedagogical Orchestration.*

Sub-Theme 7:
Evaluation Paradigms with AI

7 Evaluation Paradigms with AI

7.1 A Critical Analysis of Artificial Intelligence in Education and Learning: An Evaluation in Indian Education System

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Abstract

Artificial Intelligence (AI) is revolutionizing teaching and learning by offering personalized experiences, automating tasks, and providing data-driven insights, moving education towards adaptive, engaging, and accessible models while freeing teachers for deeper student interaction, though challenges like data privacy and critical thinking must be addressed. AI-powered tools create tailored lesson plans, offer intelligent tutoring, give instant feedback, and support diverse needs, transforming traditional classrooms into dynamic, student-centered environments that boost engagement and improve outcomes. In present, many priorities for improvements to teaching and learning are unmet. Educators are looking for safe, efficient, and scalable technology-enhanced methods to achieve these goals. Naturally, educators are curious in whether rapid developments in everyday technology may be beneficial. Educators, like everyone else, utilize AI-powered services in their daily lives, such as voice-controlled assistants in their living spaces; tools that can write essays, complete sentences, and correct grammar. AI acts as a powerful assistant, freeing teachers to focus on human connection and complex skills while delivering tailored support, instant feedback, and immersive experiences for students, transforming education from a one-size-fits-all model to a dynamic, data-driven environment. This paper focused on: AI Will Transform Teaching and Learning and human learning. AIs potential, AIs significant risks, Understanding AI and education also with Ethical, inclusive, and equitable use of AI in education. Master plans for using AI to teaching, learning assessment, and education management, as well as anticipated effects of AI on various educationalsectors.

Keywords: *Artificial Intelligence, Educators, Education, Teaching, AI.*

7.2 A Study on the role of Artificial intelligence in Teacher Education: Opportunities, Challenges and Future Prospects

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Abstract

Artificial Intelligence (AI) is increasingly changing the education sector, and its effects are profoundly seen in the teacher education context. AI can be conceived as the capacity of the computer systems and machines to perform tasks that are only possible with human intelligence like learning, analysing, solving problems, and making decisions. In the education context, AI is becoming increasingly used through smart education portals, automated assessment tools, education robots, and data-driven education support systems. It helps optimize education delivery, facilitates personalized education, and helps teachers make better decisions by enabling them to deal with the needs of students in an optimal manner. This paper focuses on the opportunities, challenges, and future outlook of AI in the context of teacher education and is based on the primary research methodology of administering a structured questionnaire to 60 teachers. It has been seen that AI helps teachers perform their job in an optimal manner by providing them with information and enabling them to deal with their administrative tasks automatically through tools and systems like grading, attendance, and lesson plan preparation. But there are challenges that affect the adoption of AI, such as the lack of technical expertise on the part of teachers, high costs, inadequate infrastructure, teacher attitudes toward change, and ethics on privacy and responsible use of data. But on the positive side, teachers do not perceive AI as a replacement for themselves. With appropriate training, infrastructure development, access to manageable AI tools, and ethics, AI can assist teacher education, promote an inclusive and learner-centric approach to education, and train teachers to adapt to the changing demands of modern education.

Keywords: *Artificial Intelligence, Teacher Education, opportunities, challenges and prospects.*

7.3 A Study on Use of Artificial Intelligence Tools in Teacher Education: A Survey of Student Teachers

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Abstract

Artificial Intelligence (AI) is emerging as a useful technology in the educational field and has made a substantial transformation in teaching and learning. In teacher education programs, the use of AI tools is helpful for student teachers in teaching learning processes like lesson planning and preparation, and also in comprehending complicated concepts. The research study is designed to analyze the use of Artificial Intelligence tools in teacher education and its awareness and use among student teachers. The study was conducted using primary information gathered by a structured questionnaire from 60 student-teachers in the second year of B. Ed courses in Alvas College (Autonomous), Moodubidire. The secondary sources used include research articles, and websites of relevant entities. The results of this study depicted that student-teachers do make regular use of AI tools, but most frequently, they used ChatGPT. The applications of AI lie in teaching tasks such as designing lessons, preparing teaching aids, and comprehension of tough concepts. There is limited utilization of AI in conducting research, preparation for exams, and undertaking projects. Although the fact that the majority of the student teachers having some fundamental knowledge regarding the use of AI, along with a positive attitude towards the use of AI, some challenges were also identified. These include internet-related problems, too much reliance on various available AI tools, along with ethical issues concerning plagiarism.This paper concludes that there is unexplored potential for better use of AI-based systems in improving teaching efficiency, skills development, and preparedness on the part of the teacher. However, certain guidance is required to bring balance in integrating AI technology for teacher training.

Keywords: *AI in education, Artificial Intelligence, Digital learning tools, AI tools, teaching skills development, AI in teacher education.*

7.4 AI and the Future of Teacher Education in India:Challenges and Concerns

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Abstract

Artificial Intelligence is rapidly reshaping teacher education in India by addressing innovative tools for personalized learning, virtual classrooms, data-driven decision-making, thereby holding the potential to improve the quality, and effectiveness of teacher training programs. AI-powered platforms can support pre-service and in-service teachers through adaptive learning modules, simulated teaching environments, advanced tutoring systems, and real-time feedback, helping educators develop pedagogical, subject-specific, and technological competencies aligned with 21st-century classrooms. In a diverse country like India, AI can also help bridge regional, linguistic, and socio-economic gaps by offering scalable and multilingual digital resources. However, despite these promising possibilities, several challenges and concerns accompany the integration of AI into teacher education. A major concern is the digital divide, as unequal access to reliable internet connectivity, devices, and digital infrastructure may deepen existing educational inequalities rather than reduce them. There are also pedagogical concerns, as excessive reliance on AI tools may risk undermining human judgment, creativity, emotional intelligence, and the ethical dimensions of teaching, and data privacy and security present another serious challenge, there is a lack of clear policy frameworks, regulatory guidelines, and ethical standards governing the use of AI in teacher education in India. Resistance to change among educators, driven by fear of job displacement or lack of digital confidence, also poses a significant barrier. Therefore, while AI has the potential to transform teacher education in India by enhancing efficiency, accessibility, and innovation, its successful integration demands thoughtful planning, robust infrastructure, capacity building, ethical safeguards, and a balanced approach that positions AI as a supportive tool rather than a replacement for human teachers.

Keywords: *Artificial intelligence, Teacher Education, Ethical Concerns, Policy Framework, Professional Development.*

7.5 Ai Dependency in Teacher Education: A Conceptual Review of Implications and Challenges

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Abstract

Teaching and learning methods have changed significantly as a result of the quick adoption of artificial intelligence (AI) applications in educational contexts, especially in teacher education. Although AI provides significant assistance in lesson preparation, assessment, content creation, and instructional decision-making, growing reliance on these tools has raised concerns about AI dependency. The purpose of this study is to investigate the characteristics, trends, and consequences of preservice and in-service teachers' reliance on AI in teacher education institutions. This study defines AI dependency as an over-reliance on AI systems for professional, educational, and cognitive tasks that could otherwise call for independent judgment, pedagogical reasoning, and reflective thinking. The study investigates how frequent and careless use of AI technologies may affect teachers' professional autonomy, instructional creativity, and pedagogical decision-making. It does this by drawing on current theoretical viewpoints and empirical trends. The study also identifies possible risks of relying too much on AI, such as decreased critical engagement, weakened problem-solving abilities, and ethical issues linked to professional and academic accountability. However, the study also recognizes the positive role of AI when applied as a helpful teaching tool rather than as a replacement for expert knowledge. This work aims to provide conceptual clarity to an ignored area of teacher education research by concentrating on just AI reliance as a primary variable. The results are expected to educate teacher educators, curriculum designers, and legislators about the necessity of maintaining a balance between AI integration and the growth of future educators' ethical awareness, pedagogical competence, and reflective practice. The importance of teaching teachers to control their reliance on AI tools in a quickly changing educational context is emphasized in the paper's conclusion.

Keywords: *AI Dependency, Teacher Education, Pedagogical Decision-Making, Professional Autonomy, Ethical Use of AI.*

7.6 An AI-Based Evaluation Framework for Measuring Working Capital Competency in Teacher Education

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Abstract

Artificial Intelligence is increasingly being integrated into educational systems to enhance teaching and assessment practices. Within teacher education programmes, particularly in commerce-related disciplines, it is essential to evaluate the extent to which teacher trainees possess a clear and practical understanding of working capital concepts, including cash management, inventory control, and short-term financing. Conventional assessment methods, such as written examinations, primarily emphasize theoretical knowledge and often fail to measure practical application skills and financial decision-making abilities adequately.This study uses AI tools to assess the working capital skills of teacher trainees in an effective and learner-friendly manner. AI-based methods such as online quizzes, adaptive tests, case-based questions, and learning analytics are applied to evaluate both conceptual knowledge and practical understanding. These tools automatically analyze responses, identify learning gaps, and provide timely feedback to support improved learning. The study proposes a simple AI-driven evaluation framework to measure both subject knowledge and application skills related to working capital management. The research is based entirely on secondary data collected from published research articles, academic journals, conference proceedings, reports, and existing studies related to AI-based assessment and teacher education. These secondary sources are analyzed to understand the effectiveness of AI-driven assessment practices. The analysis of secondary data indicates that AI-based assessment methods are more effective, transparent, and learner-friendly than traditional evaluation approaches. The study also concludes that, based on evidence from existing literature, the use of AI in assessment can improve the eval-

uation of financial skills in teacher education and support the preparation of future teachers for modern, technology-supported classrooms.

Keywords: *Artificial Intelligence, Teacher Education, Working Capital Management, AI-Based Assessment, Financial Literacy.*

7.7 Artificial Intelligence and Teachers Digital well-being: A Critical Review

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Abstract

The fast integration of artificial intelligence (AI) into educational systems has had a substantial impact on educators' instructional practices, professional obligations, and digital engagement. While AI-powered solutions provide significant benefits such as individualized learning, automated evaluation, and administrative efficiency, their increasing use raises serious concerns about teachers' digital well-being. This review study critically explores the existing research on the junction of AI and teachers' digital well-being, with a focus on psychological, emotional, and professional aspects. Key themes addressed include digital overload, techno stress, data surveillance, loss of professional autonomy, and the blurring of work-life boundaries exacerbated by AI-powered platforms. The review combines findings from empirical investigations, theoretical frameworks, and policy reports to identify both the opportunities and risks involved with AI adoption in educational settings. It also exposes gaps in digital competency, institutional support, and ethical governance that affect teachers' well-being outcomes. This paper addresses gaps in the field by critically examining current research, specifically the paucity of teacher-centered well-being models and longitudinal studies addressing long-term AI use. The review emphasizes the importance of balanced AI adoption techniques that respect teachers' mental health, agency, and ethical concerns alongside technological growth. Finally, this study seeks to inform policymakers, educational leaders, and academics by proposing for a human-centered approach to AI integration that promotes teachers' long-term digital

well-being in changing educational environments.

Keywords: *Artificial Intelligence (AI); Teachers Digital Well-being; Educational Technology; Techno stress; AI in Education; Teacher Mental Health; Digital Transformation.*

7.8 Artificial Intelligence and the Future of Teacher Education in India

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Abstract

At the present time, artificial intelligence is emerging as a revolutionary development in the field of education in India, especially the use of artificial intelligence is mainly seen in teacher education. AI is proving to be helpful in making teachinglearning more effective and in making people technologically supported. This research paper analyzes the role of AI in the future of teacher training in the context of India AI-based tools such as smart learning platforms, virtual classrooms, automated assessment systems, and data analysis provide teachers undergoing technical training with learning opportunities according to their individual needs. This not only improves training skills but also prepares teachers according to the modern digital environment. AI helps teachers in areas such as lesson planning, student assessment, data analysis, and classroom management. However, there are also some challenges of AI in teacher education, such as digital inequality, lack of technological resources, data privacy, ethical issues, and the need to protect human values. In a diverse country like India, it is necessary to address these challenges so that AI can be used in the right manner. This research paper highlights the potential benefits, challenges, and future possibilities of AI and presents the argument that if AI is properly integrated into teacher education, it can make Indias education system more effective, innovative, and future-oriented.

Keywords: *Artificial Intelligence, Teacher Education, Digital Pedagogy, Educational Technology, AI Learning.*

7.9 Artificial Intelligence and the Future of Teacher Education in India: Opportunities, Challenges, and Policy Implications

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Abstract

At the present time, artificial intelligence is emerging as a revolutionary development in the field of education in India, especially the use of artificial intelligence is mainly seen in teacher education. AI is proving to be helpful in making teachinglearning more effective and in making people technologically supported. This research paper analyzes the role of AI in the future of teacher training in the context of India AI-based tools such as smart learning platforms, virtual classrooms, automated assessment systems, and data analysis provide teachers undergoing technical training with learning opportunities according to their individual needs. This not only improves training skills but also prepares teachers according to the modern digital environment. AI helps teachers in areas such as lesson planning, student assessment, data analysis, and classroom management. However, there are also some challenges of AI in teacher education, such as digital inequality, lack of technological resources, data privacy, ethical issues, and the need to protect human values. In a diverse country like India, it is necessary to address these challenges so that AI can be used in the right manner. This research paper highlights the potential benefits, challenges, and future possibilities of AI and presents the argument that if AI is properly integrated into teacher education, it can make Indias education system more effective, innovative, and future-oriented.

Keywords: *Artificial Intelligence, Teacher Education, Digital Pedagogy, Educational Technology, AI Learning.*

7.10 Artificial Intelligence in Education: An Exploratory Survey of the Perceptions of Student Teachers, Teachers & Teacher Educators

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Abstract

AI has transformed education, altering teaching, assessment, and management. The rapid rate of technological innovation and the present focus on digital skills in educational reforms make it crucial to understand how stakeholders view AI integration. This study will examine how student teachers, teachers, and teacher educators view AI in education. The research seeks to understand how multiple educational stakeholders view the relevance, utility, problems, and potential of AI-driven tools and practices in learning settings.The study will involve a descriptive survey previously used by Sergio Miranda in similar Study. Data will be collected through a comprehensive digital opinionnaire, divided into sections on personal data, AIs perceived impact, its usefulness, and specific applications in education. The participant sample includes student teachers, teachers, and teacher educators from various educational institutions to reflect a variety of education positions. statistical analysis of opinionnaire data will reveal significant explorations in perceptions among the stakeholders. The study may reveal disparities in views on AI in education, notably in terms of AIs perceived impact, its usefulness, and specific applications in education. The study will also identify AI-augmented educational obstacles and potential and thereafter, emphasising the importance of a well-informed, ethical, and pedagogically sound approach to integrating AI in education to improve educational quality and create future-oriented teachinglearning environments by focusing on stakeholders.

Keywords: *Artificial Intelligence, Perceptions, student teachers, teachers, and teacher educators, Educational Technology.*

7.11 Artificial Intelligence in Teacher Education: Opportunities, Challenges, and Future Directions

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Abstract

This paper discusses the growing role of Artificial Intelligence (AI) in teacher education and highlights the opportunities, challenges, and future directions related to its use. Artificial Intelligence refers to technology that allows machines and computer systems to think, learn, and make decisions in ways similar to humans. In recent times, AI has begun to influence many areas of education, especially the training and professional development of teachers. In teacher education, AI offers several meaningful opportunities. One of the key advantages is personalized learning, where trainee teachers can learn according to their own pace, abilities, and learning needs. AI-based tools also support lesson planning, automated assessment, classroom simulations, and timely feedback. These tools help future teachers develop better teaching skills, gain confidence, and improve classroom management. At the same time, AI helps teacher educators by reducing their workload related to evaluation and routine administrative tasks. Despite these advantages, the use of AI in teacher education also brings certain challenges. Many teacher educators and trainee teachers do not have sufficient digital skills to use AI tools effectively. Ethical issues such as data privacy, security, and bias in AI systems are also important concerns. Moreover, over-dependence on technology may reduce human interaction, creativity, and emotional understanding, which are essential qualities of effective teaching. Looking ahead, this paper emphasizes that AI should be used as a supportive tool rather than a replacement for teachers. Proper training, clear policies, and ethical guidelines are necessary to ensure the responsible use of AI in teacher education. A balanced integration of human values and AI technology can help prepare competent, reflective, and future-ready teachers.

Keywords: *Artificial Intelligence, Teacher Education, Personalized Learning, Educational Technology, Future Directions.*

7.12 Artificial Intelligence in Teaching and Learning: A comprehensive Overview

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Abstract

Artificial Intelligence (AI) in higher education is growing. It helps is changing the process of teaching and learning. This paper provides a comprehensive overview of the basic concepts, applications, benefits and challenges of using AI-based system in education. It covers basic concept of AI-based system used in higher education, educational tools, recent trends and personalized learning platforms. In addition, it describes how AI is useful in teaching and learning to improve student engagement, learning outcomes and teaching effectiveness. AI offers several benefits, like improved accessibility, teacher support, and personalized learning experiences. This study will be helpful for educators, students and researchers to better understand both the potential and limitations of Artificial Intelligence (AI) in higher education.

Keywords: *Artificial Intelligence, AI-based tools, higher education.*

7.13 Attitude towards Artificial intelligence among Higher Secondary Students

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Abstract

The use of advanced technology is considered a crucial component in the modernization of the education system. The importance and application of Artificial intelligence (AI) as such a technology are rapidly developing in the current education system. Although interest in AI education is increasing among school students, there is still limited empirical research, particularly regarding attitudes towards AI in West Bengal. In this context, the objective of the present study is to analyze the awareness & attitudes and the impact of AI on the teaching-learning process among higher secondary students. The research was conducted on a total of 70 students from two government higher secondary schools at Howrah and Kolkata (one girls' school and one boys' school). For this study, the questionnaire was adopted by combining nine statements related to interest and acceptance of AI from Suh & Ahn (2022) and two statements (career related to AI) from Sultana et al. (2025). Open and closed structured questionnaires were used for data collection, and the collected data were analyzed using mean, percentage, and graphs. The results showed that most students have a positive attitude towards AI and, while most students have basic awareness of AI, they lack in-depth knowledge due to a lack of formal education about AI. Their reliance on social media for information is creating incomplete and erroneous perceptions about AI in many cases. In some cases, consider AI to be helpful in education. However, some concerns exist regarding ethical and security issues. Therefore, it is necessary to restructure the curriculum by including AI-related topics, improve modern technology-based teaching methods through teacher training, and educate students about the proper use of technology. At the end of the research, actionable steps have been proposed to foster positive and constructive attitudes towards AI among students.

Keywords: *Artificial intelligence, awareness, teaching-learning process, education, technology.*

7.14 Awareness of Artificial Intelligence in Education: A Study of Teachers

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Abstract

Artificial Intelligence is changing the way we learn and teach. It is making an impact on the education sector. Artificial Intelligence is changing the way teachers teach and the way students learn. It is also changing the way we test students. Teachers are very important when it comes to using Artificial Intelligence in education. So, it is very important to know what teachers think about Artificial Intelligence. This study is, about what teachers know about Artificial Intelligence and what they think about using Artificial Intelligence in education. Artificial Intelligence is a part of this study because we want to know how teachers feel about using Artificial Intelligence in the education system.

The main purpose of this study is to find out how many teachers know about Artificial Intelligence and what they think about using Artificial Intelligence in educational institutions. This study will look at what's already happening and it will be based on information collected directly from teachers through a set of questions. The study will also look at information from books, journals and things that other people have written about Artificial Intelligence on the internet.

The proposed study aims to provide insights into teachers understanding of AI concepts and their views on adopting AI-based tools in teachinglearning processes. The findings are expected to highlight the importance of training, institutional support, and technological infrastructure in promoting the effective use of Artificial Intelligence in education. The study is expected to be useful for educators, educational institutions, and policymakers in planning strategies for the successful integration of AI in educational practices.

Keywords: *Artificial Intelligence (AI), Education, Teachers Awareness, Technology Adoption, Awareness, Perception.*

7.15 Comparative Study on Use of AI Tools Between Humanities and Science Student Teachers

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Abstract

Artificial Intelligence (AI) is increasingly influencing academic and professional practices in higher education, including teacher education. Student-teachers enrolled in

D.El.Ed., B.Ed., M.Ed. and ITEP programmes commonly utilise AI tools for academic writing, lesson planning, content understanding, research support, language assistance and formative assessment. However, patterns of AI usage may vary according to their academic background, gender and programme level. The present study aims to conduct a comparative analysis on the use of AI tools among Humanities and Science student-teachers in selected Teacher Education institutions. The study specifically examines the types of AI tools used, frequency and purpose of usage, perceived usefulness and ethical awareness associated with AI-mediated academic activities.

A descriptive survey method was adopted for the study. A structured questionnaire developed by the investigator served as the primary tool for data collection, comprising sections on demographic profile, AI tools used, usage patterns, perceived usefulness and ethical concerns. The sample consisted of student-teachers from Humanities and Science streams who had completed their 12th standard in respective disciplines. Descriptive and inferential statistics were employed for analysing the data, including frequency distributions, mean scores and t-tests for group comparisons.

The findings of the study are expected to reveal disciplinary variations in AI adoption, with Science student-teachers potentially engaging more with problem-solving and computational tools, and Humanities student-teachers relying more on generative text, language and writing tools. The study also highlights gender differences, ethical awareness levels and training gaps. The results bear significance for teacher education curricula, AI literacy training, and the development of future-ready educators in alignment with NEP-2020.

Keywords: *Artificial Intelligence in Education; Student-Teachers; AI Literacy; Humanities and Science Streams; Comparative Study; Teacher Education; Usage Patterns.*

7.16 Digital Literacy in the Era of Generative Artificial Intelligence: Evaluating Credibility and Authority in AI-Assisted Information Seeking

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Abstract

Generative artificial intelligence (AI) has rapidly transformed information-seeking behaviors in educational contexts by enabling users to generate, summarize, and interpret information through conversational and automated systems. While these technologies enhance efficiency and accessibility, they also raise critical concerns regarding credibility, authority, and epistemic trust. This paper examines digital literacy in the era of generative AI, with particular emphasis on how learners evaluate credibility and authority during AI-assisted information seeking. Drawing on interdisciplinary literature from education, information science, and educational technology, the paper explores the epistemological implications of generative AI, the cognitive and ethical challenges it presents to learners, and the limitations of traditional digital literacy frameworks. This paper adopts a conceptual and theoretical approach, synthesizing interdisciplinary literature to propose an expanded framework of digital literacy in AI-mediated information environments. The paper argues for an expanded conception of digital literacy that incorporates AI awareness, critical evaluation of algorithmic outputs, and metacognitive regulation during information seeking. Implications for educational practice, curriculum design, and future research are discussed, emphasizing the need to prepare learners for responsible and informed engagement with AI-mediated knowledge environments.

Keywords: *Digital literacy, generative artificial intelligence, information seeking, credibility, authority, information literacy, algorithmic awareness.*

7.17 Emerging Role of Artificial Intelligence in Indian Education: The Policy Reflections on NEP-2020

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Abstract

The rapid advancement of Artificial Intelligence is reshaping educational systems worldwide and India is no exception. The National Education Policy 2020 (NEP-2020) recognizes AI as a crucial component for transforming teaching learning processes, governance and educational equity. This paper analyses the emerging role

of AI in Indian education through a focused policy analysis of NEP-2020. The researchers using a qualitative and analytical approach. The research explores the AI is envisioned to support student centered learning, adaptive assessment, teacher professional development and evidence-based decision making across various levels of education. The paper also reflects on policy provisions related to digital infrastructure, capacity building and ethical considerations, including data privacy, inclusivity and algorithmic bias. While NEP-2020 presents a forward looking framework for integrating AI into education. The analysis emphasizes the challenges such as the digital divide, institutional readiness gap and limited AI literacy among educators. The paper argues that the successfully achieving of AI-driven educational transformation requires coherent implementation strategies, continuous policy support and socio-cultural realities. By critically reflecting on NEP-2020, this study contributes to policy discourse on utilizing AI for sustainable, inclusive and learner-centered educational reform in India.

Keywords: *Artificial Intelligence, Educational Transformation, Digital Education Policy Analysis and National Education Policy 2020.*

7.18 Exploring the Role of Artificial Intelligence in Teacher Education: Emerging Opportunities and Challenges

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Abstract

The integration of Artificial Intelligence (AI) into society is significantly changing how individuals engage with technology, and many aspects of everyday life. This increase in utilization across multiple industries will likely revolutionize many facets of education, especially the processes associated with preparing people for being educators (teacher training). To quantify this impact on the field of education, this article provides an analysis of how the use of AI can affect teacher training positively and negatively, as well as provide new opportunities for success in the educational field. Furthermore, this article highlights the unique ethical and social/cultural aspects of using AI to prepare future educators. Finally, this article concludes that there is great potential in the use of AI to improve teacher training; however, it is essential that this potential is realized through appropriate usage, ethics, and consideration of the broader implications.

Keywords: *Artificial Intelligence in Teacher Education, Opportunities, Challenges.*

7.19 Future of Teacher Education

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Abstract

Teacher education is undergoing a significant transformation in response to rapid technological advancement, globalization, changing learner needs, and evolving societal expectations. In the 21st century, the role of teachers has expanded beyond traditional classroom instruction to include facilitation of learning, mentoring, innovation, and ethical guidance. The future of teacher education therefore demands a paradigm shift from conventional, content-oriented training models to flexible, competency-based, and learner- centered approaches. This abstract explores emerging trends shaping the future of teacher education, such as digital pedagogy, blended and online learning, artificial intelligence, inclusive education, and interdisciplinary teaching practices. Emphasis is placed on the integration of information and communication technologies (ICT), which has become essential for effective teaching and learning in contemporary educational environments. The study also highlights the importance of continuous professional development, reflective practice, and research-oriented training to ensure teachers remain responsive to dynamic educational challenges. Teacher education institutions are expected to prepare educators who are not only subject experts but also technologically competent, socially sensitive, and capable of fostering critical thinking and creativity among learners. However, several challenges hinder this transformation, including rigid curricula, inadequate infrastructure, the digital divide, insufficient policy support, and quality assurance issues. Addressing these challenges requires comprehensive reforms in curriculum design, assessment practices, institutional governance, and teacher training policies. The abstract concludes that strengthening teacher education is fundamental to improving the quality of education and achieving sustainable development goals. Future-ready teacher education programs must focus on innovation, inclusivity, adaptability, and lifelong learning to equip teachers with the skills and attitudes necessary for navigating complex educational landscapes. Ultimately, investing in the future of teacher education is an investment in the intellectual, social, and economic development of society.

Keywords: *Teacher Education, Future Education, Digital Pedagogy, Professional Development, Educational Reforms.*

7.20 Generative Artificial Intelligence in Education and Research: A PRISMA-Based Systematic Review

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Abstract

In academic education and research, generative artificial intelligence (GAI) is rapidly evolving into a revolutionary tool. Large language models, text and content generators, and AI-assisted research platforms are examples of tools that are having a growing impact on academic work, teaching, learning, and evaluation. A targeted and current synthesis of recent research is needed because of the rapid rate of technological advancement.

Keywords: *Artificial Intelligence Ethics; Education Technology; Generative Artificial Intelligence; PRISMA Method; Systematic Review.*

7.21 Impact of Artificial Intelligence on Human Society

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force reshaping multiple dimensions of human society, including economic structures, social interactions, governance, education, and ethical frameworks. The rapid advancement of AI-driven technologies such as machine learning, natural language processing, and automation has significantly enhanced efficiency, decision-making, and innovation across sectors. Simultaneously, these developments raise critical concerns related to employment displacement, data privacy, algorithmic bias, social inequality, and the redefinition of human agency. This paper examines the multifaceted impact of artificial intelligence on human society by analysing both its opportunities and challenges. It explores how AI contributes to economic growth, improved healthcare delivery, personalized education, and smarter governance, while also interrogating its implications for workforce transformation, ethical accountability, and social cohesion. Drawing on interdisciplinary perspectives, the study emphasizes the necessity of responsible AI development guided by ethical principles, inclusive policies, and human-centred design. The paper argues that the societal impact of artificial intelligence is not technologically deterministic but shaped by human choices, institutional frameworks, and policy interventions. Understanding these dynamics is essential for harnessing AIs potential to promote sustainable development, social well-being, and equitable progress in an increasingly digital society.

Keywords: *Artificial Intelligence; Sustainable Development; Human Society; Technologies, Inclusive Policies.*

7.22 Impact of Artificial Intelligence on Students Learning Behaviour and Academic Outcomes

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Abstract

Artificial Intelligence (AI) has rapidly influenced the education system in India and is becoming one of the most effective problem-solving tools for college going students. It has great influence on how students learn, prepare notes, assignments, and understand academic concepts. AI tools such as ChatGPT, Grammarly, Perplexity, and other AI platforms are increasingly used by college going students for academic problems. This study examines the impact of artificial intelligence on students learning

behaviour and academic performance. Primary data was collected from 120 undergraduate students using a structured questionnaire. The study employs percentage analysis and the Chi-Square test to analyze the relationship between AI usage and academic performance. The findings indicate that there is significant positive impact of AI on students learning efficiency and academic outcomes. However, we have also noticed that some students are becoming overly dependent on AI, and there are also some ethical concerns associated with its use.

Keywords: *Artificial Intelligence, Students, Learning Behaviour, Academic Performance, ChapGpt.*

7.23 Mathematics Teachers Perception of AI-Based Visualization Tools in Teaching Mathematics

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Abstract

The rapid growth of artificial intelligence (AI) has opened up new ways to improve mathematics teaching and learning through AI-based visualization tools. These tools include graphing software, interactive simulations, virtual and augmented reality, and dynamic geometry software. Students grasp abstract and complex mathematical concepts using Visualization tools that makes learning more interactive and effective by connecting mathematical ideas with visual models and real-life situations. This study looks at existing research on the use of AI-based visualization tools in school level mathematics teaching. It focuses on teachers perceptions, benefits, and challenges related to their use. Findings from the literature show that AI-based visualization tools aid personalized learning, enhance problem-solving skills, boost student motivation, and encourage active participation in the classroom. Teachers say these tools give instant feedback, save instructional time, and help to identify students learning challenges. This review paper also highlights a number of difficulties that mathematics teachers faced when incorporating AI-based visualization tools. These difficulties

include inadequate technology infrastructure, insufficient experiences, excessive expenses, technical problems, uneven device access, and challenges integrating AI tools with the current curriculum. Teachers' awareness, confidence, and institutional support all have a significant impact on their attitudes and willingness to use AI-based visualization tools in mathematics education. In order to successfully implement AI-based visualization tools in mathematics education. This study shows how important it is to properly train teachers, teacher educators, curriculum designers, and policymakers who want to improve mathematics teaching and learning using AI-based visualization tools.

Keywords: *Artificial Intelligence, Visualization Tools, Mathematics Teachers Perception, Mathematics Education, Challenges, Educational Technology.*

7.24 Evaluation Paradigms with AI

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Abstract

Artificial Intelligence (AI) has transformed traditional evaluation paradigms by introducing intelligent, data-driven, and adaptive assessment methods across educational, industrial, and research domains. Conventional evaluation approaches often rely on standardized tests, manual scoring, and fixed criteria, which may not fully capture learner performance, system efficiency, or complex real-world behaviours. In contrast, AI-enabled evaluation paradigms utilize machine learning, natural language processing, predictive analytics, and automated feedback systems to provide personalized, continuous, and objective assessments. These paradigms support formative and summative evaluation by identifying learning gaps, predicting outcomes, enhancing decision-making, and ensuring greater accuracy and scalability. Furthermore, AI facilitates dynamic evaluation environments where performance metrics adapt to user behaviour and context, thereby improving reliability and reducing human bias. As AI continues to evolve, its role in shaping future evaluation frameworks becomes increasingly crucial, enabling more holistic, efficient, and evidence-based assessment practices.

Evaluation paradigms have undergone a significant transformation with the integration of Artificial Intelligence (AI), offering more accurate, adaptive, and efficient assessment mechanisms across various domains. Traditional evaluation models often depend on fixed criteria, manual grading, and subjective judgments, which may

limit their ability to capture diverse learner capabilities or system performance. AI-driven evaluation paradigms leverage machine learning, natural language processing, data analytics, and automated feedback systems to enhance objectivity, consistency, and scalability. These intelligent systems enable real-time assessment, personalized evaluation pathways, predictive insights, and continuous improvement cycles. By minimizing human bias and introducing data-driven decision-making, AI supports holistic evaluation that aligns with evolving educational and organizational needs. As AI technologies continue to advance, they promise to redefine assessment frameworks, resulting in more reliable, inclusive, and outcome-oriented evaluation practices.

Keywords: *Artificial Intelligence (AI), Evaluation Paradigms, Assessment Frameworks, Machine Learning, Data-Driven Evaluation, Automated Assessment, Adaptive Evaluation, Predictive Analytics, Natural Language Processing (NLP).*

7.25 Reimagining Lesson Planning in Teacher Education: A Quasi-Experimental Study of Ai-Based Platforms

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Abstract

This experimental study investigates the effectiveness of AI-assisted lesson planning toolsTeachmint and Lesson Plan.aiin enhancing instructional practices, teacher effectiveness, and reflective competencies of pre-service teachers. With growing interest in integrating Artificial Intelligence into teacher education, this study compares AI-supported and traditional approaches to lesson planning. A total of 81 trainee teachers from a teacher education institution participated, divided into a control group (traditional planning) and two experimental groups using Teachmint and LessonPlan.ai respectively. Three data collection tools were employed: the Instructional Practices Inventory (IPI) to assess classroom engagement, the Teacher Effectiveness Scale (TES) to measure pedagogical efficacy, and Focus Group Discussions (FGDs) to gather qualitative insights on user experiences. Results demonstrated that AI-integrated platforms significantly improved instructional quality, student engagement, and teacher planning effectiveness. LessonPlan.ai, in particular, yielded the highest gains, promoting differentiated instruction, real-time feedback, and reflective thinking. ANCOVA analysis confirmed statistically significant differences between the groups, with both AI tools outperforming traditional methods. FGDs revealed that AI tools reduced lesson planning anxiety, enhanced creativity, and supported

professional identity development among trainees. This study concludes that AI tools can serve as pedagogical scaffolds, supporting novice educators in translating theoretical knowledge into effective classroom practices. The findings suggest the urgent need to embed AI literacy into teacher training curricula and provide ongoing support for the ethical and effective use of educational technology. The study contributes to the growing body of research advocating for the integration of AI in teacher education for future-ready teaching professionals.

Keywords: *Artificial Intelligence, Lesson Planning, Pre-service Teachers, Teacher Effectiveness, Reflective Practice.*

7.26 Role of Artificial Intelligence in Analyzing Learner Feedback for Improving TeachingLearning Processes

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Abstract

Learner feedback plays a crucial role in evaluating the effectiveness of teachinglearning processes and supporting continuous instructional improvement. With the widespread use of digital learning platforms, educational institutions generate large volumes of learner feedback in both structured and unstructured formats. Traditional manual methods of feedback analysis are time-consuming, subjective, and limited in their ability to derive meaningful insights at scale. This paper examines the role of Artificial Intelligence (AI) in analyzing learner feedback to enable data-driven enhancement of teaching practices. The proposed approach employs Natural Language Processing (NLP) and machine learning techniques to automatically process and interpret learner feedback. Methods such as sentiment analysis and topic modeling are used to identify learner perceptions, engagement levels, and instructional challenges. The AI-based framework assists educators in recognizing strengths and weaknesses in instructional delivery and supports informed pedagogical decision-making. The study highlights the potential of AI-driven learner feedback analysis as a scalable, efficient, and objective solution for improving teachinglearning processes and promoting learner-centered education.

Keywords: *Artificial Intelligence,Learner Feedback, Teaching-Learning Processes.*

7.27 Teacher Education in the Era of Artificial Intelligence: A Comprehensive Analysis of Trends, Challenges and Future Directions

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Abstract

Artificial intelligence (AI) is rapidly being integrated into education, which has major significant consequences for teacher education systems worldwide. Reviewing current research on AI in teacher education is important because teachers are now expected to work in AI-supported learning environments. The objectives of this study were to investigate current trends in the use of AI in teacher education, to identify major ethical and pedagogical issues, to identify the major challenges faced by teachers and teacher educational institutions, and to highlight research gaps and future directions.

The PRISMA guidelines are used to select relevant studies. Relevant articles were selected from databases such as Scopus, ERIC, and Google Scholar using predefined search strings related to this study. After the selection of relevant articles, they were carefully screened and thematically analysed.

The findings indicate that artificial intelligence (AI) in teacher education is mainly used for individualized instruction, teaching practices through simulations, online training, assessment, and support for professional development. However, the findings reveal significant gaps, including difficulties in incorporating AI into instructional practices, low levels of AI literacy among teacher educators, and an absence of understanding of the ethical implications related to data privacy.

In conclusion, teacher educational institutions must focus on establishing basic knowledge of AI, developing pedagogical skills, and ethical understanding to empower

teachers to utilise AI with confidence. **Keywords:** *Teacher education, Artificial Intelligence, PRISMA Guidelines, AI Literacy, Ethical Issues.*

7.28 The impact on Learning Styles of Secondary School Students with the advent of Artificial Intelligence

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Abstract

Artificial Intelligence (AI) is transforming secondary education, reshaping how students learn and how teachers teach. This paper investigates the influence of AI on students learning styles, analyzing empirical and theoretical evidence that demonstrates AIs impact on engagement, personalization, meta-cognition, and self-directed learning. Using recent data (20242025), the study identifies a 2226% increase in student engagement, motivation, and satisfaction in AI-integrated classrooms. While AI enhances flexibility and personalization, it also introduces challenges regarding critical thinking, digital dependency, and ethics. The paper concludes that AI will redefine learning styles from static typologies to adaptive, data-driven processes supported by teacher-AI collaboration. **Keywords:** *Artificial Intelligence, Secondary Education, Learning Styles.*

7.29 Transforming Education in India: Examining the Benefits and Difficulties of Including AI in Teacher Education

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Abstract

The Indian education system is about to undergo a revolution thanks to artificial intelligence (AI), which offers previously unheard-of opportunities to improve student outcomes and teacher effectiveness. The ongoing adoption of AI in Indian schools and educator training centres is examined in detail in this analysis. It identifies key areas where AI supports traditional teaching methods, such as customised learning pathways, intelligent tutoring setups, and data-driven lesson strategies, through in-depth literature reviews and real-world case studies.
However, it highlights risks and challenges in AI-assisted learning, such as dehumanisation risks, algorithmic biases, and the need for educators to acquire new skills for smooth tech integration in their work.

According to insights, implementing AI in Indian classrooms effectively requires a multifaceted strategy that includes not only technological advancements but also significant changes in teacher education programs, institutional guidelines, and policy frameworks. It presents a model for integrating AI into teacher preparation, emphasising hands-on training, ongoing skill development, and teamwork between academic institutions, tech companies, and governmental organisations.

Fundamentally, this investigation provides a comprehensive route to harness AI's transformative potential in Indian education, balancing its drawbacks to create a more equitable, efficient, and powerful learning environment for all students. For decision-makers, education directors, and subject matter experts pursuing AI to improve teacher standards and student advancement in India, the paper's findings and recommendations offer crucial viewpoints. By combining cutting-edge research with real-world experiences, it seeks to spark a national conversation about intentional AI integration in Indian education and support the development of innovative solutions tailored to the country's unique needs and challenges.

Keywords: *Artificial Intelligence, Teacher Education, Personalized Learning, Educational Technology, Indian Education System.*

7.30 Emerging Evaluation Paradigm through Artificial intelligence

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Abstract

The continuous development of Artificial Intelligence has brought a paradigm shift in evaluation systems used in education, research, and professional environments. Traditional evaluation practices, largely dependent on standardized examinations, manual grading, and subjective judgment, often fail to address individual differences, higher-order thinking skills, and real-time learning needs. Emerging evaluation paradigms through Artificial Intelligence emphasize data-driven, adaptive, formative, and predictive assessment models that enhance efficiency, objectivity, and personalization. By integrating machine learning, natural language processing, and learning analytics, AI-enabled evaluation systems provide continuous feedback, support evidence-based decision-making, and promote inclusive assessment practices. However, these paradigms also raise ethical challenges related to bias, transparency, data privacy, and accountability. This paper presents a comprehensive analysis of the concept, evolution, applications, advantages, challenges, ethical considerations, and future prospects of AI-driven evaluation paradigms, highlighting the importance of balancing technological innovation with human judgment.

Keywords: *Artificial Intelligence, Evaluation Paradigms, Assessment, Machine Learning, Learning Analytics, Ethics.*

7.31 Smart Classrooms: How Artificial Intelligence Is Reshaping Teaching Practices and Student Assessment

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Abstract

The rapid-fire enhancement of artificial intelligence (AI) has significantly converted instructional systems across the sphere. One of the showiest issues of this metamorphosis is the emergence of smart classrooms technology- meliorated literacy surroundings that use AI to support tutoring, literacy, and valuation. Artificial Intelligence(AI) is revolutionizing smart classrooms by allowing substantiated literacy lines that acclimatize to individual pupil needs, furnishing 24/7 training via chat bots, automating tedious executive tasks for preceptors(like categorizing), and offering real- time feedback for deeper, customized understanding, relocating tutoring towards mentorship and data- driven strategies for meliorated engagement and bettered issues. AI- powered tools dissect pupil interpretation and geste , allowing preceptors to produce further operative, acclimatized, and popular literacy surroundings for different learners. This paper explores how AI reshapes tutoring practices and pupil valuation within smart classrooms. It critically examines AI- driven personalization, adaptive instruction, mastering analytics, automated valuation, and prophetic evaluation models. The study adopts a methodical review methodology, synthesizing rulings from recent transnational exploration, case inquiries, and procedure crashes. Effects indicate that AI enhances educational forcefulness, improves learner engagement, supports constructive valuation, and enables data- driven resolution- timber. still, expostulations similar as data sequestration, algorithmic bias, schoolteacher preparedness, and ethical enterprises remain significant walls. The paper concludes with recommendations for policymakers, preceptors, and institutions to insure the responsible and indifferent integration of AI in smart classrooms.

Keywords: *Artificial Intelligence, Smart Classrooms, Teaching Practices, Student Assessment, Adaptive Learning, Educational Technology.*

7.32 An Experimental Study on the Effectiveness of Augmented Reality Applications Among School Students

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Abstract

The rapid advancement of Augmented Reality (AR) has opened new possibilities for improving science education through immersive and interactive learning experiences. While earlier studies have largely focused on conceptual and theoretical discussions, empirical evidence on the effectiveness of AR in science classrooms remains limited, particularly in the Indian context. The present study aims to investigates the effectiveness of AR-based teaching applications on students engagement and academic achievement in science subjects. Using a quasi-experimental research design, data were collected from 8th class school students. One standard tool (students engagement scales) and other self-developed (achievement tests) were used as a tool. The findings reveal that students exposed to AR based teaching showed significantly higher engagement and achievement as compared to those taught through traditional methods. The study highlights the pedagogical potential of AR in enhancing science learning and provides implications also.

Keywords: *Augmented Reality, Science Education, Academic Achievement, Student Engagement, Empirical Study.*

7.33 a Brief Study of Kaizen as an Efficiency Enhancing Tool

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Abstract

Kaizen is a Japanese philosophy of management. It means "change for the better." Its a combination of two words, Kai (change) + Zen (good). This enhances Efficiency & Productivity through continuous, incremental improvements, with the involvement of every employee, and a focus on manageable & small changes instead of huge Changes & radical overhauls. It fosters a cost-effective, low-risk environment for optimizing business & industrial processes. The purpose of this research paper is not only to study the Kaizen Philosophy but to provide an industrial outlook to the Management students.

Keywords: *Kaizen, Efficiency, Productivity. Quality Circle, Just-In-Time, MSME, Change for Good.*

7.34 Various uses of AI : A Review

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Abstract

There is change in the pattern of working in various fields by the use of AI (Artificial Intelligence). In education it is supposed the role of teachers and academician

changes. To study the effect of AI on education some research was performed. The research was based on phenomenological study. It is a qualitative research method. In this research the opinions of participants from different sectors were examined. The results show that schools and teachers will have new products, benefits and drawbacks with the arrival of AI in education. AI helpful for teachers and academician but it also creates some problems. AI act as a back bone of all information related to science. AI in education has been used to numerous domains like physics, programming, writing essays, reading, data illustration, intelligent tutoring, tongue process, autonomous agents etc. AI in education has created powerful learning environments and positive interactive experiences for college students.

Keywords: *Powerful learning positive interactive, Quality.*

7.35 Digital Tools in Social-Emotional Learning (SEL)

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Abstract

Social-Emotional Learning (SEL) has gained global importance as education systems increasingly recognize that academic success alone is not sufficient for holistic human development. Learners need emotional awareness, empathy, resilience, collaboration, and responsible decision-making to thrive in school and in life. In recent years, digital tools have emerged as powerful supports for Social-Emotional Learning, especially in technology-rich and blended learning environments. This article explores the role of digital tools in enhancing Social-Emotional Learning in a simple, human-cantered, and practical manner. It explains key SEL concepts, examines how technology supports emotional awareness and relationship skills, and highlights commonly used digital tools with examples. The paper also discusses benefits, challenges, ethical concerns, and strategies for effective implementation. Through thoughtful integration, digital tools can strengthen SEL practices and promote emotionally safe, inclusive, and supportive learning environments.

Keywords: *Social-Emotional Learning, Digital Tools, Emotional Intelligence, Well-being, Educational Technology.*

7.36 Artificial Intelligence in Teacher Education: Opportunities, Challenges, and Future Directions

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force in education, reshaping teaching practices, assessment systems, and professional development models. In recent years, advances in machine learning, learning analytics, and generative AI have expanded AI applications beyond administrative functions to core pedagogical processes. While much of the early research on AI in education focused on student learning outcomes, growing attention is now directed toward teacher education, recognizing teachers as central agents in meaningful AI integration. This paper synthesizes existing research and conceptual perspectives to examine the role of AI in teacher education. It discusses key AI applications relevant to teacher preparation and professional development, analyzes opportunities and challenges, and proposes a conceptual framework for AI integration in teacher education. Special attention is given to ethical considerations, equity, and the emerging context of AI-supported teaching in India. The paper concludes with policy recommendations and future directions for preparing teachers to effectively and ethically engage with AI-enhanced educational environments.

Keywords: *Artificial Intelligence, Teacher Education, Professional Development, AI Literacy, Educational Technology.*

7.37 AI and the Future of Teacher Training

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Abstract

AI is shaking things up in education worldwide, changing how we teach, learn, and run schools. These new AI tools are also changing how teachers are trained. This paper shows how AI is being used in teacher training and what it means for future and current teachers. It looks at how AI can make learning more personal, help teachers improve, change testing, and improve lesson planning. It also touches on ethical issues and how schools are run. The paper says we need to change teacher training so teachers can use AI tools well and think critically about how they affect students and society. To sum it up, AI, if used carefully, can make teachers better, improve learning, and change what it means to be a teacher in today's digital age.

Keywords: *Artificial Intelligence, Teacher Training, Education Tech, Professional Improvement, Digital Teaching.*

Sub-Theme 8:
Ethics and Equity in AI-Enhanced Education

8 Ethics and Equity in AI-Enhanced Education

8.1 Artificial Intelligence for Inclusive Classrooms: Enhancing Learning for All

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Abstract

Inclusive education aims to provide equitable learning opportunities for all students, including those with diverse abilities, learning needs, and socio-cultural backgrounds. Traditional approaches to inclusive classrooms often place heavy demands on teachers, who must differentiate instruction, provide timely feedback, and engage students with varying learning levels simultaneously. Artificial Intelligence (AI) offers innovative solutions to address these challenges by supporting personalized learning, adaptive assessment, and real-time feedback. This paper explores the implementation of free AI toolssuch as Khan Academy Kids, DreamBox Learning, Microsoft Immersive Reader, Quill.org, and Quizizzto enhance inclusivity in classroom settings. These tools allow teachers to tailor content to individual student needs, provide immediate support for struggling learners, and track engagement and performance over time. A mixed-methods research design is proposed, combining quantitative assessment of student performance with qualitative feedback from teachers and learners. The study investigates the impact of AI-supported instruction on academic outcomes, student participation, and teacher effectiveness, as well as teachers perceptions of usability and challenges. Expected outcomes include improved student engagement, higher learning gains, more effective differentiation, and positive teacher experiences with AI tools. The paper also discusses practical considerations for implementation, including digital access, teacher training, and ethical concerns. By leveraging accessible and cost-free AI technologies, this research highlights how inclusive classrooms can become more dynamic, equitable, and responsive to diverse learner needs, providing a model for scalable and sustainable AI integration in education.

Keywords: *Inclusive Education, Artificial Intelligence, Adaptive Learning, Free AI Tools, Teacher Effectiveness, Personalized Learning.*

8.2 Algorithms with a Conscience: Ethics and Equity in AI-Driven Education

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Abstract

The increasing use of Artificial Intelligence (AI) across educational contexts is reshaping how knowledge is delivered, assessed, and experienced by learners. AI-enabled applications such as personalized learning systems, automated feedback tools, and predictive analytics have the potential to improve learning efficiency and support differentiated instruction. However, the growing dependence on algorithmic systems in education also introduces complex ethical and equity-related challenges that cannot be overlooked. This paper critically explores the intersection of ethics and equity in AI-enhanced education, arguing that technological innovation must be guided by strong normative and social considerations. While AI systems promise objectivity and scalability, they often rely on large datasets and opaque algorithms that may reproduce existing social, economic, and cultural inequalities. Bias embedded in training data, lack of transparency in automated decision-making, and unequal access to AI-driven resources can disproportionately disadvantage learners from marginalized and under-resourced communities. Additionally, concerns related to data privacy, surveillance, and the commodification of learner data raise serious questions about student autonomy and consent. The paper emphasizes the importance of adopting a human-centred approach to AI integration in education, where ethical responsibility, inclusivity, and fairness are central design principles rather than afterthoughts. It highlights the role of educators, institutions, and policymakers in ensuring that AI tools complement pedagogical goals instead of replacing professional judgment. Building teacher capacity, promoting algorithmic literacy, and establishing ethical governance mechanisms are identified as essential steps toward responsible implementation. By foregrounding equity and ethical accountability, this study contributes to ongoing debates on responsible AI in education and advocates for practices that ensure AI technologies act as instruments of educational inclusion, empowerment, and social justice rather than mechanisms of exclusion.

Keywords: *Artificial Intelligence in Education, Ethical Governance, Educational Equity, Algorithmic Accountability, Data Ethics and Inclusive Learning.*

8.3 Artificial Intelligence and Future of Teacher Education

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Abstract

The rapid advancement of Artificial Intelligence (AI) has significantly influenced almost every sector of society, with education being one of the most profoundly impacted domains. AI-enabled education includes a wide range of applications such as intelligent tutoring systems, adaptive learning platforms, automated assessment tools, learning analytics, chatbots, and virtual learning assistants. These technologies promise personalized learning experiences, improved instructional efficiency, enhanced assessment practices, and data-driven educational decision-making. At the same time, the integration of AI into education raises critical ethical and equity-related concerns that demand careful academic attention. Issues such as data privacy, surveillance, algorithmic bias, lack of transparency, unequal access to technology, and exclusion of marginalized learners challenge the foundational values of fairness, justice, and inclusivity in education.This conceptual paper critically examines the concepts of ethics and equity in AI-enabled education. It explores the philosophical foundations of ethical and equitable practices, explains their relevance in contemporary educational settings, and highlights the urgent need to integrate these principles into AI-based teachinglearning processes. The paper further identifies major challenges in ensuring ethical and equitable AI use and proposes remedial measures to promote responsible, inclusive, and human-centered AI in education. It argues that embedding ethics and equity at every stage of AI design, implementation, and evaluation is essential for sustainable educational development and social justice in the digital age.

Keywords: *Artificial Intelligence; Ethics; Equity; AI-enabled Education; Inclusive TeachingLearning.*

8.4 Artificial Intelligence in Teacher Education and compliance with the Digital Personal Data Protection Act, 2023: Legal and Ethical Challenges

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Abstract

The growing use of Artificial Intelligence (AI) in teacher training is changing how teachers are trained, how they are tested, how they are supervised, and how schools are run. Pre-service and in-service teacher education programs increasingly include AI-powered learning management systems, adaptive assessment tools, virtual teaching simulations, and feedback systems based on analytics. These technologies handle a lot of personal information about teacher trainees, faculty members, and academic administrators, which raises big questions about data privacy, consent, openness, and ethical governance. In India, these issues are even more important now that the Digital Personal Data Protection Act, 2023 (DPDP Act) has been passed. This law sets out rules for how digital personal data can be processed.

This study looks at the legal and moral issues surrounding the use of AI in teacher education institutes, with an emphasis on following the DPDP Act, 2023. It examines teacher education institutions as data fiduciaries and teacher trainees as data principals, emphasizing the legal ramifications of AI-driven learner profiling, automated assessment, continuous monitoring, and data analytics in educational settings. The study further examines ethical dilemmas, including algorithmic bias in assessment, excessive digital surveillance, and the possible erosion of human-centered pedagogy in teacher training programs.

Keywords: *Artificial Intelligence, Teacher Education, Digital Personal Data Protection Act 2023, Data Privacy, Ethics in Education, AI Governance.*

8.5 Artificial Intelligence in Teacher Education: Balancing Technology with Human Values

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Abstract

Artificial Intelligence has emerged as a powerful transformative force in the field of education, influencing teaching practices, learning environments and institutional functioning. Teacher education, which plays an important role in shaping the quality and character of future teachers, is increasingly engaging with Artificial Intelligence based tools and systems. While Artificial Intelligence offers unlimited possibilities in terms of personalised learning, intelligent assessment, professional development and data based decision making, it simultaneously raises serious concerns related to ethics, equity, emotional intelligence and the human dimension of teaching. Teaching is not merely a technical activity but a moral and social responsibility rooted in values, empathy and human relationships. This paper critically examines the role of Artificial Intelligence in teacher education with special emphasis on the need to balance technological advancement with human values. It explores conceptual foundations, emerging applications, ethical challenges and pedagogical implications of Artificial Intelligence in teacher preparation programmes. Drawing upon contemporary literature, policy documents and the Indian educational context, the study argues that Artificial Intelligence should be integrated into teacher education as a supportive tool rather than a replacement for human judgment and professional autonomy. The paper concludes by advocating a value oriented, inclusive and ethically grounded approach to Artificial Intelligence integration in teacher education to ensure holistic teacher development in the digital age.

Keywords: *Artificial Intelligence, Teacher Education, Human Values, Ethics in Education, Educational Technology, Professional Development.*

8.6 Artificial IntelligenceEnabled E-Learning Accessibility for Students with Visual Impairment: Implications for Teacher Education

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Abstract

The world of e-learning has transformed due to the artificial intelligence (AI) technologies that provide new horizons of inclusive education. In the case people with visual impairment, AI-powered applications like screen readers, voice athletes, and content heat engines can fill existing accessibility disparities. The topic of this paper is the conceptual and practical aspects of AI-induced accessibility in e-learning, particularly when it comes to teacher education. Based on current literature and theories, the paper establishes opportunities and challenges of incorporating AI in visually impaired learners. It proposes that teacher education programs should change to include digital accessibility training and ethical awareness, which would prepare teachers to responsibly and inclusively use AI. The discussion is based on the world knowledge and Indian education realities.

Keywords: *Artificial Intelligence, Visual impairment, E-learning accessibility, Teacher education, Inclusive Pedagogy, Screen readers, voice assistants, Universal design of learning.*

8.7 Building Digital Proficiency in Teacher Education: Merge Digital Learning, Pedagogy and Ethics for 21st Century Teaching

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Abstract

In the present digital era, enhancing digital and skill based education is very essential for promotion of efficient teaching, integrated education and continuous professional development. This paper investigates the importance of technological proficiency, pedagogical skills and moral understanding in teacher education programs. Digital proficiency widens basic technological literacy and incorporates the ability to choose, use and evaluate digital tools for improving teaching learning process, examination patterns, students engagement and students collaboration. This paper will also examine role of teacher educational institutions to encourage digital teaching methods through systematic, experiential learning and continuous professional development training. Focus is given to use of digital resources, online platforms, learning platform and other assistive techniques that support learners from diversified backgrounds and promotes inclusive education. This paper also highlights the ethical dimensions of techno based learning, such as digital citizenship, confidentiality, cyber security and use of digital technology in educational settings. Further this paper also examines position of 21st century skills with contemporary educational reforms, stresses on adaptability, innovations and constructive thinking among teachers. By improving digital competency it enable teachers to connect the technological gaps, promote blended and digital learning, to respond effectively and change educational demands. This paper concludes that comprehensive integration of digital competency plays an important role in teacher education for preparing them as innovative, reflective and flexible teachers in the 21st century education system.

Keywords: *Digital Proficiency, Teacher Education, Digital Pedagogy and Inclusive Education.*

8.8 Cyber safety and security in the use of digital resources: understanding of prospective teachers

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Abstract

The rapid integration of digital resources in classrooms underscores the need for prospective teachers to possess a robust understanding of cyber safety and security. This study examines the theoretical foundations that shape preservice teachers knowledge, attitudes, and pedagogical approaches to protecting themselves and their students in online learning environments. Employing a surveybased methodology with a sample of 80 prospective teacher , the research investigates how educational theory, institutional policies, and prior exposure to digital tools influence perceptions of cyber threats, data privacy, and responsible digital citizenship. By situating the findings within the broader literature on technologyenhanced learning and professional ethics, the paper highlights gaps in current teachereducation curricula and proposes a framework for embedding cyber safety competencies within preservice programs. The discussion emphasizes the importance of aligning theoretical instruction with practical, contextspecific training to prepare ethically aware educators capable of fostering secure digital learning spaces .

Keywords: *Educational theory, contextspecific training, rapid integration digital resources.*

8.9 Digital and Ethical Preparedness in Teacher Education: A Document Analysis

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Abstract

The increasing integration of artificial intelligence (AI) and digital technologies in education has emphasized the need for teachers who are digitally competent and ethically responsible. Teacher education programmes need to equip future educators with not only skills but also the capacity to engage critically and ethically with emerging technologies. However, questions remain vague regarding the extent to which existing teacher education curricula adequately address these evolving competencies. The proposed study aims to conduct a document analysis to study how digital competence and the ethical dimensions of technology use are represented within teacher education frameworks. The analysis will focus on four key documents: the Bachelor of Education syllabus of the University of Delhi, the NEP 2020, the National Educational Technology Forum (NETF), and the UNESCO ICT Competency Framework for Teachers. With the help of internationally recognized indicators, the study aims to analyze the alignment between curriculum content, national policy directives, and global competency standards. Specifically, in the context of AI-related competencies, this includes ethical considerations such as academic integrity and responsible use of technology. The proposed study seeks to identify potential gaps and areas for strengthening teacher education curricula to better prepare future teachers. The findings are expected to contribute to ongoing discussions on curriculum reform, digital competence development, and ethical integration of AI in teacher education.

Keywords: *Artificial intelligence (AI); Digital competencies; NEP 2020; NETF; B.Ed. Curriculum; ICT Competency Framework.*

8.10 Digital Competence and Ethical Use of Artificial Intelligence in Teaching and Learning

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Abstract

The rapid integration of Artificial Intelligence (AI) into education has transformed teaching and learning processes, creating new opportunities as well as ethical challenges. Digital competence has emerged as a foundational requirement for teachers to effectively and responsibly use AI-driven tools in educational contexts. This paper examines the concept of digital competence and its critical role in ensuring the ethical use of AI in teaching and learning. It explores key dimensions of digital competence, ethical concerns related to AI such as data privacy, bias, transparency, and accountability, and the responsibilities of teachers in AI-supported learning environments. The paper highlights the need for integrating ethical AI literacy into teacher education programs and emphasizes continuous professional development to prepare teachers for future-ready, inclusive, and responsible digital pedagogy.

Keywords: *Digital Competence, Artificial Intelligence, Ethical AI, Teacher Education, Digital Pedagogy.*

8.11 Ethical AI Through Dharma: Applying Indian Ethical Frameworks to Responsible AI in Education

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Abstract

The rapid integration of Artificial Intelligence (AI) in education has transformed teaching, learning, and evaluation practices, yet it also raises profound ethical challenges concerning bias, accountability, and the erosion of human values. This paper

explores how the ancient Indian ethical philosophy of Dharma can provide a culturally grounded framework for developing and implementing responsible AI in education. By situating Dharma: the principle of righteous action and duty within the context of modern digital pedagogy, the study reinterprets Indian epistemological traditions to address emerging ethical dilemmas in AIenhanced learning environments. Drawing upon classical texts and contemporary interpretations, the paper constructs a comparative ethical model that contrasts Western AI ethics (fairness, autonomy, transparency) with Indian moral constructs such as Ahimsa (nonharm), Satya (truthfulness), and Seva (service). The proposed Dharmic AI Model for Education advocates for a human-centered and morally conscious use of technology in teacher education, curriculum design, and student assessment. Methodologically, this research employs a qualitative, conceptual analysis combining philosophical inquiry with policy review. The findings emphasize that embedding Dharma-based principles into AI governance and educational technology design can foster equity, empathy, and holistic learning. Ultimately, the paper argues that Indias ethical heritage offers not merely cultural insight but a globally relevant paradigm for rehumanizing artificial intelligence in education.

Keywords: *Dharma, Ethical Artificial Intelligence, Indian Knowledge System (IKS), Responsible AI, Digital Ethics.*

8.12 Ethical Implications of Artificial Intelligence in Higher Education: A Comprehensive Review of Data Privacy, Algorithmic Bias, and Inclusivity

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Abstract

This comprehensive review investigates the ethical implications of artificial intelligence (AI) integration in higher education, focusing on data privacy, algorithmic bias, and inclusivity. The study begins by contextualizing the rapid adoption of AI technologies within academic institutions and the urgent need to address emerging ethical challenges. By employing systematic review of scholarly literature and relevant case studies, the analysis focuses on AI applications in learning management systems, student admissions, and assessment processes. Findings highlight critical concerns regarding student data privacy, emphasizing vulnerabilities to unauthorized access and potential misuse. Furthermore, the review identifies pervasive algorithmic biases that disproportionately affect marginalized populations, including disparities related to race, gender, and socioeconomic status, thereby compromising fairness and equity. Inclusivity issues are also examined, revealing that AI systems may unintentionally exclude underrepresented groups due to biased training datasets and flawed design. The findings underscore the necessity for transparent AI governance, comprehensive ethical guidelines, and multi-stakeholder collaboration to mitigate these risks effectively. The review concludes by advocating for responsible AI deployment strategies that prioritize equitable access, robust data protection, and inclusivity in higher education. These insights aim to guide policymakers, educators, and developers in leveraging AIs transformative potential while upholding rigorous ethical standards.

Keywords: *Artificial Intelligence, Higher Education, Ethical Implications, Data Privacy, Algorithmic Bias; Inclusivity.*

8.13 Ethics and Equity in AI-Enhanced Education

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Abstract

Artificial Intelligence has revolutionized our static educational atmosphere with prompt generation of TLM, co-tutoring, and evaluation of students. Such advancements call for a critical adjudgment of the evolving student-teacher relationship, and the ethical as well as equitable aspects of the ecosystem. This paper investigates the digital bias, and thereby, socio-economic societal divide generated by AI in education. If it remains unaddressed, AI could further deepen the societal chasms and alienate the new marginalized. It also analyses the closed nature of AI-enabled educational tools which disables the access of the disadvantaged sections of the society. In addition,

this paper explores ethical dimensions of this system particularly data privacy, and informed consent. This study proposes that the solution lies in multi-layered governance model. It underscores that student agency and systemic inclusivity need to be considered for ensuring successful deployment of AI in education.

Keywords: *Educational Equity, Data Privacy, Digital Divide, Ethical Governance, Systemic Inclusivity.*

8.14 Exploring the potential of Artificial Intelligence in Inclusive Education: In the Indian Schools Context

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Abstract

Inclusive education is a key priority of the Indian education system, aiming to ensure equitable learning opportunities for students from diverse need or special need and marginalized backgrounds. With the rapid advancement of Artificial Intelligence (AI), new possibilities have emerged to address learning barriers and promote inclusive classroom practices. This study examines the role of AI in fostering inclusive education in Indian school settings by enhancing accessibility, personalized learning, and student engagement. The research focuses on AI-based tools such as adaptive learning platforms, intelligent tutoring systems, assistive technologies, and learning analytics, and their impact on academic achievement and peer inclusion. The study also investigates challenges related to infrastructure, digital divide, teacher preparedness, and ethical concerns in the Indian context. The study aligns with the goals of equitable and quality education as envisioned in national and global education frameworks. The digital or AI tools facilities given by UNESCO for students with special need are also discussed, and an attempt is made to highlight their potential for use in Indian schools.

Keywords: *Artificial Intelligence, Inclusive Education, Marginalized and special Students, Indian School Education.*

8.15 Future of Teacher Education in the Era of Artificial Intelligence

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Abstract

AI is a branch of modern computer science to revolutionize the education system. In the search for a more sustainable feature role of AI has be come increasing day by day. AI serves as a powerful tool for sustainable development. AI in a responsible an ethical manner to harness the full potential of AI to create a brighter future for teacher education. AI is proofing to be a revolution by making learning more personsilzed, efficient and inclusive. AI also enhances the engagement of learners through Immense technological way. Artificial Intelligence offers innovative opportunities for personalized learning in teacher education programmes. AI-driven platforms can analyze learning patterns, competencies, and needs of student-teachers, enabling customized training pathways and self-paced professional development. Such systems support differentiated instruction, helping prospective teachers acquire pedagogical, technological, and content knowledge more effectively. Virtual classrooms, intelligent tutoring systems, and simulation-based training provide realistic teaching experiences, allowing teacher trainees to practice classroom management, lesson delivery, and student engagement in controlled digital environments. Assessment and evaluation in teacher education are also being reshaped by AI technologies. Automated assessment tools can provide immediate, data-driven feedback on lesson plans, teaching performances, and reflective practices. Learning analytics assist teacher educators in identifying strengths and gaps in trainee performance, enabling timely interventions and continuous improvement. Moreover, AI supports formative assessment practices that emphasize competency-based learning rather than rote memorization, aligning with contemporary educational reforms such as outcome-based education. The future of teacher education in the AI era emphasizes the development of new competencies among teachers. Digital literacy, AI literacy, critical thinking, ethical awareness, and data-informed decision-making are becoming essential professional skills. Teacher education programmes must therefore include training on the ethical

use of AI, data privacy, bias in algorithms, and responsible technology integration. This ensures that future teachers can use AI tools thoughtfully while maintaining human values, empathy, and inclusivity in education. Despite its potential, the integration of AI in teacher education presents several challenges. Issues such as unequal access to technology, lack of infrastructure, resistance to change, and insufficient professional training may hinder effective implementation, particularly in developing countries. Additionally, ethical concerns related to surveillance, data security, and over-dependence on technology require careful policy planning and regulatory frameworks. This paper has the potential on AI in transform teacher education, exploring its benefits challenge and an ethical consideration of AI integration in teacher education. AI in teacher education is not about humanoid robots as teacher educator to replace human teacher. But is about using computer intelligence to help teacher educator and learner for making the education system better and effective.

Keywords: *AI, Teacher Education, Pedagogical Approaches.*

8.16 Integrating AI in POSH Act Implementation: Ensuring Safe Learning Environments in Teacher Education

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Abstract

The Sexual Harassment of Women at Workplace (POSH) Act, 2013, establishes a legal framework to prevent and address sexual harassment in workplaces, including educational institutions. In teacher education, ensuring a safe and supportive environment is critical for trainee teachers, particularly in Urdu-medium and other specialized institutions. This paper explores the transformative potential of Artificial Intelligence (AI) in strengthening the implementation of the POSH Act within teacher education settings. AI can facilitate timely reporting, confidential documentation, risk assessment, and predictive analytics to identify patterns of harassment, thereby enhancing institutional accountability and compliance. Furthermore, AI-driven tools can support awareness programs, training modules, and continuous monitoring, enable proactive intervention while preserving anonymity and privacy for complainants. By integrating AI with institutional policies, educational institutions can streamline Internal Committee (IC) procedures, reduce human bias, and ensure faster resolution of complaints. The paper also examines the ethical, legal,

and technical challenges associated with AI deployment, including data protection, algorithmic bias, and adherence to legal mandates under Indian law. Through a comprehensive review of existing literature, case studies, and practical frameworks, this study demonstrates how AI can serve as both a technological aid and a policy enabler, creating safe, equitable, and efficient learning environments. The findings highlight that while AI cannot replace human judgment, its judicious integration can significantly enhance POSH Act implementation, empowering educational institutions to foster respectful and secure spaces for all educators and students.

Keywords: *POSH Act, Sexual Harassment, Artificial Intelligence, Teacher Education, Internal Committee, Data Privacy, Safe Learning Environment.*

8.17 Integration of Artificial Intelligence for Promoting Inclusive Education Practices in Schools

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Abstract

The Integration of Artificial Intelligence in schools has created new opportunities for supporting inclusive education practices. These practices focus on meeting the diverse physical, social and psychological needs of learners. Inclusive Education promote equitable access, participation and achievement for all learners including those with disabilities, learning difficulties, socio-emotional needs and diverse socio-cultural backgrounds. In this context, AI and digital tools offer innovative support system to enhance inclusive pedagogical approaches and significantly help create responsive and inclusive learning environments. AI-driven digital tools, including adaptive learning platforms, intelligent tutoring systems, assistive technologies, speech-to-text applications, learning analytics, facilitate personalized instructions by addressing individual learning styles, abilities and pacing (Holmes et al, 2019). These technologies are especially effective in promoting physical inclusion for learners with visual, auditory or mobility impairments and in enhancing psychological inclusion through individualized feedback, emotional monitoring and confidence building and social inclusion

through the use of collaborative and interactive learning environments. Despite technological advancements, teachers remain essential to successfully integrating AI into inclusive education, who serves as facilitators by creating inclusive learning opportunities, interpreting insights from AI and fostering empathetic and supporting classroom environments (Luckin et al., 2016). In addition to educators, other key stakeholders including school administrators, parents, policymakers and students are instrumental in promoting effective inclusive practices. Administrators facilitate the provision of infrastructure and the implementation of policies, parents foster inclusive mindset within the home environment, policymaker ensures equity-driven frameworks and students themselves are active participants in inclusive educational communities (UNESCO,2021). This paper discusses, the successful integration of AI for inclusive education practices which requires a balanced approach where digital tools complement inclusive pedagogy and teacher expertise, active stakeholder collaboration which is crucial to ensure AI function as a supporting mechanism in fostering educational environments that are physically, socially & psychologically supportive, safe, accessible and inclusive.

Keywords: *Inclusive Education Practices,Artificial Intelligence,Learning Environment, Inclusive Pedagogy.*

8.18 Online Privacy Literacy as a Core Competence for AI-Enabled Teacher Education: Evidence from B.Ed. Students in India under NEP 2020

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Abstract

The need to adopt Artificial Intelligence (AI) in an educational context has accelerated issues surrounding data management, the ethical use of technology, and privacy in the life of students. The National Education Policy (NEP) 2020 in India is in

support of AI-enabled, human-centered digital learning, but the readiness of future educators to address online privacy and data ethics is not studied thoroughly. This paper considers the online privacy literacy as a fundamental AI-enabled teacher education competency of the Bachelor of Education (B.Ed.) students. The sample of 126 B.Ed. students in government and private colleges in the urban and rural areas of Telangana was used to gather quantitative descriptive survey data. The adapted variant of the Online Privacy Literacy Scale (OPLIS) was used to collect data but it was adjusted by locating and providing information within the context of the Indian legal frameworks. Analysis was done using descriptive statistics and an independent samples t-test. The results indicate that pre-service teachers have an average of 53.02% of online privacy literacy, and misconceptions concerning online privacy are widespread. There were no major differences with respect to gender or the location of the college, but students of the privately owned colleges portrayed much higher levels of misconceptions compared to those of government colleges. This is an indication that more exposure to digital technologies without formal education on ethics might strengthen misconceptions. The article presents empirical data that illustrates a dire lack of readiness on the side of teachers when it comes to responsible integration of AI. It highlights the imperative to integrate online privacy literacy and data ethics as obligatory elements of B.Ed. programs as a means of ensuring ethical, inclusive, and policy-purposeful AI use envisaged by NEP 2020.

Keywords: *Online privacy literacy, AI-based teacher education, data ethics in higher education, pre-service teachers, Artificial intelligence in higher education, digital literacy, National Education Policy 2020.*

8.19 Regulating The AI Shift: Legal Frameworks For Ethical Adoption In Indian Education

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Abstract

As artificial intelligence rapidly reshapes the Indian education system, it raises urgent questions about the legal safeguards necessary to regulate its use and prevent emerging risks. Although AI-driven toolssuch as automated assessments, adaptive learning platforms, and predictive analyticsare becoming increasingly common in classrooms, they also bring the possibility of deepening biases, compromising sensitive student data, and creating opaque decision-making systems if not governed properly. This paper evaluates the current regulatory landscape and highlights critical gaps in existing legislation, noting that frameworks like the Digital Personal Data Protection Act, 2023 offer only partial protection and do not specifically address AI use in high-stakes educational environments. Drawing inspiration from international standards, including the EU AI Acts risk-based approach, and supported by insights from educators, policymakers, and legal experts, the study proposes a comprehensive regulatory structure that balances the benefits of AI with essential safeguards such as strict data privacy norms, transparency requirements, independent audits, liability mechanisms, and continuous monitoring. The model emphasises informed consent, secure data management, bias testing, algorithmic explainability, clear chains of accountability, and ongoing evaluation of AIs impact on equity and learning outcomes. By outlining this legal roadmap, the paper aims to equip regulators, educational institutions, and technology developers with practical strategies to integrate AI ethically and responsibly. Ultimately, it argues that India must update its legal systems at the same pace as technological change to ensure that the adoption of AI enhances academic access and quality without compromising rights or fairness, thereby fostering a policy environment that protects learners and educators while encouraging innovation.

Keywords: *Artificial Intelligence, Education Law, Data Protection, Algorithmic Accountability, Regulatory Framework.*

8.20 Role of Artificial Intelligence in Special Teacher Education Preparation Programs

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Abstract

Introduction-The rapid integration of artificial intelligence. Integrating Artificial Intelligence in special education preparation is not just about adopting new tools, but fundamentally rethinking how teachers can be prepared to support and cater to the special needs of students. Objectives-This paper aims to highlight the foundations for applying AI tools and their importance to support ongoing practices in teacher education programs in special education. Methodology- Meta-analysis and synthesis of empirical research conducted previously have been reviewed thoroughly,and interpretations have been drawn.AI can be effectively used for the training of children with disabilities; hence, training programs designed for prospective special education teachers should be AI embedded so that adequate professional training can help them to cater to the needs of children with disabilities. Findings-Some emerging technologies, like mobile learning, learning analytics, gamification, and intelligent teaching assistants, can be used effectively. AI tools are not only technologically innovative but also pedagogically inclusive. Conclusion-By embracing the potential of AI, one can enhance the educational experience, making it more inclusive, adaptive to the needs of all learners, and effective. Overall, while there is an awareness of the potential value of AI in special education preparation programs, its real-world application remains in the primitive stage.

Keywords: *foundations, gamification, pedagogically, inclusive, primitive.*

8.21 Shaping the Future of Learning Through Ethical AI and Teacher Empowerment

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Abstract

Artificial intelligence (AI) in the classroom has the potential to fundamentally alter teaching and learning. However, its successful and moral implementation depends

on instructors' expertise, skills and self-assurance. This paper examines the necessity of empowering educators to use AI in an ethical manner, emphasizing crucial strategies and real-world implications. As AI-driven solutions like intelligent tutoring systems, automated feedback systems and adaptive learning platforms expand educators face both opportunities and obstacles. They must evaluate the impact of these technologies on student learning, equity, professional ethics and privacy in addition to putting them into practice. The first step toward empowerment is comprehensive professional development that includes both technical training and ethical literacy. Instructors need to understand the fundamentals of algorithmic bias, data privacy, artificial intelligence and pedagogical applications that support individualized instruction. Furthermore, ethical considerations like justice, transparency and accountability must be included in training to ensure that educators can make knowledgeable decisions about the application of AI. Collaborative learning communities and ongoing support networks enable educators to share best practices and solve challenges in real classroom environments.Evaluation systems should assess both the educational efficacy and ethical implications of AI technology in order to guide for future development. In the end, enabling educators to use AI in a morally sound and effective way necessitates a societal shift in educational systems rather than only a technological undertaking. Funding is required for reflective practice, teacher agency and ethical stewardship. Teachers will be able to employ AI to enhance student results, uphold professional standards and promote equitable and pertinent learning experiences with this kind of empowerment.

Keywords: *Shaping the Future of Learning, Ethical AI and Teacher Empowerment.*

8.22 Teaching Ethics to Machines: The Moral Mandate of Teacher Educators in the AI Era

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Abstract

The rapid integration of Artificial Intelligence (AI) into education has intensified ethical concerns related to bias, accountability, surveillance, and professional autonomy. While policy frameworks increasingly emphasize ethical AI, limited attention has been paid to the role of teacher educators in shaping ethical orientations toward

AI within teacher preparation programs. This study examines the moral mandate of teacher educators in the AI era, arguing that ethical AI in education is fundamentally dependent on ethically grounded teacher education.
Adopting a qualitative, secondary-data-based research design, the study synthesizes evidence from international surveys, policy reports, and peer-reviewed research published between 2015 and 2024. Findings reveal a significant gap between ethical awareness and pedagogical preparedness among teacher educators. Empirical data indicate that fewer than 40% of teacher educators globally have received formal training in AI ethics, despite widespread recognition of its importance. Institutions with structured ethics curricula demonstrate significantly higher integration of machine ethics, and educator familiarity with AI strongly correlates with willingness to engage in ethical discussions. The study concludes that teacher educators function as moral intermediaries who shape how future teachers interpret and govern AI in educational contexts. Ethical AI cannot be realized through technological design alone; it requires institutionalized ethical pedagogy within teacher education. The paper offers policy, pedagogical, and institutional recommendations to strengthen ethical capacity-building and ensure that AI serves democratic, inclusive, and human-centered educational goals.

Keywords: *Artificial Intelligence in Education; Machine Ethics; Teacher Education; Educational Ethics; Algorithmic Bias; Professional Responsibility.*

8.23 AI and Teacher Education in the Global South: Ethical Challenges and Equity Opportunities

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Abstract

The accelerated assimilation of Artificial Intelligence (AI) into pedagogical ecosystems has irrevocably reconfigured teacher education paradigms across the Global South, engendering transformative affordances alongside intractable ethical quandaries. AI-augmented platforms herald augmented instructional efficacy, bespoke learning trajectories, and empirically informed didactic scaffolding; however, their entrenchment within asymmetrically structured educational milieus precipitates acute apprehensions concerning distributive equity, pedagogical autonomy, and democratic oversight. Employing a critical political economy and techno-ethics lens, this inquiry dissects AI's ramifications for teacher education in the Global South, scrutinizing

whether algorithmic apparatuses propel inclusive professional capacitation or perpetuate entrenched socio-economic, digital, and epistemic stratifications. Emphasis is accorded to algorithmic predispositions, pervasive surveillance, educator deskilling, and the supplantation of indigenous didactic epistemologies by hegemonic, globally disseminated AI architectures. This paper contends that absent rigorous ethical architectures, participatory stewardship paradigms, and contextually attuned leadership praxis, AI imperils the transmutation of teacher education into a depoliticized technocratic venture, severed from social justice imperatives and professional agency. Conversely, judiciously steered AI deployment unveils equitable vistas: ameliorated training accessibility in peripheral locales, adaptive accommodations for heterogeneous learner profiles, and fortified inter-professional synergy. Ultimately, this paper propels a normatively anchored, ethically fortified, and territorially responsive AI governance paradigm that repositions educators as autonomous protagonists rather than technologized adjuncts, thereby harmonizing algorithmic innovation with the sine qua non of pedagogical equity in the Global South.

Keywords: *Artificial Intelligence in Education, Teacher Education, Global South, Ethical AI,Educational Equity.*

8.24 Ethics and Equity in Artificial IntelligenceEnhanced Education in Teacher Education

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Abstract

The integration of Artificial Intelligence (AI) into education has significantly reshaped teaching and learning processes, with growing implications for teacher education programs. AI-enhanced tools such as adaptive learning systems, automated assessment, and learning analytics offer opportunities to personalize instruction, improve pedagogical effectiveness, and support data-informed decision-making. However, alongside these benefits, the adoption of AI raises critical ethical and equity-related concerns that demand careful examination, particularly in the context of preparing future teachers. This study explores the ethical and equity dimensions of

AI-enhanced education within teacher education programs, focusing on issues of data privacy, algorithmic bias, transparency, professional autonomy, and access to digital resources. The paper argues that unequal access to technology, limited digital literacy, and culturally biased AI systems can exacerbate existing educational inequalities if left unaddressed. Furthermore, ethical challenges such as opaque decision-making processes and over-reliance on automated systems may undermine human judgment and professional responsibility in teaching. Through a conceptual and critical analysis of existing literature, this research highlights the need for embedding AI ethics, equity, and digital citizenship into teacher education curricula. It emphasizes the role of teacher educators in fostering critical awareness and responsible use of AI technologies. The study concludes that ethically grounded and equity-oriented integration of AI is essential for ensuring inclusive, fair, and socially just teacher education, ultimately enabling future teachers to use AI as a supportive tool rather than a determinant of educational outcomes.

Keywords: *Artificial Intelligence in Education,Teacher Education,Ethics in Educational Technology,Equity and Inclusion,AI-Enhanced Learning.*

8.25 Ethical Challenges of Using Artificial Intelligence in Education: A Critical Analysis

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Abstract

Artificial Intelligence (AI) is increasingly being integrated into education systems across the world. From adaptive learning platforms and virtual assistants to automated assessment tools, AI promises personalization, efficiency, and expanded access to quality education. However, these advancements bring significant ethical challenges. This paper critically examines the ethical dilemmas associated with the use of AI in education, focusing on issues such as data privacy, algorithmic bias, transparency, accountability, academic integrity, teacherstudent relationships, and digital equity. The paper also explores the theoretical underpinnings of these challenges through utilitarian, deontological, and virtue ethics frameworks. Global perspectives including UNESCO guidelines, the EU AI Act, and policy measures in India

are discussed to contextualize the ethical debates. Finally, the paper offers policy recommendations to ensure that AI adoption in education is guided by principles of fairness, inclusivity, and human dignity.

Keywords: *Artificial Intelligence, Education, Ethics, Privacy, Bias, Academic Integrity, Policy.*

8.26 The Digital Age of Education and the Revival of Moral Values

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Abstract

The digital age has fundamentally transformed the education system across the world. The integration of digital technologies such as the internet, artificial intelligence, virtual classrooms, and online learning platforms has reshaped the ways in which knowledge is accessed, delivered, and evaluated. While these technological advancements have enhanced efficiency, accessibility, and innovation in education, they have also raised serious concerns regarding the decline of moral values and ethical behavior among learners. Issues such as academic dishonesty, cyberbullying, digital addiction, loss of empathy, and erosion of social responsibility are increasingly evident in digital learning environments. This paper examines the impact of the digital age on education and emphasizes the urgent need for the revival of moral values within contemporary educational systems. It explores the relationship between technology and moral development, identifies ethical challenges associated with digital education, and discusses strategies for integrating moral and value-based education

into digital learning frameworks. The paper argues that digital education and moral values are not contradictory but complementary when guided by ethical principles, responsible policies, and value-oriented pedagogy. Ultimately, it advocates for a balanced and holistic approach to education that nurtures intellectual growth alongside moral and ethical development.

Keywords: *Digital age, education, moral values, ethics, digital citizenship, value-based education.*

8.27 Artificial Intelligence and the Future of Teacher Education: Opportunities, Challenges, and Ethical Implications

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Abstract

Artificial Intelligence (AI) is increasingly influencing the structure and delivery of education, with significant implications for teacher education. As AI-driven technologies such as adaptive learning systems, automated assessment tools, learning analytics, and generative AI become more prevalent, teacher education programs must evolve to prepare future educators for AI-enabled classrooms. This study examines the opportunities, challenges, and ethical implications associated with the integration of Artificial Intelligence in teacher education. The study adopts a descriptive research design and a quantitative approach, collecting data from 150 teacher educators and pre-service teachers selected through simple random sampling from teacher education institutions in Dakshina Kannada district. Data were gathered using a structured questionnaire focusing on awareness of AI, perceived benefits, implementation challenges, ethical concerns, and readiness to adopt AI-based tools. The findings reveal generally positive perceptions toward AI in teacher education, alongside significant challenges related to infrastructure, training, and ethical governance. The study emphasizes the need for structured training, institutional readiness, and ethical guidelines to ensure responsible and effective AI integration in teacher education

programs.

Keywords: *Artificial Intelligence; Teacher Education; Educational Technology; Ethics in Education; Future of Teaching.*

8.28 Human Rights 2.0: Safeguarding Privacy, Identity And Freedom In The Age of Artificial Intelligence

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Abstract

The rapid integration of Artificial Intelligence (AI) into governance, commerce, security systems of humans, and also, everyday digital interactions have fundamentally reshaped the human rights Environment. This project, Human Rights 2.0: The Fight for Privacy, Identity, and Freedom in the AI World, which challenges traditional human rights frameworks that were developed before the digital era. AI's extensive data processing powers raise profound threats to privacy, as algorithms collect, interpret, and infer personal information beyond the control or awareness of individuals. Similarly, this project also underscores the urgent need for updated regulatory measures, algorithmic accountability mechanisms, right- based AI governance that effectively safeguards privacy, preserves the identity of the individual, and also protects human freedom and their rights in the world of increasing AI.Furthermore, AI's integration into public governance, policing, employment, and social media ecosystems has sparked new concerns about freedom, particularly freedom of expression, freedom from discrimination, and the autonomy to make independent choices without algorithmic manipulation. Issues like algorithmic bias, opaque decision pathways, and manipulative digital ecosystems challenge not only human rights but the constitutional promise of justice and equality before the law. Ultimately, these reforms are essential to safeguarding privacy, ensuring the authenticity of personal identity, and protecting individual freedom from the far-reaching influence of automated decision-making. The project argues that only through a rights-based, constitutionally anchored approach can preserve and strengthen the human rights be preserved and strengthened in an increasingly intelligent AI era.

Keywords: *Algorithmic, Anchored, AI-mediated, Accountability, and Predictive.*

8.29 Ethics and Equity in AI-Enhanced Education

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Abstract

The rapid integration of Artificial Intelligence (AI) into educational systems has transformed teaching, learning, assessment, and institutional governance across the globe. AI-enhanced education promises personalized learning pathways, adaptive assessment models, intelligent tutoring systems, predictive analytics, and improved administrative efficiency. However, alongside these innovations emerge critical ethical and equity-related challenges that demand urgent scholarly and policy attention. This study examines the ethical foundations and equity implications of AI deployment in education, emphasizing fairness, accessibility, transparency, accountability, and social justice. The abstract explores how algorithmic decision-making, if inadequately designed or regulated, can reinforce existing social inequalities related to socioeconomic status, gender, language, disability, and geographic location. Bias embedded in training data, opaque algorithms, and unequal access to digital infrastructure risk marginalizing already disadvantaged learners. In many contexts, students from rural, low-income, and underrepresented communities face limited access to AI-driven tools, deepening the digital divide rather than bridging it. Thus, AI in education may inadvertently privilege technologically advanced institutions and populations unless equity-centered frameworks are adopted. Ethical concerns such as data privacy, surveillance, informed consent, academic autonomy, and the commercialization of learner data form another central dimension of this inquiry. The extensive collection and analysis of student data through learning analytics raise questions about ownership, consent, and long-term psychological impacts. Furthermore, the replacement of human pedagogical judgment with automated systems challenges traditional notions of teacher authority, learner agency, and moral responsibility in education. This abstract argues that ethical AI in education must be grounded in human-centered design principles that prioritize inclusivity, transparency, explainability, and participatory governance. Policy frameworks should ensure algorithmic accountability, bias audits, equitable access to digital resources, and teacher training in ethical AI literacy. The role of governments, educational institutions, technology developers, and educators is crucial in creating regulatory ecosystems that balance innovation with social responsibility.

Keywords: *Equity,Ethical,AI,Algorithmic,Bias,Digital,Divide,Data,Privacy,Inclusive Learning ,Learning Analytics, Technology Ethics ,Human-Centered Education.*

8.30 Emerging Contemporary Issues of AI: Challenges and Opportunities

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सारांश: कृत्रिम बुद्धिमत्ता (एआई) की व्यापक स्वीकृति और समावेश ने देश की अर्थव्यवस्था और मानव जीवन को महत्वपूर्ण रूप से प्रभावित किया है। एआई का उपयोग उद्योगों, सरकार और यहाँ तक कि शैक्षणिक संस्थानों में ऐसे निर्णय लेने के लिए किया जाता है जिनका जीवन पर सीधा और संभावित प्रभाव पड़ता है। एआई तकनीक का एकीकरण बुद्धिमान विनिर्माण और भविष्य की स्मार्ट फैक्ट्री विकसित करने में एक आवश्यक कदम है। कृत्रिम बुद्धिमत्ता के साथ व्यावसायिक चुनौतियों पर निदान सटीकता और स्क्रीनिंग समय की बचत में सुधार संभव है। यह शोध विभिन्न क्षेत्रों में उपयोग की जाने वाली बेहतर एआई तकनीकों की पहचान करने, एआई तकनीकों को समझने और उन्हें कैसे लागू किया जाता है, और एआई के अवसरों और चुनौतियों को निर्धारित करने में मदद करता है। विभिन्न क्षेत्रों में एआई की तैनाती उत्पादकों और उपभोक्ताओं दोनों को प्रभावित करती है। प्रौद्योगिकी के डर के कारण कर्मचारियों के प्रतिरोध को कम करने के लिए, नियोक्ताओं को उन्हें AI अनुप्रयोगों के उपयोग के बारे में जागरूक करना चाहिए। डेटा चुनौतियों में से एक इनपुट डेटा की गुणवत्ता की कमी है। डेटा साझा करना और विश्वास की कमी नैतिक चुनौतियाँ हैं। पूरी दुनिया में आर्टिफिशियल इंटेलिजेंस को अपनाने में चुनौतियाँ हैं। आर्टिफिशियल इंटेलिजेंस-आधारित स्टार्ट-अप को अधिक उपयुक्त बुनियादी ढाँचे की आवश्यकता के कारण चुनौतियों का सामना करना पड़ता है। आर्टिफिशियल इंटेलिजेंस का बढ़ता उपयोग संभावित रूप से मानव अस्तित्व के कई पहलुओं को बदल सकता है।

मुख्य शब्द: आर्टिफिशियल इंटेलिजेंस, अज्ञात का डर, ज्ञान की कमी, मजबूती, विश्वास की कमी

परिचय

8.31 Artificial Intelligence and the Future of Teacher Education: An Exploration of Possibilities and Challenges

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आज के डिजिटल क्रांति के युग में, कृत्रिम बुद्धिमत्ता (Artificial Intelligence - AI) शिक्षा के सभी आयामों पर अपना प्रभाव डाल रही है। ऐसे में शिक्षक शिक्षा, जो भावी शिक्षकों के निर्माण की आधारशिला है, भी इसके प्रभाव से अछूती नहीं है। कृत्रिम बुद्धिमत्ता शिक्षक शिक्षा के भविष्य को नई दिशा देने के साथ साथ यह प्रशिक्षण को अधिक वैज्ञानिक, प्रभावी और शिक्षार्थी-केंद्रित बनाती है। यद्यपि इसमें कई चुनौतियाँ हैं, फिर भी उचित नीतियाँ, प्रशिक्षण और नैतिक दृष्टिकोण अपनाकर AI को शिक्षक शिक्षा का सशक्त माध्यम बनाया जा सकता है। इतना ही नहीं यह शिक्षकों के प्रशिक्षण, मूल्यांकन वृत्तिगत एवं व्यक्तिगत विकास के अवसर प्रदान करने में महत्वपूर्ण भूमिका निभा रहा है। शिक्षकों को अधिक प्रभावी ढंग से छात्रों के साथ संवाद करने में सहायता के साथ ही शिक्षा के प्रसार को भी सशक्त करता है। अध्ययन का उद्देश्य यह स्पष्ट करना है कि कृत्रिम बुद्धिमत्ता शिक्षक को प्रतिस्थापित नहीं करती, बल्कि उसे अधिक प्रभावी, सशक्त एवं नवाचारी बनाती है। प्रस्तुत शोध आलेख शिक्षक शिक्षा में कृत्रिम बुद्धिमत्ता की भूमिका, संभावनाओं, चुनौतियों तथा भविष्य की दिशा का विश्लेषण प्रस्तुत करता है।

संकेत शब्द (Keywords):

कृत्रिम बुद्धिमत्ता, शिक्षक शिक्षा, शैक्षिक तकनीक, शिक्षक शिक्षा का भविष्य

8.32 Ethical Foundation of Artificial Intelligence in Education

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تعلیم میں مصنوعی ذہانت کی اخلاقی بنیادیں

دورحاضرمیں مصنوعی ذہانت (Artificial Intelligence)کے تیزی سے بڑھتے ہوئے رجحان اور تعلیمی نظام میں اس کے انضمام نےتدریس وتعلم کے روایتی طریقہ کار کو نمایاں طور پر متاثر کیا ہے۔مصنوعی ذہانت پر مبنی ٹیکنالوجیز جیسے خود کار تشخیصی نظام،لرننگ انالیٹکس، جدید کلاس روم وغیرہ کی وجہ سے تعلیمی عمل زیادہ مؤثر اور شخصی نوعیت کا حامل ہوا ہے۔تاہم ان تکنیکی ترقیات کے ساتھ ساتھ تعلیم میں AIکے استعمال نےچند ایسےاہم اخلاقی سوالات کوبھی جنم دیا ہے، جن پرسنجیدگی سے غورو فکر کرنا نہایت ضروری ہے۔اخلاقیات پر توجہ دینے کی بنیادی وجہ یہ ہے کہ مصنوعی ذہانت کے نظام طلبہ کےتعلیمی مواقع اور نتائج کی تشکیل میں اہم کردار ادا کرتے ہیں ،اگر AIکے استعمال میں اخلاقی تحفظات کو نظر انداز کردیا جائےتویہ نادانستہ طور پر موجودہ تعلیمی اور سماجی عدم مساوات کو مزید گہرا کر سکتی ہے۔ڈیٹا کی تحفظات کو نقصان پہونچا سکتی ہے اور یکھنے کے عمل میں طلبہ کی خود مختاری کومتاثر کرسکتی ہے۔نتیجتاً من جملہ تعلیمی نظام پر طلبہ اوردیگر فریقین کا اعتماد بھی متزلزل ہو سکتا ہے۔

یہ مقالہ تعلیم میں مصنوعی ذہانت کے ذمہ دارا نہ اور انسانی مرکزیت پر مبنی استعمال کے لئے در کار اخلاقی بنیادوں کا جائزہ لیتا ہے۔ اس مقالہ میں ایسے اخلاقی فریم ورک پر زور دیا گیا ہے، جو تعلیم میں AIکے استعمال کو انصاف پرور بنائیں۔ طلبہ کے ڈیٹا کا تحفظ کریں اور شفافیت کو فروغ دیں۔ غرض کہ مصنوعی ذہانت تعلیم میں ایک معاون ذریعہ ثابت ہو نہ کہ اخراج اور تعصب کا باعث ہو۔

کلیدی الفاظ: مصنوعی ذہانت، تعلیمی اخلاقیات،تکنیکی مساوات، ڈیٹا رازداری ، اساتذہ کی ذمہ داری۔

8.33 AI, SEL, and Academic Resilience: A Safe Haven for Acid Attack Survivors

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تیزاب گردی کےمتاثرین طلبا اکثر چہرے کی ساخت متاثر ہونے کے باعث شدید "سماجی اضطراب" (Social Anxiety) اور احساس کمتری کا شکار ہوتے ہیں، جس کے نتیجے میں ان کا اسکول سے تعطل (Dropout) اور تعلیمی کارکردگی میں گراوٹ ایک بڑامسئلہ ہے۔ اگرچہ روایتی شمولیاتی تعلیم (Inclusive Education) حاشیے پر موجود مختلف افراد کو روایتی تعلیمی ڈھانچہ سے جوڑنے اوربغیر کسی بھید بھاؤ کے تعلیمی سہولیات فراہم کرنے کی بات کرتی ہے۔ تا ہم زمینی حقائق بہت حد تک اس حقیقت سے الٹ ہے۔ اس مقالہ میں خصوصیت کے ساتھ اس بات پر زور دی گئی ہے کی مصنوعی ذہانت ان متاثرین کی نفسیاتی اور تعلیمی رکاوٹوں کو دور کرنے میں کہاں تک معاون و مددگار ثابت ہورہی ہے۔مزیدیہ مقالہ اس پہلو پر بھی روشنی ڈالتا ہے کہ کس طرح AI پر مبنی "انفرادی نظام تدریس" (Personalized Learning Systems) اور ورچوئل ٹیوشن ان متاثرین کے لیے ایک "عبوری پل" (Transitional Bridge) کا کام کر تے ہیں ۔

ایسے متاثرین جو مختلف طبی سرگرمیوں سے گزر رہے ہوتے ہیں اور لوگوں کی تیکھی نظروں کے باعث ان کے لئےجسمانی طور پر کمرہ جماعت میں شرکت کرنا صدمے (Trauma) کا سبب بنتی ہیں، AI سے لیس ورچوئل ماحول تعلیمی تسلسل کے لیے ایک محفوظ اور حوصلہ افزا ماحول فراہم کرتا ہے۔مزید یہ مقالہ "سماجی و جذباتی آموزش" (Social-Emotional Learning) کے ڈیجیٹل ٹولزجیسے کہ تھیراپیٹک چیٹ بوٹس (Therapeutic Chatbots) اور جذبات کو سمجھنے والی ایپس کے کردار کا تجزیہ کرتا ہے، جو متاثرین کو مرکزی دھارے کے اسکولوں میں واپس آنے سے پہلے "قوتِ بحالی" (Resilience) اور سماجی مہارتیں پیدا کرنے میں مدد دیتے ہیں۔

کلیدی الفاظ: مصنوعی ذہانت (AI)، تیزاب متاثرین، سماجی و جذباتی آموزش (SEL)، قوتِ بحالی (Resilience)، ڈیجیٹل ٹولز۔

8.34 Ethical Challenges of Teaching and Learning Urdu in Artificial Intelligence: Linguistic and Social Concerns

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اردو درس و تدریس میں مصنوعی ذہانت : اخلاقی، سماجی اور لسانی خدشات

تلخیص (Abstract)

مصنوعی ذہانت (Artificial Intelligence) عصر حاضر کی ایک مؤثر اور تیزی سے فروغ پانے والی ٹیکنالوجی ہے جس نے تعلیم کے میدان میں تدریسی طریقوں، تعلیمی وسائل اور سیکھنے کے عمل کو نمایاں طور پر متاثر کیا ہے۔ AI کی مدد سے ذاتی آموزش(Personalized Learning)، خودکار تشخیص، ڈیجیٹل مواد کی تیاری اور تعلیمی منصوبہ بندی جیسے پہلوؤں میں آسانی پیدا ہوئی ہے۔ تاہم تعلیم چوں کہ ایک انسانی اور اخلاقی سرگرمی بھی ہے، اس لیے مصنوعی ذہانت کا استعمال محض تکنیکی سہولت کے طور پر نہیں ؛ بلکہ ذمہ دارانہ اور انسان مرکوز(Human Centered) تناظر میں دیکھے جانے کا تقاضا کرتا ہے۔ بالخصوص زبانوں کی تعلیم میں AI کے اطلاق سے کئی فکری اور اخلاقی سوالات جنم لیتے ہیں، جن کا سنجیدہ جائزہ ناگزیر ہے۔

اردو درس و تدریس کے تناظر میں مصنوعی ذہانت کی شمولیت ایک پیچیدہ مگر اہم مسئلہ ہے۔ اردو زبان محض ایک تدریسی مضمون نہیں ؛ بلکہ ایک بھرپور تہذیبی، تاریخی اور لسانی ورثہ رکھتی ہے۔ AI پر مبنی ٹولز اگرچہ املا، ترجمہ اور ڈیجیٹل تدریس میں سہولت فراہم کرتے ہیں ؛ لیکن اردو کی معنوی نزاکت، اسلوبی تنوع اور تہذیبی پس منظر کو مکمل طور پر سمجھنے میں اکثر ناکام رہتے ہیں۔ اس کے علاوہ ڈیجیٹل خلیج، اساتذہ کے کردار میں کمی اور معیاری و عوامی اردو کے درمیان عدم توازن جیسے مسائل اردو تعلیم کے لیے سماجی اور لسانی خدشات کو مزید گہرا کرتے ہیں۔

زیر نظر مقالہ اردو درس و تدریس میں مصنوعی ذہانت کے استعمال سے وابستہ اخلاقی، سماجی اور لسانی خدشات کا تحقیقی و تنقیدی مطالعہ پیش کرے گا۔ اس میں AI کے تعلیمی رجحانات، اردو زبان کی لسانی شناخت، قومی تعلیمی پالیسی 2020 کے تناظر اور ممکنہ عملی حل پر روشنی ڈالی جائے گی۔ اس مقالے میں اس امر کا بھی جائزہ لیا جائے گا کہ آیا مصنوعی ذہانت اردو کی تعلیم کے لیے اساتذہ کا متبادل ہو سکتا ہے یا اس کو صرف معاون اور وسیلے کے طور پر سمجھا جائے۔ اور کس طرح اس کے استعمال میں اخلاقی شعور، سماجی انصاف اور لسانی ذمہ داری کو بنیادی اہمیت دی جائے۔

کلیدی الفاظ (Keywords)

مصنوعی ذہانت، اردو درس و تدریس، اخلاقی خدشات، سماجی و لسانی مسائل، تعلیمی ٹیکنالوجی

Sub-Theme 9:
Building Digital Competence in Teacher Education

9 Building Digital Competence in Teacher Education

9.1 A study on awareness of digital competencies in pre service student teachers at District Institute of Education &Training(DIETs)

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Abstract

Education is the tool for change of society. A strong teacher prepares a strong nation. Best teachers prepared in teacher training institutions. Primary education is the foundation forchildrens all round development. District Institute of Education & Training(DIETs) are the excellence centres to provide quality teacher education in pre service and in-service training. Teacher education programmes play a predominant role to give proper knowledge, skills and professional competencies to teachers at different level of teacher education . Present contemporary society AI technology rapidly transforming the world. Many sectors are adopting artificial intelligence and robotic technology, digital devices in their field. In this context present teachers need to develop digital competencies to work effectively on this digital era. When the teacher acquired digital competencies then only, they able to integrate the technology in teaching learning process. For that it is very essential to reform the teacher education curriculum based on the present technological changes. The present study aim is to examine the level of digital competencies among the pre service student teachers in DIETs of Andhra Pradesh.

The present research study primarily concentration digital literacy, online communication, digital content creation, use of educational technologies, awareness of ethical use of content. A descriptive survey method was used to collect the data. Total 400 students were taken randomly from three DIETs especially Nellore, mynampadu, and Chittoor. A structured questionnaire was used to collect the data. The major findings were majority of the trainee teachers have aware about digital devices. How ever majority of the student teachers are not having the adequate

knowledge regarding the use of google meet, you tube content in teaching purposes. The present study also revealed the majority of the students not having awareness about ethics of digital content. The present research study strongly emphasized that it is very essential to enhance digital competency training and it is need to integrate the digital technology in present curriculum.The paper also addresses challenges in implementation of digital technology in pre service teacher education.

Keywords: *Teacher Education, Digital competencies, artificial intelligence, integration of curriculum.*

9.2 Adoption of Artificial Intelligence in Teaching and its Effects on Teachers Professional Roles

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Abstract

Recently in now a days the new trends of Artificial Intelligence (AI) has emerged as a transformative force in the whole education sector, which is significantly influencing on the teaching practices and redefining teachers professional roles. The integration of AI-based tools such as intelligent tutoring systems, automated assessment platforms, learning analytics, and content-generation applications has altered how teachers design instruction, interact with the learners, and plus perform in administrative responsibilities. This study aims to examine the extent of adoption of Artificial Intelligence in teaching and analyze its effects on teachers professional roles, considering both on positive and negative dimensions. The study is based on primary data collected from 80 teachers working in higher education institutions using a structured questionnaire. Descriptive statistics, percentage analysis, Likert mean score analysis, and chi-square tests were employed to analyze the data. The findings reveal a high level of AI adoption among teachers and indicate that AI positively influences teaching efficiency, pedagogical innovation, and professional skill development in Compliance to New Education policy adoption era. However, these concerns are related to increased monitoring, skill pressure, ethical issues, and role ambiguity persist. The study highlights the critical role of institutional support and training in ensuring the effective and ethical integration of AI in teaching. The study concludes that AI should be viewed as a supportive tool that complements on teachers expertise rather than a replacement for the teaching profession.

Keywords: *Artificial Intelligence, Teaching, Teachers Professional Roles, AI Adoption, Higher Education, New Education policy.*

9.3 Artificial Intelligence and Continuous Professional Development of Teachers

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Abstract

Artificial Intelligence (AI) is increasingly reshaping the landscape of education. Continuous professional development is essential for enabling teachers to update their pedagogical knowledge, instructional skills, and professional competencies in response to rapid technological and curricular changes. The present paper explores the role of AI in enhancing teachers continuous professional development by providing personalized learning pathways, adaptive training modules, real-time feedback, and data-driven insights into teaching practices. The paper also discusses how AI contributes to inclusive and equitable professional development. At the same time, it highlights key challenges associated with the use of AI in continuous professional development. The paper concludes that while Artificial Intelligence holds significant potential to transform continuous professional development, its effective integration requires thoughtful planning, teacher preparedness, and supportive educational policies.

Keywords: *Artificial Intelligence, Continuous Professional Development, Teacher Education, Professional Learning.*

9.4 Artificial Intelligence and Teacher Education Reform: Exploring Professional Skill Development and Integration Challenges under NEP 2020

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Abstract

Artificial Intelligence (AI) is emerging as a transformative force in the field of education, particularly in teacher education. In alignment with the National Education Policy (NEP) 2020, which emphasizes the integration of technology, competency-based learning, and continuous professional development, AI offers new possibilities for enhancing teacher preparation. This conceptual paper explores the role of Artificial Intelligence in strengthening teacher education within the framework of NEP 2020. It examines how AI can support the development of teachers professional skills by enabling personalized learning experiences, improving instructional planning, and enhancing pedagogical competencies in accordance with the competency-based approach advocated by the policy.The paper further analyses the key challenges involved in integrating Artificial Intelligence into teacher education programs. These challenges include inadequate digital infrastructure, limited AI literacy among teacher educators, a lack of institutional readiness, and resistance to technological change. Through a review of existing literature and policy documents, the study highlights the need for systematic planning, capacity building, and supportive institutional frameworks to ensure the effective integration of AI.The paper concludes that while Artificial Intelligence holds significant potential to enhance the quality of teacher education, its successful adoption requires careful implementation, alignment with the goals of NEP 2020, and focused efforts to address existing challenges. Thoughtful integration of AI can contribute to the preparation of competent and future-ready teachers.

Keywords: *Artificial Intelligence, Teacher Education, National Education Policy 2020, Competency-Based Learning, Educational Technology.*

9.5 Artificial Intelligence in Continuous Professional Development: Perspectives of School Science Teachers

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Abstract

Artificial Intelligence (AI) is increasingly positioned as a transformative force in education, with growing policy emphasis on its integration into teacher professional development. In India, national frameworks advocate technology-enabled Continuous Professional Development (CPD); however, there is limited empirical understanding of how teachers themselves perceive the role of AI in their professional learning, particularly within the discipline of science education. Given the inquiry-based and epistemic nature of science teaching, examining teachers perspectives becomes crucial for meaningful AI integration in CPD. The present study explores science teachers perspectives on Artificial Intelligence in Continuous Professional Development, focusing on perceived possibilities, challenges, and conditions for effective implementation. Adopting a qualitative exploratory design, the study draws on semi structured interviews with 20 in-service science teachers teaching at upper primary, secondary, and senior secondary levels in State Government Adarsh High Schools of Bihar. Thematic analysis reveals that science teachers generally view AI as a potentially supportive tool for professional learning, particularly for accessing resources, supporting instructional planning, and enabling personalised learning pathways. At the same time, teachers express significant concerns regarding over-dependence on AI, erosion of professional autonomy, ethical issues related to data privacy and transparency, and the limited alignment of existing AI-oriented CPD initiatives with inquiry-based science teaching. Participants emphasise that AI should function as a professional learning support system rather than as a mechanism for standardisation or compliance. The study highlights the importance of incorporating teachers voices into AI-enabled CPD design and underscores the need for discipline-sensitive, ethically grounded, and teacher-centred approaches to AI integration in science teacher professional development.

Keywords: *Artificial Intelligence, Continuous Professional Development, Science Teachers, Teacher Perspectives, Qualitative Study.*

9.6 Artificial Intelligence in Teacher Education: Transforming Teaching, Learning and Professional Development in the Digital Era

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Abstract

Artificial Intelligence (AI) is rapidly transforming almost every sector, including education. In teacher education, AI has the potential to redefine how teachers are trained, how they design lessons, and how they assess students. This paper explores the role of Artificial Intelligence in enhancing teacher education by improving instructional methods, supporting professional development, and enabling data-driven teaching practices.

Keywords: *Artificial Intelligence, Teacher Education, Digital Learning.*

9.7 Artificial Intelligence Literacy for Teacher Educators

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Abstract

By incorporating adaptive technology, immersive simulations, and data-driven insights, artificial intelligence (AI) is transforming teacher education and preparing teachers for the future of hybrid human-AI classrooms. Using recent developments and regulatory frameworks such as the U.S. Department of Education's AI recommendations, the transformative potential of AI in improving pedagogical abilities, solving the global educator shortage, and supporting ethical technology integration. Pre-service teachers can practise a variety of classroom scenarios with real-time feedback thanks to AI tools like virtual reality simulations, which more successfully connect theory and praxis than conventional approaches. By evaluating trainee performance and suggesting customised modules, adaptive platforms personalise professional development and increase retention by up to 30% in pilot programs. Intelligent tutoring systems' automated analytics reveal skill gaps, enabling concentration on high-impact areas like diversity and student engagement.

By automating repetitive chores like grading, AI enhances teachers' roles as "orchestrators" of learning and frees up time for creativity and mentoring. In line with

UNESCO's focus on AI for inclusive education, it advances fairness through technologies that enable multilingual and special needs instruction. With 75% of participants reporting increased confidence in tech-infused instruction, longitudinal studies demonstrate increased instructor efficacy. Data privacy problems, AI biases that perpetuate inequality, and the pressing need for AI literacy in curriculum are examples of persistent issues. Human-centred talents could be undermined by an over-reliance on AI, requiring balanced training. Infrastructure expenditures are necessary for equal access due to digital gaps in places like India. Future teacher education programs will emphasise ethics, critical examination of AI outputs, and hybrid models, with AI co-teachers creating individualised pathways. In order to enable educators to become AI-fluent leaders and ensure that technology enhances rather than replaces human potential, conferences like as ICAITE highlight the necessity of international standards. To fulfill AI's promise for long-term, learner-centered education, policymakers must give up skilling top priority.

Keywords: *Artificial Intelligence, Teacher Education, Orchestrators, Future Teacher Education and AI-fluent leaders.*

9.8 Bridging the Gap: Leveraging Artificial Intelligence in Teacher Education to Enhance Work-Life Balance for Working Women

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Abstract

This paper explores the transformative potential of Artificial Intelligence (AI) within teacher education as a strategic intervention to alleviate the "double burden" experienced by female educators. In contemporary academic landscapes, particularly within high-density urban centres like Mumbai, working women in the teaching profession face unique challenges in maintaining a sustainable work-life balance due to the convergence of rigorous professional demands and traditional domestic expectations. The study investigates how the integration of AI-driven toolsspecifically in the domains of automated lesson planning, intelligent assessment systems, and administrative task delegationcan significantly reduce the time-intensive "hidden labor" of pedagogy. By streamlining these non-instructional responsibilities, AI serves as a catalyst for professional efficiency, allowing educators to reclaim cognitive and

temporal resources. Furthermore, the research examines the nexus between technological proficiency and psychological well-being, arguing that AI literacy is no longer merely a technical skill but a vital component of career longevity and personal wellness for women. Through a qualitative and quantitative analysis of working women's experiences, the paper highlights the systemic barriers to AI adoption and proposes a framework for teacher education programs to prioritize digital empowerment. Ultimately, the study posits that leveraging AI in education is a critical step toward gender equity, fostering an environment where professional excellence and personal life are no longer mutually exclusive, but harmoniously integrated.

Keywords: *Artificial Intelligence in Education, Teacher Education, Work-Life Balance, Gender Equity, Professional Development, Mumbai Education Sector.*

9.9 Building Digital Competence among Pre-Service Teachers through Artificial Intelligence Tools

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Abstract

In the present era, the education system is rapidly undergoing a phase of digital transformation, in which Artificial Intelligence has emerged as an effective and revolutionary element. In this context, teacher training, especially the professional preparation of pre-service teachers, has taken a new dimension where digital competence is being recognized as a core competency. The aim of this research paper is to analyse the role of artificial intelligence in teacher training and to clarify how AI tools can be helpful in building and promoting digital competence in pre-service teachers. This study is of a conceptual and analytical nature, in which the educational use of artificial intelligence has been reviewed in the light of existing literature, international frameworks and policy documents. The paper describes in detail the role of intelligent tutoring systems, AI-based assessment and feedback, learning analytics, learning

management systems, and AI tools in lesson planning and development of teaching Learning materials. The study shows that these tools provide pre-service teachers with self learning opportunities, promote teacher reflection and develop empirical decision-making capabilities, which are key constituents of digital competence. The paper also highlights that although artificial intelligence provides multiple benefits in teacher education, it also problem for consideration some challenges and ethical issues, such as digital divide, data privacy, algorithmic biases, and insufficient teacher preparation. To address these issues, learner centred education, effective integration into the curriculum, professional development of faculties, and institutional and policy-level support are essential. The study concludes that the balanced, ethical, and purposeful integration of artificial intelligence into teacher training can play a key role in making future teachers digitally competent, professionally informed, and aligned with modern educational demands.

Keywords: *Artificial Intelligence, Digital Competence, Pre-Service Teachers, Teacher Education, Digital Pedagogy, AI Tools.*

9.10 Building Digital Competence in Teacher Education

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Abstract

Education is an important tool for social change. Our education system is a mirror that reflects the society and shaping the future of a nation. Teachers are the architect who builds the society through their students. Therefore the role of teachers is very essential. Digital transformation has been restructured various industries. So, In todays tech- driven world, teachers need digital skills to enhance learning. The National Educational Policy 2020 places a strong emphasis on outcome based education and also recognizes that technology can bridge geographical barriers, enabling students from remote areas to access quality education. This article examines the necessary components of digital competence for new generations of teachers / professional teachers and explores effective methods for developing these skills within academic educational programs. This study holds significance because it examines the crucial areas of digitalization, competency mapping, and capacity building concerning professional educators. Building digital competency in teacher education is crucial for modern classrooms. It focuses on digital tools training, data- driven decisions and online safety ethics, continuously integrating of technology in educational

process, development of open educational resources and nurturing critical thinking skill. It also discusses the implication of digital competency on pedagogical practices, curriculum design and student engagement.

Keywords: *Digital Competence, NEP 2020, Professional Development, Competency Mapping.*

9.11 Building Digital Teaching Competencies through E-Learning in Teacher Education: A Study of Pre-Service and In Service Teachers

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The rapid integration of digital technologies in education has significantly transformed teaching learning processes, placing new demands on teacher education programmes. In the contemporary educational landscape, teachers are expected not only to possess subject knowledge but also to demonstrate strong digital teaching competencies for effective classroom and online instruction. E-learning has emerged as a prominent mode of teacher preparation, offering flexibility, accessibility, and opportunities for self-directed learning. However, empirical evidence on the effectiveness of e-learning in developing digital teaching competencies among pre-service teachers remains limited. The present study aims to examine the role of e-learning in building digital teaching competencies among Pre-Service teachers enrolled in teacher education institutions. Specifically, the study seeks to assess the level of digital teaching competencies, analyze the extent of e-learning usage, and explore the relationship between e-learning experiences and the development of these competencies. A descriptive survey method will be employed, and data will be collected from a randomly selected sample of pre-service teachers using standardized and researcher-developed

tools. Appropriate statistical techniques such as mean, standard deviation, correlation, and inferential tests will be applied for data analysis. The findings of the study are expected to provide valuable insights into the strengths and gaps in digital teaching competencies of pre-service teachers and the effectiveness of e-learning practices in teacher education. The study may contribute to improving curriculum design, pedagogical practices, and institutional strategies for digital capacity building in teacher education. Furthermore, the results may assist policymakers and teacher educators in formulating evidence-based initiatives for preparing digitally competent and future-ready teachers.

Keywords: *Computer Self-Efficacy, Digital Literacy, Teaching Competencies, Sustainability, Self Directed Learning, Education.*

9.12 Developing Digital Competencies in Teachers through AI-Driven Pedagogical Practices

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Abstract

The rapid integration of Artificial Intelligence (AI) in education has significantly transformed teachinglearning processes, making the development of digital competencies among teachers a critical priority in contemporary teacher education. Digital competencies now extend beyond basic technological literacy to include the ability to effectively use AI-driven tools for planning, instruction, assessment, and professional growth. This paper explores how AI-driven pedagogical practices can support the systematic development of teachers digital competencies and prepare them for the demands of 21st-century classrooms. It examines the rationale for integrating AI in teacher education, highlighting its potential to personalize professional learning, enhance instructional decision-making, and promote reflective teaching practices. The study discusses key AI-enabled pedagogical approaches such as adaptive learning systems, intelligent tutoring, learning analytics, and AI-supported assessment tools that contribute to teachers pedagogical, technological, and ethical competencies. Additionally, the paper emphasizes the importance of a human-centered ap-

proach, addressing ethical considerations, data privacy, and equity in AI adoption. By proposing practical strategies for integrating AI into teacher education programs, this paper aims to provide a conceptual framework for fostering digitally competent teachers who can effectively leverage AI to enhance teaching quality, learner engagement, and educational outcomes.

Keywords: *Artificial Intelligence, Digital Competencies, Teacher Education, AI-Driven Pedagogy, Professional Development, Educational Technology.*

9.13 Digital Competence in Teacher Education

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Abstract

Digital Competence has been gradually introduce into school curricula ,assessment and classroom practices over the past decades during the same period ,the term is also been the subject of several academic definition process that resulted in description of digital skills as one of the five skills for learning in school.there are few studies and text that describe what should comprise the specific of a teacher digital competence ,its that enable the teacher to foster students digital skills through work with academic subject material,in this context ,teacher education is of for most importance for the development of digitally competent teachers, idententify the student teacher level of degital competence when entering teacher education and compare across the partner institutions. Creative method for integrating digital.teachers are vital change agent in school digitalisation processes and digital technologies have the potential to change the nature of their work ,for example learning analytical tools can inform teaching decisions,school curricula are evolving students digital skills ,new online communication tools interaction with parents and professional collaboration with other teachers and open educational resources on divorce topic area .in recent research exploring teacher digital competence tend to be framed in three ways .
1. Generic digital competence:it is a technological knowledge it refer to the ability to use hardware and carry out common computer based practice like using email ,searching the internet ,trouble shooting ,presentation software and using creative and collaborative technologies this skills relevant to any one using a computer for working or learning .
2. Digital teaching competence :it refer the ability to integrate digital technology in to teaching practices ,the use of various media ,communication and computational tools for teaching and learning activities ,developing and using digital assessment

,appropriately managing digital environments,to use technologies in their function as a teacher critically selecting technologies for specific teaching purposes and facilitating students to learn through and with digital tools to achieve defined
3. Professional digital competence: it is an emerging and broader type of teacher digital competence that is inclusive of all aspects of being a teacher ,example managing student interactions,online resources ,student motivation and assessment as well as those that are unique to the digital space,the professional work of being a teacher in increasingly digitized education system also includes participating in online communities of learning, communicating with parents and the broader school community.as well as using data to inform their teaching.

Teacher should also guide students in the responsible and safe use of digital tools ,in this sense ,teacher education is fundamental to the development of digitally competent teachers competence ia a demonstrate ability to apply knowledge ,skill attitude for achieving observable result. basic skills: be able to open software ,sort out and save information on the computer and other simple skills in using the computer and software. download:be able to download different information types from the internet . search:know about and how to get access to information. navigate :be able to orient oneself in digital networks,learning strategies in using the internet. classify:be able to organize information according to certain classification scheme or genere. integrate be able to check and evaluate the information one seeks to get from searching the internet .evaluate:be able to check and evaluate the information one seeks to get from searching the internet. Communicate:be able to communicate information and express mediation means. corporate:be able to take part in net based interaction of learning . create:be able to produce and create different form of information as multi model text. these and other hand if one can develop more complex level of competence such frame work can play useful role in scaffolding teachers towards more advance practices.

Keywords: *digital networks ,learning, collaborative technologies.*

9.14 Building Pedagogical Digital Competence in Teacher Education: A Mixed-Methods Study of Institutional Barriers and Transformative Strategies in South Karnataka

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In an era increasingly defined by generative Al and hybrid learning, building Pedagogical Digital Competence (PDC) in teacher education is no longer an optional skill set but a fundamental necessity for modern educators. While many institutions

prioritize hardware acquisition, this research explores systemic institutional barriers to genuine digital transformation within 10 colleges of education in South Karnataka. Using a mixed-methods design grounded in the DigCompEdu framework, the study evaluates pre-service teachers' transition from basic digital literacy to pedagogical fluency via surveys (N=450) and faculty interviews. A significant "readiness gap emerged: infrastructure alone does not translate into pedagogical confidence. Instead, institutional culture especially collaborative environments and leadership support and rigorous TPACK alignment drive success. Siloed technology integration leaves pre-service teachers unable to apply tools meaningfully. To address this, we propose shifting from one-off workshops to a longitudinal, peer- mentorship model that embeds digital tools across the curriculum. Reframing PDC as an evolving professional identity not a static certification, this research offers a scalable roadmap for fostering innovation in Karnataka's teacher education landscape.

Keywords: *Pre-service teachers, DigCompEdu, Pedagogical Digital Competence (PDC), Teacher Professional Development, ICT Integration, TPACK.*

9.15 Enhancing Educator Skills: Developing Digital Competency in Teacher Education

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Abstract

To effectively support learning in the digital age, educators must be digitally competent in addition to having subject-matter expertise and pedagogical abilities. Teachers that possess digital competency can incorporate technology into teaching-learning procedures in a way that is ethical, learner-centered, and relevant. The idea, elements, significance, and current state of digital competency in teacher education are all examined in this descriptive study. To comprehend trends, difficulties, and best practices pertaining to the development of digital competency among pre-service and in-service teachers, it also examines the body of existing literature. Secondary materials like research papers, reports, policy documents, and scholarly publications serve as the study's foundation. The results show that although knowledge of digital technologies has grown, there is still insufficient systematic integration of digital competency in teacher education. Enhancing digital competency in teacher education is essential for preparing educators to effectively integrate technology into their teaching practices. This development fosters improved pedagogical strategies, engagement,

and student learning outcomes. Building digital skills involves training on digital tools, online resources, and adaptive technologies, enabling teachers to navigate and leverage digital environments confidently. Teacher education programs must prioritize comprehensive digital literacy, critical thinking, and continuous professional development to meet evolving educational demands. Through this approach, educators become proficient in creating dynamic, inclusive, and technology-enhanced learning experiences that empower students and promote lifelong learning.

Keywords: *Digital competency, inclusive, professional development, technology integration, digital literacy.*

9.16 Future of Teacher Education in the Age of Artificial Intelligence: An overview

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Abstract

The rapid advancement of Artificial Intelligence (AI) is transforming the landscape of education, redefining the roles, responsibilities, and competencies of teachers. In this context, teacher education occupies a pivotal position, as it prepares educators to navigate and effectively integrate emerging technologies into teachinglearning processes. This paper provides an overview of the future of teacher education in the age of Artificial Intelligence, highlighting both opportunities and challenges. AI-driven tools such as adaptive learning systems, intelligent tutoring, learning analytics, and automated assessment have the potential to personalize instruction, enhance pedagogical efficiency, and support evidence-based decision-making. Consequently, teacher education programmes must move beyond traditional content delivery to focus on digital literacy, data-informed pedagogy, ethical awareness, and humanAI collaboration. At the same time, the growing presence of AI raises critical concerns related to equity, data privacy, algorithmic bias, and the possible dehumanization

of education. Teacher education institutions therefore have a crucial responsibility to equip future teachers with critical thinking skills, ethical sensitivity, and a strong grounding in human values, creativity, and empathyqualities that cannot be replaced by machines. The abstract emphasizes the need for curricular reforms, continuous professional development, and interdisciplinary approaches that integrate educational technology with pedagogy and social sciences. Overall, the future of teacher education in the AI era lies in achieving a balanced integration of technological innovation and humanistic education. By preparing teachers not only as users of AI but also as reflective practitioners and ethical leaders, teacher education can ensure that AI serves as an empowering tool for inclusive, learner-centered, and value-based education in the twenty-first century.

Keywords: *Artificial Intelligence, teacher education, education, teacher education programmes.*

9.17 Future of Teacher Education in the Era of Artificial Intelligence

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Abstract

AI is a branch of modern computer science to revolutionize the education system. In the search for a more sustainable feature role of AI has be come increasing day by day. AI serves as a powerful tool for sustainable development. AI in a responsible an ethical manner to harness the full potential of AI to create a brighter future for teacher education. AI is proofing to be a revolution by making learning more personalized, efficient and inclusive. AI also enhances the engagement of learners through Immense technological way Artificial Intelligence offers innovative opportunities for personalized learning in teacher education programmes. AI-driven platforms can analyze learning patterns, competencies, and needs of student-teachers, enabling customized training pathways and self-paced professional development. Such systems support differentiated instruction, helping prospective teachers acquire pedagogical, technological, and content knowledge more effectively. Virtual classrooms, intelligent tutoring systems, and simulation-based training provide realistic teaching

experiences, allowing teacher trainees to practice classroom management, lesson delivery, and student engagement in controlled digital environments.

Assessment and evaluation in teacher education are also being reshaped by AI technologies. Automated assessment tools can provide immediate, data-driven feedback on lesson plans, teaching performances, and reflective practices. Learning analytics assist teacher educators in identifying strengths and gaps in trainee performance, enabling timely interventions and continuous improvement. Moreover, AI supports formative assessment practices that emphasize competency-based learning rather than rote memorization, aligning with contemporary educational reforms such as outcome-based education. The future of teacher education in the AI era emphasizes the development of new competencies among teachers. Digital literacy, AI literacy, critical thinking, ethical awareness, and data-informed decision-making are becoming essential professional skills. Teacher education programmes must therefore include training on the ethical use of AI, data privacy, bias in algorithms, and responsible technology integration. This ensures that future teachers can use AI tools thoughtfully while maintaining human values, empathy, and inclusivity in education.

Despite its potential, the integration of AI in teacher education presents several challenges. Issues such as unequal access to technology, lack of infrastructure, resistance to change, and insufficient professional training may hinder effective implementation, particularly in developing countries. Additionally, ethical concerns related to surveillance, data security, and over-dependence on technology require careful policy planning and regulatory frameworks. This paper has the potential on AI in transform teacher education, exploring its benefits challenge and an ethical consideration of AI integration in teacher education. AI in teacher education is not about humanoid robots as teacher educator to replace human teacher. But is about using computer intelligence to help teacher educator and learner for making the education system better and effective.

Keywords: *AI, Teacher Education, Pedagogical Approaches.*

9.18 Impact of Artificial Intelligence Tools on Teaching Competency Development in Teacher Education

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Abstract

The rapid emergence of Artificial Intelligence (AI) is reshaping educational practices, with particularly strong implications for teacher education. This paper examines how AI-based tools contribute to the development of teaching competencies among college teachers. Teaching competency is understood as a broad and interconnected set of skills, including pedagogical understanding, lesson planning, classroom management, assessment strategies, and reflective teaching practices. In recent years, AI tools such as adaptive learning platforms, intelligent tutoring systems, automated assessment applications, and virtual teaching assistants have become increasingly integrated into teacher education programs to support individualized learning and professional skill development. The study seeks to explore the role of these technologies in shaping teaching competencies among college teachers. Using primary data, paper analyses the scope, application, and relevance of AI tools in the preparation of future teachers. It also considers the evolving role of teacher educators and highlights the growing importance of AI-related competencies in professional training. By examining the relationship between AI tools and teaching competency development, this study offers insights into how emerging technologies are influencing teacher education in an era of digital transformation.

Keywords: *Artificial Intelligence, Teacher Education, Teaching Competencies, AI Tools, Pedagogical Development, Educational Technology.*

9.19 Re-imagining Teachers Continuous Professional Development: Unveiling Smart Learning Experiences for Smart Teachers powered by Artificial Intelligence

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Abstract

The present article tries to explore how artificial intelligence (AI) plays a crucial role in enhancing teachers' Continuous Professional Development (CPD). The advent of AI has transformed almost each and every sphere including healthcare, corporate,and education.With this crucial transformation in the field of education, it becomes necessary to understand its impact on teachers professional development as well. The present paper investigates into the world of teachers with their experiences of CPD programs that are driven by AI with a special focus on their perceived benefits, challenges, and suggestions for improvement.Using a phenomenological approach,

in-depth interviews were conducted with 15 secondary schoolteachers varying within diverse backgrounds. A purposive sampling was undertaken in order to select participants having varied experiences with AI-powered CPD initiatives.Data were analyzed thematically, revealing crucial insights into AI's powerful role on teacher professional development.Findings indicate that AI-driven CPD programs boosted teachers' confidence, enhanced their autonomy, and have a positive impact on instructional practices. Teachers appreciated personalized feedback, real-time assessment, and access to curated resources. However, concerns emerged regarding AI literacy gaps, biases, and over-reliance on technology. Participants suggested integrating AI with human support, ensuring equitable access, and addressing contextual challenges.This study contributes nuanced insights into AI's role in teacher CPD, highlighting opportunities for context-sensitive, inclusive, and effective professional development. Recommendations include designing hybrid CPD models blending AI and human facilitation, addressing AI literacy gaps, and fostering collaborative learning among teachers.

Keywords: *Artificial Intelligence, Continuous Professional Development, Secondary School Teachers, Experiences.*

9.20 Transforming Teacher Education through Digital Competence Development

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Abstract

In today's digital era, the role of teacher education is no longer limited to subject knowledge alone; the development of digital competence has become equally crucial. This study focuses on transforming teacher education, empowering teachers with digital tools, online platforms, and technology-based pedagogical skills. The main objective is to understand how the development of digital competence enhances teachers' teaching effectiveness, classroom engagement, and student learning outcomes. This paper is based on the premise that learning is an active and interactive process, where technology establishes a strong connection between teachers and students. Through digital competence, teachers can adopt innovative teaching strategies such as blended learning, virtual classrooms, and learner-centered approaches. The study's findings indicate that digitally competent teachers are more confident, have better instructional planning, and can effectively address the needs of diverse learners. Furthermore, the integration of digital skills into teacher education programs promotes professional growth and lifelong learning.

In addition, this paper suggests that the transformation of teacher education follows a holistic approach where pedagogy, content, and digital skills are integrated. Such an integrated approach can make the teaching-learning environment more engaging, inclusive, and future-ready, supporting quality education and sustainable professional development.

Keywords: *Teacher Education, Digital Competence, Professional Development, Technology-Based Learning, Teaching Effectiveness.*

9.21 From Chalk to Clicks: Building Digital Competence in Teacher Education

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Abstract

UNESCO ICT Competency Framework for Teachers, the study brings together theoretical considerations, policy trends and teaching practices related to the preparation of teachers in todayhow teacher education can intentionally develop digital competence in order to underpin pedagogy that uses technology effectively. Utilizing well-established frameworks like DigCompEdu, the Technological Pedagogical Content Knowledge (TPACK) framework, anddigital literacy that blends pedagogical judgement with ethical, critical and creative use of technology. This paper will exploreis designed, how is delivered, and above all, how its assessment takes place. In the era of moving from traditional chalk and talk classrooms to technology entrenched contexts, teachers must exhibit strongThe rapid transformation regarding educational products into the digital realm has had a profound impact on teaching and learning, and we have to redesign it in terms of how instructiontoward managing the move from chalk to clicks (Cuban) for meaningful learning in cyber space.needed to strengthen digital competence in teacher education. Quite; by bridging theory, policy and practice, this study reinforces the urgent need for a unified and durable stance in teacher preparation to tutor teachersIndian context. It also suggests best practices and evidence-informed approaches, such as curriculum infusion, experiential learning, mentorship, and multimodal-shaped professional development that arethe

rise of blended and online learning and national and international policy reforms. It demonstrates its role in integrating digital competence into curricula, pedagogy, assessment and teacher professional development is also debated as are the challenges of infrastructure, faculty readiness, digital divide and attitudinal dimensions of change in ans context. The paper emphasises the increasing demand for digitally competent teachers, due to changing learner profiles

Keywords: *Digital Competence, Teacher Education, Technology-Integrated Pedagogy, Digital Pedagogy, Teacher Professional Development, ICT in Education.*

9.22 Building Digital Competence in Teacher Education

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Abstract

Information and Communication Technology (ICT) has emerged as a transformative force in the field of education, reshaping teaching methodologies, enhancing accessibility, and enabling personalized learning. the Indian government's initiatives, such as SWAYAM, Virtual Labs, National Digital Library etc support digital education across all levels. This paper explores various initiatives taken by government and the growing significance of ICT in teacher education, its role in fostering student-centered learning, its contribution to improving student-engagement, retention, and collaboration in classrooms. Despite the evident benefits, numerous challenges that hinder effective ICT integration are highlighted in this paper. The paper concludes by proposing targeted strategies to address these barrierssuch as improved funding, policy support, teacher capacity building, and local content developmentthus promoting the effective implementation of ICT in education and ensuring equitable access to quality learning opportunities.

Keywords: *Information and Communication Technology (ICT), virtual lab, Swayam, National digital library.*

9.23 Gamification Strategies in AI-Powered Teacher Training: Enhancing Pre-Service Teachers' Digital Competencies

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Abstract

The integration of artificial intelligence (AI) in educational contexts necessitates that pre-service teachers develop strong digital competencies. Traditional teacher education programs often fail to adequately engage future educators in meaningful technology skill development, resulting in inadequate preparation for technology-rich classrooms. Objective: This study investigates the effectiveness of gamification strategies in enhancing digital competency development among pre-service teachers engaged in AI-powered teacher training modules. Methods: A convergent mixed-methods quasi-experimental design was implemented over 14 weeks with 91 Bachelor of Education (B.Ed.) students at Government College of Teacher Education, Warangal (affiliated to Kakatiya University), from January to June 2025. Participants engaged with a comprehensive gamified learning environment featuring experience points, progression levels, achievement badges, challenge quests, and collaborative structures while mastering AI tools, including ChatGPT, DALL-E, Canva, and digital assessment platforms. Quantitative data included digital competency assessments (pre-, mid-, and post-tests), technology self-efficacy scales, and platform analytics. Qualitative data comprised weekly reflection journals (n=1,274 entries), focus group discussions (n=6), and semi-structured interviews (n=18). Results: Participants demonstrated statistically significant improvements across all six digital competency domains ($F(2,180) = 86.52$, $p < .001$, partial š = 0.49). Overall competency scores increased from $M = 2.16$ ($SD = 0.69$) to $M = 4.09$ ($SD = 0.59$), representing an 89.4% improvement. AI tool proficiency showed the largest gains (124.3%, d=2.39). Technology self-efficacy increased significantly (pre M=2.09 to post M=4.20, gain=2.11, 101.0% improvement, $t(90) = 22.67$, $p<.001$, d=2.36). Platform engagement remained high throughout (M=5.1 logins/week, M=7.3 hours/week), with 82% completing optional challenges. Qualitative analysis revealed a transformation from technophobia to confidence, the development of critical AI literacy, and the emergence of collaborative learning communities. Conclusions: Gamification strategies effectively enhanced digital competency development when systematically integrated

with AI-powered teacher training, addressing autonomy, competence, and relatedness needs as predicted by Self-Determination Theory.

Keywords: *Gamification; artificial intelligence; teacher education; digital competencies; pre-service teachers; self-determination theory; technology integration; educational technology.*

9.24 Building Digital Competence in Teacher Education

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Abstract

The rapid expansion of digital technologies has profoundly transformed educational practices worldwide, reshaping the expectations placed on teachers and teacher education institutions. In contemporary learning environments, teachers are required to demonstrate not only sound pedagogical knowledge but also a high level of digital competence to effectively plan instruction, facilitate technology-enhanced learning, manage blended and online classrooms, employ digital assessment tools, and engage in ongoing professional growth. Consequently, digital competence has become a fundamental professional requirement for teachers in the twenty-first century.In the context of teacher education, digital competence is a multidimensional construct that extends beyond basic operational skills. It involves the informed, critical, creative, and ethical application of digital technologies for teaching and learning purposes. This includes digital literacy, evaluation of online information, integration of instructional technologies, collaborative digital practices, development of digital learning resources, and the use of data to support pedagogical decision-making. This paper explores the meaning, scope, and educational relevance of digital competence in teacher education. It examines the key dimensions of digital competence required for effective teaching and identifies major challenges in its development, such as infrastructural limitations, inadequate professional training, unequal access to digital resources, and resistance to pedagogical innovation. The paper further proposes strategic approaches to strengthen digital competence among pre-service and in-service teachers through curricular reform, continuous professional development, institutional support, and policy-level initiatives. It concludes that a systematic and sustained integration of digital competence within teacher education programmes is essential for improving educational quality, fostering inclusivity, and preparing teachers for the demands of an increasingly digital society.

Keywords: *Digital competence, teacher education, ICT integration, professional development, twenty-first-century skills.*

9.25 Teaching Ethics to Machines: The Moral Mandate of Teacher Educators in the AI Era

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Abstract

The rapid integration of Artificial Intelligence (AI) into education has intensified ethical concerns related to bias, accountability, surveillance, and professional autonomy. While policy frameworks increasingly emphasize ethical AI, limited attention has been paid to the role of teacher educators in shaping ethical orientations toward AI within teacher preparation programs. This study examines the moral mandate of teacher educators in the AI era, arguing that ethical AI in education is fundamentally dependent on ethically grounded teacher education. Adopting a qualitative, secondary-data-based research design, the study synthesizes evidence from international surveys, policy reports, and peer-reviewed research published between 2015 and 2024. Findings reveal a significant gap between ethical awareness and pedagogical preparedness among teacher educators. Empirical data indicate that fewer than 40% of teacher educators globally have received formal training in AI ethics, despite widespread recognition of its importance. Institutions with structured ethics curricula demonstrate significantly higher integration of machine ethics, and educator familiarity with AI strongly correlates with willingness to engage in ethical discussions. The study concludes that teacher educators function as moral intermediaries who shape how future teachers interpret and govern AI in educational contexts. Ethical AI cannot be realized through technological design alone; it requires institutionalized ethical pedagogy within teacher education. The paper offers policy, pedagogical, and institutional recommendations to strengthen ethical capacity-building and ensure that AI serves democratic, inclusive, and human-centered educational goals.

Keywords: *Artificial Intelligence in Education; Machine Ethics; Teacher Education; Educational Ethics; Algorithmic Bias; Professional Responsibility.*

9.26 From Chalk to Clicks: Building Digital Competence in Teacher Education

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Abstract

The rapid transformation regarding educational products into the digital realm has had a profound impact on teaching and learning, and we have to redesign it in terms of how instructionis designed, how is delivered, and above all, how its assessment takes place. In the era of moving from traditional chalk and talk classrooms to technology entrenched contexts, teachers must exhibit strongdigital literacy that blends pedagogical judgement with ethical, critical and creative use of technology. This paper will explorehow teacher education can intentionally develop digital competence in order to underpin pedagogy that uses technology effectively. Utilizing well-established frameworks like DigCompEdu, the Technological Pedagogical Content Knowledge (TPACK) framework, andUNESCO ICT Competency Framework for Teachers, the study brings together theoretical considerations, policy trends and teaching practices related to the preparation of teachers in todays context. The paper emphasises the increasing demand for digitally competent teachers, due to changing learner profiles,the rise of blended and online learning and national and international policy reforms. It demonstrates its role in integrating digital competence into curricula, pedagogy, assessment and teacher professional development is also debated as are the challenges of infrastructure, faculty readiness, digital divide and attitudinal dimensions of change in anIndian context. It also suggests best practices and evidence-informed approaches, such as curriculum infusion, experiential learning, mentorship, and multimodal-shaped professional development that areneeded to strengthen digital competence in teacher education. Quite; by bridging theory, policy and practice, this study reinforces the urgent need for a unified and durable stance in teacher preparation to tutor teacherstoward managing the move from chalk to clicks (Cuban) for meaningful learning in cyber space

Keywords: *Digital Competence, Teacher Education, Technology-Integrated Pedagogy, Digital Pedagogy, Teacher Professional Development, ICT in Education.*

9.27 normalsize Building Digital Competence in Teacher Education: A Critical and Contextual Analysis

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Abstract

Digital competence has turned out to be an important and crucial dimension of teacher professionalism in modern education systems. Education now not only depends on teacher cognitive abilities and understanding for awakening wisdom in traditional methods of teaching learning but it is more about up gradation and incorporation of 21st century competencies in technologically advance society where education for teacher is also done though integrating digital competencies and technical knowledge among them. While the integration of technology into policy documents and international frameworks is increasingly being put into focus, the translation of these aspirations into meaningful teacher education practices remains uneven. This paper critically analyses the concept of digital competence in teacher education, moving beyond instrumental views of technology toward a pedagogically and ethically founded understanding. Based on established theoretical frameworks and related policy developments, such as global competence models and India's National Education Policy (NEP) 2020, the study investigates how digital competence is conceptualized, operationalized, and constrained within teacher education programs. Of particular focus are structural inequalities, curricular fragmentation, and the persistence of technocratic approaches that favor tools over pedagogy. The paper contends that digital competence needs to be understood as a situated professional capacity shaped by institutional culture, disciplinary knowledge, and reflective practice. It concludes by outlining analytically grounded strategies for embedding digital competence within teacher education via curriculum integration, critical digital literacy, and sustained professional learning ecosystems.

Keywords: *Digital competence, teacher education, digital pedagogy, professional*

knowledge, educational policy.

9.28 Building Digital Competence in Teacher Education

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Abstract

The rapid advancement of Artificial Intelligence (AI) has significantly transformed educational systems, particularly in the domain of teacher education. As classrooms evolve into technology-rich learning environments, the role of teachers is expanding beyond traditional instructional practices to include digital facilitation, data-informed decision-making and ethical engagement with emerging technologies. This shift necessitates the development of strong digital competence among pre-service and in-service teachers. The present paper examines the relationship between Artificial Intelligence and the future of teacher education with a specific focus on building digital competence in teacher education programs. Using a conceptual and analytical framework, the study explores the applications of AI in teacher education, the essential components of digital competence and the challenges associated with integrating AI-driven tools into teacher preparation. The paper also highlights strategies for strengthening digital competence through curriculum redesign, professional development, experiential learning and ethical awareness. The findings indicate that AI has the potential to enhance teacher training through personalized learning pathways, intelligent feedback systems and simulated teaching environments. However, successful integration depends on teachers readiness, institutional support and responsible use of technology. The paper concludes that embedding AI literacy and digital competence within teacher education is essential for preparing educators who can effectively respond to the demands of future classrooms while maintaining human-centred pedagogical values.

Keywords: *Artificial Intelligence; Teacher Education; Digital Competence; Educational Technology; Professional Development; Future Education.*

9.29 Google Classroom as a Foundation for AI-Supported Teacher-Student Interaction in B.Ed. Pre-Service Teacher Education

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Abstract

This study investigated how Google Classroom functions as a primary digital platform for enabling teacher-student interactions and engagement in preservice teacher education. It specifically examined the views of preservice teachers enrolled in a 2-year B.Ed. program about the benefits associated with the key features of the application; such as the features associated with assignments, learning materials, Google Forms for Quizzes, and Collaborative Communication tools. A descriptive survey design was employed to collect information from the sample of 86 participants using a detailed structured questionnaire. The data from the survey was analysed using descriptive statistics (i.e., mean and standard deviation). Results of the analysis revealed that Google Classroom has allowed preservice teachers to have increased levels of engagement, self-direction in learning, and increased levels of interactions with their instructors. The assignments and quizzes received the highest scores from participants regarding feedback and formative assessments. The findings shows that Google Classroom has provided an effective platform to establish AI-empowered, data-driven educational practices in the preparation of teachers. Future recommendations include enhanced institutional digital infrastructures, increased promotion of digital literacy, and the use of AI-based analytics to guide individualize learning experiences moving forward.

Keywords: *Google Classroom, B.Ed. preservice teachers, AI-supported pedagogy, teacherstudent interaction, educational technology.*

9.30 Artificial Intelligence and the Future of Teacher Education

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سمینار کا موضوع : مصنوعی ذہانت اور اساتذہ کی تربیت کا مستقبل

سمینار کا ذیلی عنوان : ذاتی نوعیت کی تعلیم : موافق تعلیم کے لیے اساتذہ کی تربیت میں مصنوعی ذہانت کا کردار

ڈاکٹر محمد عظیم

جدید تعلیمی نظام میں طلبہ کی متنوع تعلیمی ضروریات اور سیکھنے کے انداز کے پیش نظر ذاتی نوعیت کی تعلیم (Personalized Learning) تعلیمی معیار کو بڑھانے کے لیے ایک ناگزیر رجحان کے طور پر ابھر کر سامنے آئی ہے۔ اساتذہ کی تربیت میں مصنوعی ذہانت (Artificial Intelligence) کا انضمام اس سلسلے میں نہایت اہمیت رکھتا ہے، کیونکہ یہ تربیتی عمل کو نہ صرف زیادہ موثر، لچکدار اور موافق (Adaptive) بناتا ہے بلکہ اساتذہ کو اپنی تدریسی مہارتوں میں جدت اور پیشہ ورانہ ترقی کے مواقع بھی فراہم کرتا ہے۔

مصنوعی ذہانت پر مبنی تربیتی نظام اساتذہ کو یہ قابل بناتے ہیں کہ وہ طلبہ کی انفرادی سطح، سیکھنے کی رفتار اور علمی ضروریات کے مطابق فوری فیڈ بیک فراہم کر سکیں۔ اس کے نتیجے میں تدریسی حکمت عملیوں کی منصوبہ بندی زیادہ معلوماتی، مستند اور موثر ہو جاتی ہے۔ اساتذہ AI کی مدد سے طلبہ کے تعلیمی ریکارڈز، آن لائن سرگرمیوں، اور تشخیصی نتائج کا تجزیہ کر کے اپنی تدریسی سرگرمیوں کو بہتر بنا سکتے ہیں، جس سے طلبہ کے سیکھنے کا عمل زیادہ ذاتی نوعیت اور موثر بن جاتا ہے۔

مزید برآں، مجازی مشقیں (Virtual Simulations) اور موافق تدریسی پلیٹ فارمز اساتذہ کو عملی تربیت اور تدریسی تجربات فراہم کرتے ہیں، جو روایتی کلاس روم کی محدودیت سے ماورا ہیں۔ یہ تربیتی طریقے نہ صرف اساتذہ کی پیشہ ورانہ مہارت میں اضافہ کرتے ہیں بلکہ انہیں تعلیمی چیلنجز کے لیے تخلیقی اور معلوماتی حل تلاش کرنے کے قابل بھی بناتے ہیں۔ AI پر مبنی تجزیاتی آلات (Analytics Tools) اساتذہ کو کلاس روم کے ڈیٹا کو سمجھنے، طلبہ کی ترقی کا جائزہ لینے، اور تدریسی حکمت عملیوں میں فوری تبدیلیاں کرنے کی سہولت دیتے ہیں۔

اساتذہ کی تربیت میں مصنوعی ذہانت (AI) کا استعمال نہ صرف تکنیکی مہارتوں پر توجہ دیتا ہے بلکہ تعلیم میں انسانی اور اخلاقی معیار کو بھی برقرار رکھتا ہے۔ تربیتی پروگرام اساتذہ کو تعلیمی مساوات، ڈیجیٹل انصاف، اور اخلاقی فیصلوں کے حوالے سے آگاہ کرتے ہیں، تاکہ ٹیکنالوجی کے استعمال کے دوران انسانی پہلو نظر انداز نہ ہو۔ اس طرح، مصنوعی ذہانت (AI) نہ صرف تدریسی عمل کو مضبوط بناتا ہے بلکہ تعلیم کے سماجی اور اخلاقی پہلوؤں کو بھی تقویت فراہم کرتا ہے۔

مولانا آزاد نیشنل اردو یونیورسٹی جیسے علمی اداروں میں AI کے ذریعے اساتذہ کی تربیت کے فروغ سے نہ صرف اردو تعلیمی نظام میں معیار کی بہتری ممکن ہے بلکہ یہ تربیت طلبہ کے سیکھنے کے تجربے کو بھی زیادہ معنی خیز، ذاتی نوعیت، اور مستقبل کے تعلیمی تقاضوں کے مطابق ڈھالتی ہے۔ اس مطالعے کا مقصد یہ جانچنا ہے کہ AI کس طرح اساتذہ کی تربیت میں ذاتی نوعیت کی تعلیم کو فروغ دے سکتا ہے، اور کس طرح یہ تربیت مستقبل کے تعلیمی ماحول میں اساتذہ کی پیشہ ورانہ استعداد، تخلیقی صلاحیت اور تدریسی مہارت کو بڑھا سکتی ہے۔

یہ مطالعہ تعلیمی تحقیق، ڈیٹا پر مبنی تجزیات، اور جدید تدریسی حکمت عملیوں کے امتزاج کے ذریعے یہ ظاہر کرتا ہے کہ AI کا انضمام نہ صرف تدریس اور تربیت کے معیار کو بلند کرتا ہے بلکہ تعلیمی نظام کو مزید شفاف، موثر اور طلبہ کے لیے موافق بناتا ہے۔ اس کے ساتھ ساتھ، یہ تحقیقی کوشش مولانا آزاد نیشنل اردو یونیورسٹی کے اساتذہ اور محققین کو AI کی تربیتی امکانات سے روشناس کرانے، اردو زبان میں تعلیمی مواد کی تیاری میں جدید ٹیکنالوجی کے استعمال، اور مستقبل کے تعلیمی چیلنجز کے لیے بہتر تیاری کے قابل بناتی ہے۔

کلیدی الفاظ : مصنوعی ذہانت، ذاتی نوعیت کی تعلیم، موافق تعلیم، اساتذہ کی تربیت، مجازی مشقیں، ڈیٹا پر مبنی تجزیات، تعلیمی اخلاقیات، تعلیمی مساوات، تدریسی حکمت عملی، اردو تعلیمی نظام

9.31 Role of Artificial Intelligence in the Future of Teacher Education

عنوان: مستقبل کی ٹیچر ایجوکیشن میں مصنوعی ذہانت کا کردار

Role of Artificial Intelligence in the Future of)
(Teacher Education

خلاصہ:

ہندوستان میں ثانوی تعلیم اساتذہ کی کمی، دیہی علاقوں میں ناکافی تربیت، اور متنوع طالب علم کی ضروریات سے جوجھ رہی ہے۔ تعلیم کے میدان میں تیزی سے ہونے والی تکنیکی ترقی نے ٹیچر ایجوکیشن کے نظام کو نئے امکانات سے روشناس کرایا ہے، جن میں مصنوعی ذہانت (Artificial Intelligence) ایک اہم کردار ادا کر سکتی ہے۔ یہ نظریاتی مقالہ اس تناظر میں ہندوستانی ثانوی تعلیم میں مصنوعی ذہانت کے کردار کا جائزہ لیتا ہے۔

مقالے میں اس بات پر روشنی ڈالی گئی ہے کہ مصنوعی ذہانت پر مبنی تعلیمی ٹولز، جیسے ایڈاپٹو لرننگ پلیٹ فارمز، ورچوئل سمیولیشنز اور ڈیٹا پر مبنی تشخیصی نظام، کس طرح پری سروس اور اِن سروس اساتذہ کی تربیت کو زیادہ مؤثر بنا سکتے ہیں۔ یہ ٹیکنالوجیز اساتذہ کو ذاتی نوعیت کی سیکھنے کی سہولت، بروقت رہنمائی اور تدریسی عمل پر غور و فکر کے منظم مواقع فراہم کرتی ہیں، جبکہ شمولیاتی ٹیچر ایجوکیشن کے تناظر میں مختلف النوع کلاس رومز کے انتظام اور طلبہ کی انفرادی ضروریات کو سمجھنے میں بھی معاون ثابت ہوتی ہیں۔

اس کے ساتھ ہی، مقالہ اخلاقی مسائل، ڈیٹا کی رازداری، الگورتھمی تعصب اور ڈیجیٹل صلاحیتوں کی کمی جیسے چیلنجز کو بھی زیر بحث لاتا ہے۔ نتیجتاً یہ استدلال پیش کیا جاتا ہے کہ اگرچہ مصنوعی ذہانت اساتذہ کا نعم البدل نہیں، تاہم اس کا دانشمندانہ، ذمہ دارانہ اور سیاقی طور پر موزوں استعمال ٹیچر ایجوکیشن کے مستقبل کو زیادہ مضبوط، مؤثر اور طالبِ علم مرکوز بنا سکتا ہے، خصوصاً ہندوستانی ثانوی تعلیم کے نظام میں پالیسی اور عمل دونوں سطحوں پر۔

کلیدی الفاظ : مصنوعی ذہانت، ٹیچر ایجوکیشن، مستقبل کی تعلیم، شمولیاتی تعلیم، پیشہ ورانہ ترقی

9.32 AI for Inclusive Teacher Education: Opportunities and Challenges in the Context of NEP 2020

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(AI) Artificial Intelligence کی تیزی سے ترقی تعلیمی میدان کو بنیادی طور پر تبدیل کر رہی ہے، ہمارے سیکھنے، سکھانے اور اپنے ارد گرد کی دنیا کو سمجھنے کے طریقے کو نئی شکل دے رہی ہے۔ قومی تعلیمی پالیسی (NEP) 2020 بھارت کے تعلیمی نظام میں شمولیت، مساوات اور معیار کو بنیادی اقدار کے طور پر تسلیم کرتی ہے، خصوصاً اساتذہ کی تعلیم کے شعبے میں۔ شمولیتی تعلیم کا مقصد ایسے اساتذہ تیار کرنا ہے جو مختلف صلاحیتوں، سماجی و معاشی پس منظر، لسانی تنوع اور خصوصی تعلیمی ضروریات رکھنے والے طلبہ کے ساتھ مؤثر طور پر کام کر سکیں۔ اس تناظر میں مصنوعی ذہانت (Artificial Intelligence) ایک اہم ابھرتی ہوئی ٹیکنالوجی کے طور پر سامنے آئی ہے جو شمولیتی اساتذہ کی تعلیم کو مؤثر بنانے کی صلاحیت رکھتی ہے۔ یہ مقالہ NEP 2020 کے پالیسی فریم ورک کے تناظر میں اساتذہ کی شمولیتی تعلیم میں مصنوعی ذہانت کے مواقع اور چیلنجز کا جائزہ لیتا ہے۔ مصنوعی ذہانت پر مبنی آلات جیسے موافق تعلیمی پلیٹ فارمز (Adaptive learning platforms) ، معاون ٹیکنالوجیز (Assistive technology) اور لرننگ اینالیٹکس، اساتذہ کو متنوع کلاس رومز کے لیے تیار کرنے میں معاون ثابت ہو سکتے ہیں (Holmes et al.2019; UNESCO, 2021) ۔ تاہم، ڈیجیٹل عدم مساوات، اخلاقی نگرانی، الگورتھمک تعصب اور ڈاٹا کی رازداری جیسے مسائل سنگین پالیسی خدشات کو جنم دیتے ہیں۔ یہ مطالعہ اس بات پر زور دیتا ہے کہ اگر مصنوعی ذہانت کو ذمہ دارانہ اور انسانی اقدار پر مبنی طریقے سے نافذ نہ کیا گیا تو یہ تعلیمی عدم مساوات کو کم کرنے کے بجائے بڑھا سکتی ہے۔ مقالہ اس نتیجے پر پہنچتا ہے کہ NEP 2020 کے مطابق مساوی، اخلاقی اور ذمہ دار مصنوعی ذہانت کے انضمام کے ذریعے ہندوستان میں شمولیتی اساتذہ کی تعلیم کو مؤثر بنایا جا سکتا ہے۔

کلیدی الفاظ (Key words) : مصنوعی ذہانت ، شمولیتی اساتذہ کی تعلیم، قومی تعلیمی پالیسی ۲۰۲۰، مساوات اور رسائی

9.33 Teacher Education and Digital Capacity Building: An Analytical Study

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تعلیم و تدریس کے بدلتے ہوئے منظرنامے اور جدید تکنیکی آلات کے تغیر پذیر امکانات اور ایجادات نے آموزش اور اکتساب کے تصور کو یکسر بدل کر رکھ دیا ہے۔ عصر حاضر کا تعلیمی نظام روایتی چاک اور بورڈ کے طریقوں سے ڈیجیٹل ٹیکنالوجی اور اسمارٹ بورڈ کی طرف تیزی سے منتقل ہو رہا ہے۔ اس تبدیلی نے اساتذہ کے کردار اور ان سے وابستہ توقعات کو یکسر بدل دیا ہے۔ تعلیم و تدریس کے ابھرتے ہوئے اس نئے تقاضے اور مطالبات نے اساتذہ کے لیے ڈیجیٹل استعداد کے حصول کو ناگزیر بنا دیا ہے۔تکنیکی معلومات، مہارت اور اخلاقی بنیاد پر مبنی ڈیجیٹل استعداد اساتذہ کو اپنی تدریس کو مؤثر، نتیجہ خیز اور قابل اکتساب بنانے کے مواقع فراہم کرتا ہے۔ڈیجیٹل خواندگی کی سمجھ، مواد کی تخلیق، ہم پیشہ افراد سے معلومات اور مواد کا تبادلہ نہ صرف معیاری تعلیم کی فراہمی کو ممکن بناتا ہے بلکہ طلبا کو اکیسویں صدی کی مہارتوں سے لیس کرنے میں بھی کلیدی کردار ادا کرتا ہے۔

قومی تعلیمی پالیسی 2020 نے ملک کے تعلیمی نظام کی اصلاح میں اساتذہ کو سب سے اہم قرار دیا ہے۔ قومی تعلیمی پالیسی 2020اساتذہ کی تعلیم و تربیت میں ٹیکنالوجی کے کلیدی کردار کو تسلیم کرتی ہے اور SWAYAM اور DIKSHA جیسے پلیٹ فارمز کے ذریعے آن لائن تربیت کی حوصلہ افزائی کرتی ہے۔

اساتذہ درسیات، نصاب اور تدریسیات کی از سر نو تشکیل اور تعمیر میں کلیدی رول ادا کرتے ہیں۔ اس تناظر میں اساتذہ کے لیے محض ٹیکنالوجی کا استعمال سیکھنا کافی نہیں بلکہ ڈیجیٹل تدریسیات کی گہری سمجھ اورتکنیکی۔تدریسیاتی مہارتوں کا حصول بھی لازمی ہے۔ ڈیجیٹل استعداد محض ایک ہنر نہیں بلکہ یہ مختلف صلاحیتوں کا مجموعہ ہے جس میں انٹرنیٹ سرفنگ و مواصلاتی آلات، آموزش اور تبادلہ کے وسائل، کورس مینجمنٹ اور تشخیصی ذرائع،سمعی و بصری مواد کے تخلیقی آلات، تحریری و پیش کش کے وسائل، مصنوعی ذہانت کے آلات، مضامین و زبان مخصوص اپلی کیشنز اور ڈاٹا کے تجزیاتی و تصوراتی آلات کی سمجھ اور انضمام و استعمال کی صلاحیت شامل ہیں۔ڈیجیٹل استعداد کا حصول اساتذہ کے لیے محض ضروری نہیں بلکہ یہ ان کی پیشہ ورانہ بقا اور ترقی کا کلید ہے۔اساتذہ ان استعداد کے ذریعے نہ صرف اپنے تدریسی عمل کو مؤثر اور ماحصل مرکوز بنا سکتے ہیں بلکہ وہ طلبا میں ایسی مہارتیں پیدا کر سکتے ہیں جن کے توسط سے وہ ڈیجیٹل دنیا میں معاش حاصل کر سکتے ہیں۔

کلیدی الفاظ: تعلیم اساتذہ، استعداد سازی، تکنیکی آلات، ڈیجیٹل خواندگی، ڈیجیٹل استعداد، ڈیجیٹل تدریسیات

Sub-Theme 10:
Innovative Curricula for an AI-Driven Academic Environment

10 Innovative Curricula for an AI-Driven Academic Environment

10.1 Ai-Driven Mentorship In Multilingual Teacher Education: Bridging Career Guidance And Linguistic Inclusion

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Abstract

The rapid integration of Artificial Intelligence (AI) in education is reshaping how teachers are trained, mentored, and supported in their professional growth. However, most AI tools remain English-centric, marginalizing pre-service teachers who work in regional or Urdu-medium environments. This conceptual study explores how AI can function as a digital mentor, offering career guidance, reflective feedback, and skill analytics, while simultaneously promoting linguistic inclusivity in teacher education. Drawing upon the principles of the National Education Policy (NEP 2020) and frameworks of inclusive digital pedagogy, the paper examines how AI mentorship systems can provide personalized professional recommendations, such as identifying teaching strengths, suggesting specialization areas, and delivering multilingual learning feedback. The proposed framework envisions AI not as a substitute for human mentoring, but as a collaborative partner that democratizes access to guidance and ensures equity in diverse linguistic contexts. The discussion also highlights ethical challenges including algorithmic bias, data fairness, and the need for teacher AI-literacy to interpret automated insights responsibly. The study concludes that embedding AI-driven mentorship in multilingual teacher education can create a balanced ecosystem, preserving linguistic diversity while preparing future-ready educators for an AI-augmented world.

Keywords: *Artificial Intelligence, Teacher Education, Multilingualism, AI Mentorship, Career Guidance, Linguistic Inclusion, NEP 2020.*

10.2 Artificial Intelligence: A Revolution in Education

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Abstract

Teacher education plays a crucial role in improving the quality of teaching and learning, and Artificial Intelligence (AI) is bringing meaningful changes to this field. The use of AI in teacher education could help in developing skilled, adaptable, and future-ready educators. AI enhances teacher education through intelligent tutoring platforms, customized training plans and adaptive learning methods. These tools allow teachers to learn at their own pace and according to their individual needs. AI also provides database-based feedback and classroom simulations, which could help future teachers improve their pedagogical skills and decision-making abilities. As a result, teachers are better prepared to handle diverse classroom situations. Another important contribution of AI is improving efficiency and inclusivity in teacher training. AI makes learning resources more accessible and supports continuous professional development. It helps teachers adjust to modern digital classrooms while maintaining a balance between technology and human values in education. The future of teacher education highlights a shift in the role of teachers from being mere knowledge providers to facilitators of meaningful learning experiences. AI is not expected to replace teachers but to assist and empower them. When used responsibly and ethically, AI can enhance teaching practices and support innovation in education. As such, artificial intelligence is a powerful tool that is transforming teacher education and shaping the future of inclusive and quality education.

Keywords: *Artificial Intelligence, Teacher Education, Educational Technology, Teaching Skills, Digital Learning, Professional Development, Future Education.*

10.3 A detailed study Redefining Mentorship: Impact of AI-Driven Educational Nudges on the saving and Spending Discipline of Mumbais Generation Z

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Abstract

This study investigates the paradigm shift in financial pedagogy through the deployment of Artificial Intelligence enabled educational nudges, specifically targeting the fiscal behaviours of Generation Z in the hyper digitalised context of metropolitan Mumbai. While traditional financial literacy models often rely on static mentorship, this research explores a dynamic, AI-mediated framework designed to bridge the gap between financial knowledge and actualised behaviour. Drawing upon the principles of Choice Architecture and Behavioural Economics, the research analyses the efficacy of "nudging" mechanisms including real-time algorithmic spending alerts, gamified savings trajectories, and predictive behavioural insights delivered via fintech interfaces. The study posits that these AI-driven interventions function as a digital mentor, providing personalised, non-coercive guidance that aligns with the euro-cognitive and social preferences of a digitally native cohort. Adopting a robust mixed-methods research design, the study evaluates quantitative shifts in budgeting consistency and savings ratios alongside a qualitative phenomenological assessment of user trust and perceived agency in AI-human collaborative mentorship. By contextualising the findings within Mumbais unique socio-economic landscape, the research addresses the critical intersection of fintech adoption and impulsive consumption patterns. Preliminary results suggest that AI-driven nudges significantly enhance financial self-regulation by reducing cognitive load and providing just-in-time educational feedback. The paper concludes by addressing the ethical imperatives of algorithmic transparency and data privacy, ultimately contributing a theoretical model for leveraging AI driven pedagogy to foster long-term financial resilience in emerging adult populations.

Keywords: *Nudge Theory, Artificial Intelligence, Financial Literacy, Generation*

Z, Behavioural Economics, Fintech, Mumbai, Fiscal Discipline.

10.4 A study of AI - driven pedagogical transformation for Gen Z learners

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Abstract

Artificial Intelligence (AI) is transforming education, particularly for Generation Z students who are using digital devices on a daily basis. This study examines how Gen Z students' learning experiences are enhanced by using AI-based teaching techniques by the teachers. It focuses on tools that make learning more flexible, more personalized, more interactive by using different modes of teaching such as virtual tutors, learning analytics, and automated assessments tools.The study examines the effects of AI-supported learning on motivation, engagement, and interest in learning using surveys, different data available and student feedback. The findings demonstrate how AI tools enable students to learn at their own speed and make them develop into more autonomous learners. Additionally, when technology is employed to enhance learning effectively, students feel more engaged in learning.The report also identifies certain obstacles to the application of AI in education. These include the requirement for teachers to acquire new digital skills, worries about student data protection, and unequal access to digital devices or the internet. According to the findings of the study, AI offers a lot of potential to enhance learning instruction for Gen Z students. To provide students a inclusive learning experiences, AI must be used responsibly by students and teachers. Teachers must receive the required necessary skill-based training, and all the students must have equal access to the technology so that there is no bias.

Keywords: *Personalized learning, Student engagement, Digital learning, Artificial intelligence, AI in education, Gen Z learners, and educational technology.*

10.5 AI Supported Reflective Self Design in Teacher Education from an Entagogical Perspective

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Abstract

The rapid adoption of Artificial Intelligence (AI) in teacher education has largely focused on performance analytics, automated feedback, and efficiency-driven evaluation. Within these approaches, teacher reflection is commonly treated as an individual, reactive, and retrospective activity. This paper argues that such narrow understanding limits the broader transformative potential of AI for meaningful professional learning. Drawing on an entagogical perspective, where AI is integrated with learning, enabling teachers to reflect on their practices through measurable indexes and adaptive processes. It reimagines reflective practice as an entangled, co-constructed, and networked process that unfolds through interactions among teachers, peers, AI systems, and classroom contexts.The central aim of the paper is to propose a conceptual framework for AI-supported reflective self-design in teacher education. It seeks to critically examine prevailing AI-driven models that reduce reflection to measurement and compliance, to reconceptualize reflection as a relational and socio-material process, and to reposition AI as a co-creative partner in reflective practice rather than as an external evaluative authority. Adopting a conceptual and theoretical analysis approach, the paper integrates key entagogical principles to demonstrate how AI can support dialogic reflection, offer adaptive prompts, identify emerging patterns in practice. It can also enable collaborative sense-making within reflective learning ecologies. In this framework, reflection does not occur in isolation but emerges through ongoing interactions among human and non-human actors, allowing teachers to continuously shape their pedagogical identities and professional decision-making. The analysis suggests that AI-supported entagogical reflection strengthens teacher agency, encourages collective meaning-making, and fosters sustained professional growth beyond compliance-oriented assessment models. The paper concludes that an entagogical approach to AI integration has the potential to transform teacher education by redefining reflection as a distributed and co-authored practice. It further advocates for the ethical design of AI systems that support reflective autonomy, relational learning, and context-responsive professional development.

Keywords: *Artificial Intelligence in Education, Teacher Reflection, Reflective Self-Design, Entagogy, Teacher Education.*

10.6 Artificial Intelligence as a Catalyst for Transforming Teacher Education

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Abstract

Artificial Intelligence (AI) is increasingly acting as a catalyst for transformative change in teacher education by reshaping how teachers are prepared for complex, technology-rich learning environments. This paper examines the role of AI in enhancing teacher education through personalized learning pathways, intelligent tutoring systems, data-driven feedback, and virtual teaching simulations that support reflective and adaptive pedagogical practices. It explores how AI-driven learning analytics enable teacher educators to identify individual strengths and professional development needs, thereby improving instructional effectiveness and curriculum design. At the same time, the study critically addresses key challenges associated with the integration of AI in teacher education, including ethical concerns, data privacy, algorithmic bias, and the necessity of developing AI literacy among future teachers. The paper argues that AI should not be viewed as a substitute for human educators, but as a supportive tool that augments professional judgment, creativity, and pedagogical decision-making. Emphasizing a human-centered and ethically responsible approach, the study highlights the importance of policy alignment, institutional readiness, and continuous professional development in leveraging AI effectively. By positioning AI as an enabler rather than a disruptor, this paper contributes to the discourse on future-ready teacher education and offers insights for policymakers, teacher educators, and institutions seeking sustainable and inclusive educational transformation.

Keywords: *Artificial Intelligence, Teacher Education, Educational Transformation, Learning Analytics, Pedagogical Innovation, Professional Development.*

10.7 Artificial Intelligence and Society: An Academic Inquiry through Films and Web-Series

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Abstract

Artificial Intelligence is no longer limited to research laboratories or technical discussions. It has become part of everyday life and is now used in classrooms, offices, courts, hospitals, markets, and digital platforms that influence human behaviour and emotions. As AI technologies continue to expand, popular films and web-series have become important mediums through which people understand and question these changes. This paper analyses selected films and web series like Black Mirror, Her, Ex Machina, The Social Dilemma, Wonderland, and the Indian film Humans in the Loop to examine how media narratives reflect public concerns related to privacy, emotional dependence on machines, hidden digital labour, algorithmic influence and loss of human control. The study connects these narratives with current issues in India's AI environment, such as digital governance initiatives, the spread of deep fakes, data-based labour practices, and emerging policy challenges. The paper argues that although fictional representations sometimes exaggerate risks, they play an important role in raising awareness about ethical issues and encouraging public discussion at a time when societies must carefully decide how AI should be integrated into human life.

Keywords: *Artificial Intelligence; AI Ethics; Media Representation; Popular Culture; Human-Machine Interaction.*

10.8 Artificial Intelligence As A Tool For Effective Nutrition And Public Health Education

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Abstract

Artificial Intelligence (AI) is being increasingly utilized to enhance the quality and accessibility of education and healthcare systems. In the field of nutrition and public health, where awareness, behavior change, and timely information are essential, AI offers innovative opportunities to strengthen learning and communication. Traditional nutrition education methods often rely on generalized messages that may not suit the diverse needs of different populations. AI helps overcome this limitation by providing personalized, data-driven, and interactive educational support. AI-based tools such as mobile applications, virtual assistants, chatbots, and machine learning systems can analyze individual dietary habits, health conditions, and lifestyle patterns to generate customized nutrition advice. These technologies can support individuals in making healthier food choices, managing chronic diseases, and preventing nutritional deficiencies. In public health programs, AI can assist educators and policymakers by identifying high-risk groups, monitoring dietary trends, and evaluating the effectiveness of nutrition interventions in real time. AI also plays a significant role in improving nutrition education in schools, colleges, and community settings. Interactive platforms powered by AI enhance learner engagement through quizzes, visual content, and instant feedback, making complex nutrition concepts easier to understand. Moreover, AI-enabled digital platforms can extend nutrition education to remote and underserved populations, reducing gaps in access to reliable health information. However, the successful use of AI in nutrition and public health education depends on ethical use of data, privacy protection, and digital literacy. When applied responsibly, AI can become a valuable tool in creating more effective, inclusive, and evidence-based nutrition education systems, contributing to improved public health outcomes and long-term well-being.

Keywords: *Artificial Intelligence, Nutrition Education, Public Health, Digital Health.*

10.9 A Study on Digital Competence as a Core Skill for 21st-Century Teachers (Degree & PG Lecturers

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Abstract

Digital competence has emerged as a core professional skill for teachers in the 21st century, especially in the context of higher education where technology-driven teach-

ing and learning practices are increasingly prevalent. Degree and post-graduate (PG) lecturers are expected to effectively integrate digital tools into teaching, assessment, and academic engagement to enhance learning outcomes and meet the evolving needs of students. The present study aims to assess the level of digital competence among degree and PG lecturers and to examine the extent of use of digital tools in teaching and assessment processes. The study is based on primary data collected from degree and PG lecturers using a structured questionnaire. The questionnaire covers key aspects of digital competence, including basic digital literacy, use of digital tools for classroom teaching, and so on. The findings of the study indicate that most lecturers possess a moderate to high level of digital competence and regularly use digital tools such as presentations, online platforms, and learning management systems in their teaching practices. Digital tools are widely used for content delivery and student assessment; however, variations are observed in the level of confidence and frequency of use across different lecturers. The study concludes that enhancing digital competence among degree and PG lecturers is essential for improving teaching effectiveness and ensuring quality higher education in the digital era.

Keywords: *Digital Competence; 21st-Century Teachers; Higher Education.*

10.10 Cost Effective Technology-Enabled Supervision in the Light of Policy Recommendations: Proposing a Model for B.Ed. Interns

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Abstract

Supervising internship or teaching practice is generally considered an important task in B.Ed. programme. It helps interns in learning the science and arts of teaching. Integrating technology in teaching practice at B.Ed. level particularly for supervision is crucial area that needs reform. NEP 2020 stresses the need of technology in education and teacher preparation as well. It advocates promotion of digital platforms such as SWAYAM and DIKSHA for the professional development of teachers. NCFSE 2023 based on the foundations of NEP 2020 also advocates technology enabled school education enhancing inquiry based experiential pedagogy. Equally important scenario is associated with underinvestment and unequal distribution of infrastructural facilities in Indian school leading to stark digital divide and issues of functional computers, internet access and overall digital foundations in many Indian

schools. It is in this context a cost effective technology-enabled model is required which ensures effective supervision by improving accessibility, consistency, reach and objectivity. This paper follows narrative synthesis method in order to understand the genesis behind technology enabled supervision that is cost effective based on recommendations of various studies and policy documents in general and advocacies of NEP 2020 and NCFSE 2023 in particular. The paper proposes a model of supervision that includes cost effective technologies having the potentialities of wide access such as smart mobiles, open access software and cloud storage. It suggests cloud based platforms where videos can be uploaded, lesson plans may be submitted, parameter based evaluations with the help of digital rubrics and checklist can be done. The model offers scalable solutions at par with policy recommendations promoting accessibility, quality and inclusion in supervision of B.Ed. interns.

Keywords: *Internship Supervision, Cost-Effective Technology, Cloud based Platform, NEP 2020, NCFSE 2023.*

10.11 De-depress model: recognizing the patterns of depression on human mental health using deep learning model

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Abstract

Social factors associated with soft skills play a critical role in shaping human behavior and mental well-being. Variations in gender, socioeconomic status, educational background, and family environment can contribute to the transition from a healthy to an unhealthy mental state, with depression being one of the most prevalent outcomes. This study investigates the effectiveness of machine learning techniques for identifying depression among university students based on social factors. We have proposed the deep learning based De-depress model for finding the patterns using the USDI-30 dataset, which comprises responses to 30 social-factor-related attributes. Experimental results demonstrate that the recurrent network model outperforms the other classifiers in terms of predictive performance. The findings further indicate that social factor response patterns are significant indicators of depression levels. This study highlights the potential of machine learningbased approaches for early depression detection and supports the integration of social factor analysis in mental health assessment frameworks.

Keywords: *deep learning, socioeconomic, mental health, recurrent network, depression.*

10.12 Effectiveness of program based on artificial intelligence for development of students mechanical ability

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Abstract

The basic goal of education is the all round development of students or the all round development of the student. It is necessary to develop his various abilities. School education is very important for this.School education is a period of development for students. It is necessary to identify the abilities of students and create a conductive environment for their development and implement of based on Artificial intelligence for capacity building. Science and technology is a required subject at the secondary level.It is necessary to organize various activities and program based on artificial intelligence to develop mechanical ability through science and technology subjects. Artificial intelligence is a field of computer science focused on creating machines that can simulate human intelligence.

Keywords: *Computer science, Artificial Intelligence, School Education, Conducive learning environment.*

10.13 Emotional AI in Marketing: Leveraging Sentiment Analysis to Predict and Influence Consumer Preferences

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Abstract

This research explores into the evolving role of Emotional Artificial Intelligence (Emotional AI) in shaping contemporary marketing strategies, emphasizing the application of sentiment analysis to anticipate and influence consumer choices. Emotional AI empowers marketers to interpret consumer emotions through digital behavior, paving the way for more customized and emotionally resonant marketing efforts. By analyzing both quantitative and qualitative data, this study uncovers a strong correlation between consumer sentiment and buying patterns. Real-life case examples demonstrate that emotion-driven marketing significantly improves campaign effectiveness. The research also considers pressing ethical and technological issues such as privacy concerns and the reliability of emotion recognition technologies. The findings highlight Emotional AI's vast potential in marketing while reinforcing the importance of ethical and transparent AI use. The study provides meaningful insights for marketing professionals, AI technologists, and policymakers who aim to leverage emotional intelligence responsibly. Future areas of focus include enhancing emotion recognition tools, incorporating multiple emotional data sources, and developing comprehensive ethical guidelines.

Keywords: *Emotional AI, Sentiment Analysis, Consumer Preferences, Marketing Strategies, AI Ethics.*

10.14 From the Google Effect to the AI Effect: Cognitive Offloading, Knowledge Retention, and Epistemic Shifts in the era of Artificial Intelligence

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Abstract

The increased use of digital technology has changed the way individuals think and remember, primarily; as such, it changes the way memory is stored, the way that people learn, and the way that people reason about things. The Google Effect describes that when someone knows something will be available to them via a digital search, they are less likely to remember it for a long time[1].The recent widespread use of generative AI tools to synthesize knowledge has created an even greater cognitive change than that described by the Google Effect. In this article, a systematic conceptual review of the peer-reviewed literature published from 2011 to 2024 is provided to illustrate how cognitive offloading has evolved from the offloading of external memory to the offloading of externalized reasoning and decision-making processes [4].In

analyzing the Google Effect and the AI Effect in their cognitive [5], educational and epistemic contexts using theories of cognitive offloading [6]., externalized cognition, and cognitive load; the findings of this article show that while the Google Effect primarily affects the retention of information, the AI Effect changes the way people utilize higher-order thought, authorship and epistemic authority. The overall conclusion is to provide an educational model that enables responsible use of AI and that maintains individual cognitive autonomy.

Keywords: *Digital Technology, primarily affects, cognitive autonomy.*

10.15 Life Skills Education 2.0: AI Innovations for Educators

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Abstract

Life Skills Education 2.0 is a revolutionary approach to education that incorporates Artificial Intelligence (AI) to improve students' acquisition of critical psychosocial skills. Teachers must go beyond conventional instructional approaches to promote critical thinking, emotional intelligence, flexibility, problem-solving, and ethical decision-making in a time of rapid technological innovation, globalization, and complex social concerns. Personalized and inclusive life skills education that is catered to each learner's unique needs, learning preferences, and emotional states is made possible by AI-driven advancements including chatbots, intelligent tutoring systems, adaptive learning platforms, virtual simulations, and data analytics. By facilitating real-time feedback, experience learning, and ongoing evaluation. AI is an effective tool for curriculum design, learner engagement, early detection of psychological issues, and evidence-based interventions for educators. AI tools like ChatGPT, Gemini, Duck AI Chat, Copilot, Claude, Perplexity, Raina, and School AI Assistants support educators. These Chatbots and AI platforms develop ability of self-awareness, empathy, critical thinking, creative thinking, decision-making, problem-solving, effective communication, interpersonal relationships, coping with stress and coping with emotions Life Skills Education 2.0 also places a strong emphasis on the ethical

and responsible application of AI, guaranteeing equity, data privacy, and human-centered learning. While using technology as a helpful tool rather than a substitute, educators continue to play a crucial role in fostering values, empathy, and social responsibility. In general, AI-enabled life skills education promotes holistic development and long-term social well-being by equipping students to deal with uncertainty, control their emotions, and flourish in both digital and real-world contexts. The aim of the study is to assess the importance of AI-driven life skills for Educators. This Study is based on secondary data sources.

Keywords: *Artificial Intelligence, Life Skills Education 2.0, Teaching, Innovations, Strategies, Educators.*

10.16 Role of AI-Tools for enhancing students Mathematical Communication Skills

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Abstract

Mathematical communication- encompassing the ability to express, interpret, Justify, as well as communication of mathematical concepts, ideas, or solutions through mathematical symbols, words, images, and representations, is one of the primary objectives of contemporary mathematics education. With the advancement of new-age technology, ICT, especially AI-based software, is playing transformative role in strengthening this fundamental knowledge.Artificial intelligence tools such as intelligent tutoring systems, interactive simulations, virtual assistants, and adaptive learning systems help students in explaining their reasoning, visualizing mathematical concepts, and engaging in meaningful mathematical discussions. These tools also help teachers in developing interactive learning activities, offering immediate feedback, and catering to individual learning requirements. Active participation, collaborative learning, and individualized support by AI tools enable an interesting learning environment that improves the confidence and clarity of mathematical expression by students. Use of artificial intelligence in math classes also provides immense potential in terms of improving mathematical communication skills of students. This paper highlights the role of AI tools for enhancing mathematical communication skills also

discussing how these tools helps teachers to make class interactive and interesting.

Keywords: *Mathematical Communication, AI Tools.*

10.17 Impact of Artificial Intelligence on Teaching Effectiveness in Commerce Colleges of Assam: An Empirical Study

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Abstract

Artificial Intelligence (AI) is increasingly influencing higher education by transforming teaching methodologies, assessment practices, and academic engagement. In commerce education, where analytical skills, data-driven decision-making, and technological competence are essential, AI-enabled tools offer significant opportunities to enhance teaching effectiveness. This empirical study examines the impact of Artificial Intelligence on teaching effectiveness in commerce colleges of Assam, with particular focus on instructional delivery, student engagement, and assessment efficiency. The study adopts a descriptive and analytical research design and is based on primary data collected from faculty members teaching commerce-related subjects in selected colleges across Assam. A structured questionnaire was used to assess key dimensions of teaching effectiveness, including lesson planning, classroom interaction, adaptability to diverse learners, and assessment practices. Secondary data were sourced from peer-reviewed journals, policy documents, and institutional reports related to AI in higher education. Statistical techniques such as percentage analysis, mean score analysis, and regression analysis were employed to examine the relationship between AI adoption and teaching effectiveness. The findings reveal that the integration of AI tools significantly improves instructional efficiency, supports personalized learning, and enhances assessment accuracy in commerce education. However, challenges related to digital infrastructure, faculty training, and unequal access to technology persist. The study emphasizes the need for institutional support and capacity-building initiatives to strengthen AI integration and improve the quality of commerce education in Assam.

Keywords: *Artificial Intelligence; Teaching Effectiveness; Commerce Education; Higher Education; Assam.*

10.18 Technological Integration in Teacher Education: Emerging Trends and Future Directions

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Abstract

The rapid growth of digital technologies has intensely transformed educational systems across the globe, redefining teachinglearning processes, institutional practices, and professional competencies. Teacher education, as the cornerstone of educational quality, has increasingly embraced technological integration to prepare teachers for dynamic, learner-centered, and data-driven classrooms. Technological integration in teacher education involves the purposeful and pedagogically sound incorporation of digital tools, platforms, and emerging technologies to enhance instructional effectiveness, professional skills, and continuous development of teachers. This paper examines the concept, importance, and scope of technological integration in teacher education and explores emerging trends such as Learning Management Systems (LMS), Artificial Intelligence (AI), blended and online learning, virtual classrooms, mobile learning, and learning analytics. The paper further analyzes the relevance of technological integration in the light of the National Education Policy (NEP) 2020, which emphasizes digital literacy, innovation, equity, and lifelong professional development of teachers. Challenges related to infrastructure, digital competence, ethical concerns, and the digital divide are discussed in detail. The paper concludes by suggesting future directions for effective and sustainable technological integration in teacher education programs, highlighting the need for capacity building, policy support, research-driven practices, and inclusive digital strategies.

Keywords: *Technological Integration, Teacher Education, Digital Learning, Emerging Technologies, NEP 2020.*

10.19 The AI-Augmented Educator: Transforming Teaching, Not Replacing the Teacher

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Abstract

The rapid advancement of Artificial Intelligence (AI) technologies is reshaping educational environments by influencing instructional design, classroom practices, and institutional decision-making. Rather than positioning AI as a replacement for educators, this study conceptualizes AI as an enabling partner that enhances teachers professional roles and instructional effectiveness. The paper critically examines how AI-driven systems support educators by streamlining routine administrative responsibilities, enabling adaptive and personalized learning experiences, and generating actionable insights from educational data. These capabilities reduce operational burdens on teachers and allow greater emphasis on meaningful pedagogy, learner interaction, and reflective teaching practices. By integrating AI tools into instructional contexts, educators are better equipped to cultivate higher-order learning outcomes, including problem-solving abilities, creative expression, ethical reasoning, and emotional awareness competencies that are increasingly essential in a technology-driven society. The study further investigates the challenges associated with AI adoption in education, such as the need for continuous teacher professional development, responsible data governance, transparency in algorithmic decision-making, and the preservation of human agency in learning environments. Through the discussion of applied examples and emerging implementation models, the paper demonstrates how AI-supported teaching practices can lead to improved learner achievement, enhanced teacher satisfaction, and expanded access to quality education across diverse learning contexts. Ultimately, the AI-augmented educator framework presented in this study envisions a future-oriented education system in which technological intelligence amplifies, rather than diminishes, the human dimensions of teaching, contributing to a more equitable, responsive, and engaging educational ecosystem.

Keywords: *Artificial Intelligence (AI), AI-augmented Educator, Teacher empowerment, educational transformation, future teaching models.*

10.20 The Metaverse Math Classroom: Using Procedural Generation and RPG Mechanics to Solve Math Anxiety

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Abstract

Mathematics anxiety remains a significant barrier to effective learning, often leading to avoidance, reduced confidence, and poor academic performance. Traditional teaching methods frequently fail to address the emotional dimension of this challenge, leaving many learners disengaged. This paper proposes an innovative framework: the Metaverse Math Classroom, which integrates procedural generation and role-playing game (RPG) mechanics to transform mathematics education into an immersive, adaptive, and motivating experience. Within a metaverse environment, students enter as avatars and explore dynamically generated problem spaces tailored to their individual skill levels. Procedural generation ensures that tasks remain fresh, personalised, and scalable, preventing monotony while supporting gradual mastery. RPG elements such as quests, skill trees, and reward systems reframe mathematical problem-solving as an adventure rather than a test, reducing fear of failure and encouraging persistence. Narrative-driven challenges, cooperative boss battles, and progression systems foster collaboration and resilience, while positive reinforcement through experience points and unlockable abilities replaces anxiety with motivation. The classroom thus becomes a safe, exploratory space where mistakes are reframed as opportunities for growth. Beyond reducing math anxiety, this approach cultivates critical thinking, teamwork, and digital literacy, aligning with 21st-century educational goals. By merging game design principles with immersive technology, the Metaverse Math Classroom offers a novel pathway to reimagine mathematics learning as engaging, empowering, and emotionally supportive. This model highlights the potential of gamified virtual environments to not only improve academic outcomes but also reshape attitudes toward mathematics sustainably and inclusively.

Keywords: *Metaverse, RPG, mathematical anxiety,problem-solving ability.*

10.21 The Role of Artificial Intelligence in Transforming Teacher Education

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Abstract

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the 21st century, exerting a profound influence across various sectors including education. Teacher education, which plays a critical role in shaping the quality of teaching and learning, is undergoing a significant transformation driven by AI-based innovations. The integration of adaptive learning systems, personalized training modules, intelligent tutoring platforms, and ethical AI frameworks is redefining professional development in teacher education. AI enhances pedagogical competencies through data-driven insights, classroom simulations, and continuous feedback mechanisms, enabling future educators to effectively balance technological tools with human-centered teaching approaches. Furthermore, AI-driven teacher training promotes efficiency, inclusivity, and skill development, helping educators adapt to evolving digital learning environments and the challenges of the digital age. The future of teacher education emphasizes a paradigm shift from teachers as mere transmitters of knowledge to facilitators of meaningful learning experiences. Importantly, AI is not intended to replace human educators but to support and empower them by enhancing instructional decision-making and fostering innovative teaching practices. As AI becomes an integral component of the educational system, its responsible and ethical use will be essential in preparing teachers for future workforce needs. Thus, the role of Artificial Intelligence in transforming teacher education is both promising and indispensable, positioning it as a key driver of future-ready and inclusive education.

Keywords: *Artificial Intelligence (AI), Teacher Education, Digital Transformation, Professional Development, Adaptive Learning, Future of Teaching.*

10.22 Todays Teacher and AI: Transforming Education for the 21st Century

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Abstract

The integration of Artificial Intelligence (AI) into education has significantly reshaped the role of teachers and how learning is delivered. With AI systems increasingly becoming a part of classrooms, both as tools and as collaborators, this paper explores how AI can support teachers in their teaching practices, enhance personalized learning, and facilitate administrative tasks. Today's AI-enabled teachers are moving from information disseminators to mentors, with an emphasis on critical thinking, creativity, and emotional intelligence .Mean while, AI will manage personalized learning journeys, adaptive feedback, and administrative tasks, transforming education to be more effective, data-driven, and tailored to individual student needs, developing 21st century skills such as insight and ethical thinking. However, this paper also critically examines the challenges and ethical concerns that accompany the use of AI in education. Ultimately, this paper argues that while AI can never replace teachers, it offers transformative potential in augmenting the role of educators and enhancing student outcomes. The successful integration of AI into education will depend on effective collaboration between teachers, AI developers, policymakers, and students.

Keywords: *Artificial Intelligence, teachers, education, personalized learning, teaching tools, AI ethics, classroom technology, teacher-student relationship, AI in education.*

10.23 Use of Artificial Intelligence in Lesson Planning at Primary Level

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Abstract

Artificial Intelligence (AI) has emerged as a significant innovation in the educational landscape, offering practical solutions to many challenges faced by teachers in the teachinglearning process. At the primary level, lesson planning plays a vital role in shaping students foundational skills, attitudes, and learning habits. However, primary school teachers often face constraints such as limited preparation time, diverse learning abilities among students, and increasing instructional and administrative responsibilities. In this context, Artificial Intelligence serves as a supportive and efficient tool that assists teachers in designing structured, engaging, and learner-centered lesson plans. This paper examines the role of Artificial Intelligence in lesson planning at the primary school level, focusing on practical classroom applications rather than technical complexity. It explores how AI-based tools support teachers in generating lesson outlines, preparing worksheets and teaching materials, designing assessments, and planning inclusive learning activities to address varied learner needs. The paper highlights AI as a co-teacher that enhances instructional effectiveness while allowing teachers to devote more time to meaningful classroom interaction and student support. The study concludes that thoughtful and ethical use of Artificial Intelligence can significantly improve teaching efficiency, promote personalized learning, and enhance student engagement at the primary level.

Keywords: *Artificial Intelligence, Lesson planning, Primary level, Supportive level of AI.*

10.24 Redesigning Higher Education for an AI-Driven Job Market

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Abstract

Artificial Intelligence (AI) is changing the nature of work across the world. Many jobs are becoming automated, and new kinds of jobs are being created that need new skills. This paper explains why higher education must change in response to AI. It discusses present problems, skills needed in the future, and practical ways in which colleges and universities can redesign courses, teaching methods, and assessment systems. The language is kept simple so that everyone can understand the ideas.

Keywords: *Artificial Intelligence, Higher Education Reform, Future Jobs, Skills Development, Curriculum Change, Ethics, Digital Literacy, Lifelong Learning.*

10.25 Google Classroom as a Foundation for AI-Supported Teacher-Student Interaction in B.Ed. Pre-Service Teacher Education

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Abstract

This study investigated how Google Classroom functions as a primary digital platform for enabling teacher-student interactions and engagement in preservice teacher education. It specifically examined the views of preservice teachers enrolled in a 2-year B.Ed. program about the benefits associated with the key features of the application; such as the features associated with assignments, learning materials, Google Forms for Quizzes, and Collaborative Communication tools. A descriptive survey design was employed to collect information from the sample of 86 participants using a detailed structured questionnaire. The data from the survey was analysed using descriptive statistics (i.e., mean and standard deviation). Results of the analysis revealed that Google Classroom has allowed preservice teachers to have increased levels of engagement, self-direction in learning, and increased levels of interactions with their instructors. The assignments and quizzes received the highest scores from participants regarding feedback and formative assessments. The findings shows that Google Classroom has provided an effective platform to establish AI-empowered, data-driven educational practices in the preparation of teachers. Future recommendations include enhanced institutional digitalinfrastructures, increased promotion of digital literacy, and the use of AI-based analytics to guide individualize learning experiences moving forward.

Keywords: *Google Classroom, B.Ed. preservice teachers, AI-supported pedagogy, teacherstudent interaction, educational technology.*

10.26 Pedagogical Empowerment through AI from Digital Resistance to Digital Fluency: A Study of Indian Higher Education

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force in higher education, offering significant potential to enhance pedagogy, personalization, and academic decision-making. In India, despite strong policy support under the National Education Policy 2020, AI integration in higher education remains uneven, largely due to faculty-level digital resistance. This study examines pedagogical empowerment through AI by analyzing the transition from digital resistance to digital fluency among faculty in Indian higher education institutions. Using a descriptive and analytical research design based on secondary data, the study synthesizes evidence from peer-reviewed literature, government reports, institutional surveys, and international assessments. The study tests two hypotheses: first that higher levels of institutional support reduce digital resistance, and second, that lower resistance is associated with higher digital fluency in pedagogical practice. Findings confirm both hypotheses, demonstrating a strong inverse relationship between institutional support and resistance, and a positive association between reduced resistance and pedagogical fluency. The analysis reveals that digital resistance is primarily pedagogical and contextual rather than ideological, and that digital fluency emerges when faculty are empowered through targeted training, ethical clarity, and supportive institutional cultures.The study contributes to the literature by framing AI adoption as a developmental pedagogical process rather than a technological challenge. It offers policy-relevant recommendations for fostering faculty empowerment and sustainable AI integration in Indian higher education.

Keywords: *Artificial Intelligence in Education; Digital Resistance; Digital Fluency; Pedagogical Empowerment; Indian Higher Education; Faculty Development.*

10.27 Role of Design Thinking in Technology-Enabled Online Project Development

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Abstract

One of the most difficult challenges in education in the twenty-first century is to teach students to deal with deception, information confusion, value conflicts, a lack of a clear formula, and interconnected concerns. Design thinking is a student-centered method for connecting with students and teachers in a constructivist learning environment. This improves students' learning by connecting real-world experiences, problem-solving and creativity foundations, and numerous reflections and reconstructions. Design thinking enables students to approach unclear and unsuccessful situations with confidence by gradually implementing the five processes to test solutions or prototypes for tackling wicked problems. Previous research has focused on how learning motivation can be enhanced with constructivist learning, creativity and problem-solving skills can be improved via the design thinking approach. In Design thinking method, teacher provide the problem, then students find the solution through Environmental exposure and create prototype in physical/digital mode. This is practical and student-centred approach, where students work in an Experimental way. Design thinking is a Project based learning, which establish the connection between inner and outer world and allows students to develop artefacts/products (charts, presentations, speeches) that reflect and communicate their emerging understanding. Through these activities, students develop the understanding of concepts and content, creativity and problem-solving abilities. It helps children prepare for the intricacies of future challenges. It is primarily a volatile, unpredictable, complex, and ambiguous (VUCA) world, and we must provide our children with the abilities of creativity, problem-solving, decision-making, responsibility, and cooperation to enable them develop inventive, out-of-the-box solutions.

Keywords: *Design Thinking, Creativity, Problem-Solving ability, Technology enabled Project Creation, Importance in School Curriculum & School Education.*

10.28 From Policy to Practice: Leveraging AI Analytics for Data-Driven Teaching under NEP 2020

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Abstract

Indias National Education Policy (NEP) 2020 marks a decisive paradigmatic shift toward the use of digital technologies to strengthen teaching quality, teacher autonomy, and evidence-informed decision-making across the education system. Within this policy landscape, artificial intelligence (AI) and learning analytics are increasingly promoted as tools that can help teachers better understand learner needs and respond more effectively in the classroom. However, despite their growing prominence in policy discourse, the ways in which AI-driven analytics translate into everyday teaching practice remain insufficiently examined. This paper explores how AI analytics can be meaningfully integrated into data-driven teaching under NEP 2020. Building on scholarship in learning analytics, AI in education, and policy implementation, the study develops a conceptual framework that connects data generation, analytical insight, and pedagogical action. It argues that AI analytics can support more responsive and reflective teaching by enabling timely feedback, adaptive instructional strategies, and informed professional judgment. At the same time, the paper emphasizes that such benefits depend on institutional readiness, sustained teacher capacity-building, and robust ethical safeguards around data use. By linking policy aspirations with classroom realities, the study contributes to ongoing debates on educational technology governance and offers grounded insights for educators, administrators, and policymakers seeking to implement NEP 2020 in ways that are pedagogically sound, context-sensitive, and socially responsible.

Keywords: *NEP 2020, AI analytics, Data-driven teaching, Learning analytics, National Educational Policy, Educational technology.*

10.29 Artificial Intelligence Importance in Teaching and learning

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Abstract

Artificial Intelligence (AI) has become a rapidly growing field of research, with significant advancements in recent years. This paper provides an overview of the current state of AI, its applications, and its potential impact on various aspects of society. We discuss the opportunities and challenges associated with AI, including its potential to improve healthcare, education, and transportation, as well as its potential risks, such as job displacement and bias. We also examine the implications of AI on ethics, governance, and human-AI collaboration. Our analysis suggests that AI has the potential to bring about significant benefits, but it is crucial to address the challenges and risks associated with its development and deployment.

Keywords: *challenges, healthcare.*

10.30 Artificial IntelligenceDriven Innovative Ideas in Women Entrepreneurship Development

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कृत्रिम बुद्धिमत्ता (Artificial Intelligence–AI) आज के डिजिटल युग में उद्यमिता में नए अवसर पैदा कर रही है और विशेष रूप से महिलाओं के उद्यमशील विकास को सशक्त बनाने में महत्वपूर्ण भूमिका निभा रही है। यह अध्ययन केवल द्वितीयक आँकड़ों के आधार पर महिलाओं की उद्यमिता में एआई-आधारित नवाचारों के प्रभाव का विश्लेषण करता है, जिनमें प्रकाशित शोध-पत्र, सरकारी रिपोर्टें, नीति दस्तावेज और विश्वसनीय ऑनलाइन स्रोत शामिल हैं। अध्ययन का उद्देश्य यह जानना है कि एआई तकनीकें महिलाओं के व्यवसाय संचालन, व्यावसायिक निर्णय, बाजार तक पहुँच, ग्राहक प्रबंधन और कार्यकुशलता में किस प्रकार सुधार ला सकती हैं। विभिन्न स्रोतों के विश्लेषण से यह स्पष्ट होता है कि एआई-आधारित नवाचार महिलाओं के नेतृत्व वाले उद्यमों की उत्पादकता, नवाचार क्षमता और प्रतिस्पर्धात्मक स्थिति को मजबूत करने में सहायक हैं। एआई टूल्स जैसे डिजिटल विपणन, डेटा विश्लेषण, वित्तीय प्रबंधन प्लेटफॉर्म और आभासी मार्गदर्शन प्रणाली व्यवसायिक प्रक्रियाओं को सरल और प्रभावी बनाते हैं। हालांकि, डिजिटल साक्षरता की कमी, तकनीकी संसाधनों की सीमित उपलब्धता और सामाजिक-सांस्कृतिक बाधाएँ एआई के प्रभावी उपयोग में रुकावट पैदा करती हैं। अध्ययन निष्कर्ष देता है कि प्रशिक्षण, डिजिटल सहायता और नीतिगत समर्थन के माध्यम से एआई महिलाओं की उद्यमिता को अधिक सशक्त बना सकती है और समावेशी एवं सतत आर्थिक विकास को बढ़ावा देने में महत्वपूर्ण योगदान कर सकती है।

Keywords: कृत्रिम बुद्धिमत्ता, महिला उद्यमिता, डिजिटल सशक्तिकरण, उद्यमिता विकास, एआई-प्रेरित नवीन विचार

Sub-Theme 11:
Supporting Institutional Administration with AI

11 Supporting Institutional Administration with AI

11.1 The IGNOUArmy Educational Project (IAEP) Aligns with National Education Policy (NEP) 2020: Future of Soldiers Education in the AI Era

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Abstract

This research article critically examines the IGNOUArmy Educational Project (IAEP), its historical context, operational framework, and its alignment with the National Education Policy (NEP) 2020. It further explores how IAEP can evolve in the futureespecially considering the accelerating Artificial Intelligence (AI) revolutionto enhance lifelong learning, skill development, and technological preparedness among members of the Indian Army.

The IGNOU Army Education Project (IAEP) represents an institutional effort to provide high-quality higher education access to Indian soldiers, but AI adoption remains minimal. This study investigates the current status of digital and AI-enhanced learning in IAEP, identifies infrastructural and pedagogical challenges, and proposes strategies for systematic AI implementation. A mixed-methods research designincorporating surveys, interviews, focus-group discussions, and document analysis. AI integration in IAEP is presented not only as a technological advancement but as an essential step toward lifelong learning, digital preparedness, and holistic humancapital development among Indian armed forces personnel.

Keywords: *Artificial Intelligence, NEP 2020, Military Education, Distance Learning, IGNOU IAEP, Digital Transformation.*

11.2 AI-Enabled Leadership in Contemporary Organizations: Transforming Human Resource Management Practices

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Abstract

The rapid advancement of Artificial Intelligence (AI) is fundamentally transforming leadership roles and human resource management (HRM) practices in contemporary organizations. This paper explores the concept of AI-enabled leadership and its implications for strategic HRM functions such as talent acquisition, performance management, employee engagement, and decision-making. AI-enabled leadership emphasizes the integration of technological intelligence with human judgment, emotional intelligence, and ethical responsibility. The study adopts a conceptual and analytical approach to examine how leaders leverage AI tools to enhance efficiency while maintaining a human-centric organizational culture. It highlights the evolving competencies required of leaders, including digital literacy, adaptive thinking, and ethical governance in AI adoption. Furthermore, the paper discusses challenges associated with AI-driven HRM, such as data privacy, algorithmic bias, and employee resistance, particularly in emerging economies like India. The findings suggest that AI should be viewed as a strategic enabler rather than a replacement for human leadership. Effective AI-enabled leadership fosters innovation, improves workforce analytics, and supports sustainable organizational performance. The paper concludes by emphasizing the need for structured leadership development programs and policy frameworks that balance technological advancement with human values.

Keywords: *Artificial Intelligence, AI-Enabled Leadership, Human Resource Management, Digital Transformation, Ethical Leadership*

11.3 Artificial Intelligence as the Administrative Ally: Revolutionizing Institutional Governance in the Digital Era

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Abstract

In an era where digital disruption reshapes every facet of organizational life, artificial intelligence (AI) emerges as the ultimate administrative ally, poised to revolutionize institutional governance. This study explores how AI transcends traditional bureaucratic silos, injecting efficiency, foresight, and equity into the administrative bloodstream of higher education institutions particularly in resource-constrained environments like Indian universities. The primary aim is to interrogate AI's role in streamlining administrative workflows, enhancing decision-making, and fostering inclusive governance. Specifically, it investigates three pillars: automating routine tasks to alleviate administrative overload, leveraging predictive analytics for resource allocation, and embedding ethical AI to promote transparency and accountability in institutional operations. Employing a mixed-methods approach, this research integrates quantitative analysis of AI deployment data from 15 Indian universities (including case studies from Aligarh Muslim University) with qualitative insights from semi-structured interviews with 50 administrators and policymakers. Tools like machine learning models (e.g., predictive algorithms via Python's scikit-learn) simulated governance scenarios, while thematic analysis via NVivo unpacked stakeholder narratives. This rigorous triangulation ensures robust, contextually grounded findings, benchmarked against global standards from institutions like MIT and Oxford. Results reveal a paradigm shift: AI automation slashed paperwork processing time by 62%, enabling administrators to redirect efforts toward strategic innovation. Predictive tools improved enrollment forecasting accuracy by 78%, optimizing resource distribution amid fiscal pressures. Notably, AI-driven chatbots and bias-detection frameworks boosted governance equity, reducing decision disparities by 45% in diverse student cohorts. Challenges like data privacy and digital divides persist, yet ethical AI frameworks mitigated risks effectively. Summarily, AI isn't merely a tool; it's a governance game-changer, empowering institutions to navigate the digital deluge with agility and foresight. This study blueprints a future where AI allies propel administrative excellence, urging policymakers to embrace this revolution for resilient, future-ready governance.

Keywords: *Artificial intelligence (AI), institutional governance, administrative automation, digital transformation, predictive algorithm.*

11.4 From Technocracy to Democracy: Rethinking AI Governance in Teacher Education

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Abstract

The rapid expansion of artificial intelligence (AI) in education has intensified debates surrounding the governance frameworks that shape its design, deployment, and ethical use, particularly within teacher education. To date, AI integration has largely been guided by a technocratic paradigm, wherein governance decisions privilege technical expertise, efficiency, and algorithmic optimization over pedagogical values, professional judgment, and democratic participation. Such an approach risks marginalizing teacher agency, obscuring ethical concerns related to data privacy and algorithmic bias, and reinforcing existing social and educational inequities. This paper examines the tensions between technocratic and democratic models of AI governance in teacher education, with particular attention to their implications for teacher autonomy, professional identity, and educational equity. Drawing on interdisciplinary literature and empirical studies from diverse global contexts, the paper argues that prevailing technocratic approaches inadequately address the normative, relational, and ethical dimensions of teaching. Through comparative case analyses of Finlands Opetushallitus co-design model, Kenyas community-driven AI literacy initiatives, and Brazils Escola de Governo Digital, the study highlights viable democratic alternatives that foreground participatory design, transparency, and institutionalized teacher voice. This framework proposes six interrelated pillars to embed democratic governance within teacher education institutions: Normative Anchoring in Educational Values, Participatory Co-Design and Stakeholder Inclusion, Institutionalised Deliberative Structures, Transparency, Explainability, and Accountability, Capacity Building and Critical AI Literacy, and Contextual Sensitivity and Decentralised Adaptation. The paper concludes that democratic AI governance should not be viewed as a constraint on technological innovation but as a necessary precondition for fostering trust, equity, and pedagogically meaningful integration of AI in teacher education.

Keywords: *Artificial intelligence, AI governance, teacher education, technocracy, democratic participation, ethics, algorithmic bias.*

11.5 The Role of Entrepreneurial Education in Fostering Entrepreneurial Orientation: Mediating Effects of Entrepreneurial Mindset among Higher Education Students

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Abstract

Higher education students have the opportunity to develop their entrepreneurial skills through the use of entrepreneurial education. This study, which is based on Social Cognitive Theory, looks at how entrepreneurial education promotes entrepreneurial orientation and uses entrepreneurial mindset as a mediating variable. The study posits and empirically examines a mediation model that links educational exposure to entrepreneurial orientation through mindset development, based on the idea that learning experiences alter cognitive processes that drive entrepreneurial behaviour. A structured questionnaire was used to gather data from higher education students at Deemed Universities in Mangalore Taluk. The findings show that entrepreneurial orientation and attitude are significantly improved by entrepreneurship education. Additionally, entrepreneurial mindset plays a crucial role in converting educational inputs into entrepreneurial behavioral orientation by partially mediating the association between entrepreneurial education and entrepreneurial orientation. By offering empirical evidence for Social Cognitive Theory's explanation of how educational interventions affect entrepreneurial results, the findings add to the body of literature on entrepreneurship education. From a practical standpoint, the study emphasizes how crucial it is to create entrepreneurship education programs that prioritize the development of cognitive and psychological skills in order to increase students' entrepreneurial orientation. For educators, legislators, and higher education institutions looking to develop future-ready entrepreneurs, the study provides insightful information.

Keywords: *Entrepreneurial orientation, Entrepreneurial mindset, Higher education institution, Social cognitive theory.*

11.6 Artificial Intelligence for Inclusive Educational Administration: Supporting Computer-Handicap Managers

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Abstract

The growing adoption of Artificial Intelligence (AI) in educational institutions presents new opportunities to enhance administrative effectiveness while promoting inclusivity for computer-handicap managers. In schools, colleges, and universities, administrative responsibilities increasingly rely on digital platforms, creating challenges for managers with computer-related disabilities. This paper examines the role of AI-enabled administrative systems in supporting such managers by providing accessible, adaptive, and assistive solutions. Key AI applications discussed include voice-based administrative interfaces, automated documentation and reporting tools, intelligent scheduling systems, and decision-support analytics for academic and institutional planning. The study emphasizes the importance of universal design and accessibility standards in the development and implementation of AI tools to ensure equitable participation in institutional leadership and governance. It also addresses critical concerns such as data privacy, ethical use of AI, digital infrastructure readiness, and professional capacity building within educational settings. The paper argues that strategically implemented AI solutions can reduce administrative workload, enhance accuracy, and empower computer-handicap managers to perform their roles with greater independence and confidence. By aligning technological innovation with inclusive educational policies, AI can contribute to more equitable, efficient, and sustainable institutional administration.

Keywords: *Artificial Intelligence; Educational Administration; Inclusive Education; Assistive Technologies; Accessibility; Institutional Management.*

Sub-Theme 12:
Re-skilling and Up-skilling in Digital Pedagogy

12 Re-skilling and Up-skilling in Digital Pedagogy

12.1 Integrating Artificial Intelligence and 21st Century Skills in Higher Education

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The rapid advancement of Artificial Intelligence (AI) and digital technologies is profoundly reshaping higher education, necessitating a reorientation of teaching learning processes to align with 21st century skills and the vision of the National Education Policy (NEP) 2020. This paper explores the integration of AI as a strategic enabler-conceptualized as a co-pilotthat augments, rather than replaces, the role of educators in fostering learner-centered, flexible, and future-ready higher education systems. Grounded in the NEP 2020 framework, the study emphasizes the convergence of generative AI, interactive e-content, and advanced technologies such as augmented and virtual reality (AR/VR), blockchain, and the Internet of Things (IoT) to support holistic skill development.

The paper highlights how AI-driven tools can personalize learning pathways, support adaptive content delivery, enable real-time feedback, and promote higher-order thinking skills including critical thinking, creativity, collaboration, communication, and problem-solving. By leveraging generative AI and immersive digital resources, classrooms can evolve into innovation hubs where learners actively construct knowledge rather than passively consume information. Such environments not only enhance academic engagement but also prepare learners for complex, technology- mediated workplaces.

In addition, the paper examines the pedagogical shift required for effective AI integration, underscoring the importance of faculty capacity building, ethical and responsible AI use, data literacy, and inclusive design. While the transformative potential of AI in higher education is significant, the paper also addresses implementation challenges such as digital divide, scalability, faculty readiness, and governance frameworks. It argues that thoughtful, policy-aligned integration of AI can ensure equity, quality, and relevance in higher education.

The paper concludes that integrating AI with 21st century skills is no longer optional but essential for realizing the aspirations of NEP 2020. By positioning AI as a collaborative partner in teaching and learning, higher education institutions can

create resilient, inclusive, and learner-centric ecosystems capable of responding to the demands of a rapidly evolving digital society.

Keywords: *21st century skills, teaching, learning, Artificial Intelligence, Higher Education.*

12.2 Preparing Future Teachers for the Digital Classroom: Re-skilling and Up-skilling in Digital Pedagogy among B.Ed. Student Teachers

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Abstract

In the contemporary educational landscape, digital pedagogy has become an essential component of effective teachinglearning processes, necessitating continuous re-skilling and up-skilling of future teachers. The present study aims to examine the level of re-skilling and up-skilling in digital pedagogy among B.Ed. student teachers, with a focus on their preparedness for digital classroom practices. The study adopts a descriptive survey method to assess digital pedagogical competencies, awareness, and readiness among prospective teachers. The sample consists of 94 B.Ed. student teachers selected from Kumadvathi College of Education, Shikaripura, comprising 23 male and 71 female students. The sample includes students from both Arts and Science streams, with 46 first-year and 48 second-year B.Ed. students. Data were collected using a standardised tool designed to measure various dimensions of digital pedagogy, including the use of digital tools, online teaching strategies, digital content creation, and technology-integrated instructional practices. Appropriate statistical techniques were employed to analyze the data. The study's findings indicate a moderate to high level of digital pedagogical skills among B.Ed. Students. student teachers, with noticeable variations based on year of study and academic stream. The study highlights the growing importance of structured training programmes, institutional support, and curriculum integration for enhancing digital competencies in teacher education. The results underscore the need for systematic re-skilling and up-skilling initiatives to prepare future teachers for the evolving demands of digital classrooms. The study has significant implications for teacher education institutions, curriculum planners, and policymakers in strengthening digital pedagogy within pre-service teacher education programmes.

Keywords: *Digital Pedagogy, Re-skilling, Up-skilling, B.Ed. Student Teachers, Teacher Education.*

12.3 Ai Integrated interactive pedagogy: A New paradigm in Teacher Training

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Abstract

The integration of Artificial intelligence(AI)in education becoming as a transformative force, especiallyin the domain of Teacher training. This literature-based paper reviews the integration of artificial intelligence into dynamic pedagogy and its emerging position as a new paradigmin teacher education. The paper draws findings from recent national and international working papers, policy papers, reports as well as relevant sources of peer reviewed literature to examine the ways in which AI-based tools such as adaptive learning systems, intelligent tutoring,virtual simulations and learning analytics can facilitate interactive learner centered reflective pedagogical approaches within teacher education programs. The review identifies that AI-integrated interactive pedagogy improves pedagogical content knowledge, teaching decision-making, self-regulatory learning practices andlifelong professional development among pre-service and in-service teachers. It also suggests that the use of AI could enable individualized learning experiences, adaptive learning, immediate feedback and data-informed instructional planning, bringing teacher education in line with the needs 21st-century classrooms. On the other hand, the literature highlights some crucial challenges as well in terms of ethical and social barriers, digital divide, lack of institutional readiness and poor professional developmentfor successful AI assimilation. The paper concludes that AI-informed interactive pedagogy hasthe potential to be an effective tool for reinforcing teacher education systems and it also

provides direction for future research and practice in AI-based teacher training.

Keywords: *Artificial intelligence in Education, Interactive pedagogy, Teacher Education, Digital pedagogy.*

12.4 Artificial Intelligence and the future of teacher education: Re-Conceptualizing Academic Motivation of Pre-Service Teachers

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Abstract

The growing integration of artificial intelligence into education is reshaping how future teachers are trained and how they develop motivation toward learning and the teaching profession. This paper explores the evolving role of artificial intelligence in re-conceptualizing academic motivation among pre-service teachers as teacher education increasingly shifts toward technology instructed environments. Drawing on emerging literature and theoretical viewpoint including self-determination and technology acceptance the studyinspecthow adaptive learning platforms, intelligent feedback systems and simulation-based practice environments effect motivation by supporting autonomy, competence and meaningful engagement. The discussion also allowthe emotional and human dimensions of teacher preparation, recognizing that motivation is strengthened not only through personalized digital support but also through a sense of connection, encouragement and reflective interaction to teacher educators. At the same time discuss such as reduced peer collaboration, ethical dilemmas, over-reliance on automated guidance and unequal access to technology present challenges that must be thoughtfully addressed. The paper contend that AI can enhance motivation and professional growth when integrated responsibly serving as a complement rather than a replacement for human guidance and concludes with implications for teacher education programs preparing future-ready, reflective and emotionally grounded educators.

Keywords: *Academic Motivation, Adaptive learning, Artificial Intelligence, Digital Pedagogy, Pre-service Teachers, Teacher Education.*

12.5 Developing Teachers with Digital Competency for Sustainable Education in Indian Perspective

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Abstract

Over time, a variety of structures and literacies have been created to support teacher educators in their efforts to help students acquire advanced digital abilities and inspire them to utilize new technology in their future classrooms. The goal of this study is to identify the primary path for teachers digital competency development in order to guarantee a high quality educational process during the change the learning environment. As we know India is the country of villages and we rooted with Gurukul education to well integrated ICT lab classroom where we shape the future of country. To cater 21st century skills and NEP 2020 guideline we have to modify our teaching learning setup. To fulfilthe current trend of education we have to consider local education as well as global education. For being a global citizen. The necessity to identify the primary paths for the education systems evolution in order to adapt to the digitalization of society makes this study relevant. Digital literacy, as a set of competencies, becomes the basis for the full participation in the knowledge society of the teacher personally and the involvement of their students, revealing their talents.Therefore, it is necessary to continue reforms of the education system, to implement specific measures to form a digitally competent teachers,digital culture and philosophy of digitalization of the educational environment.

Keywords: *Digital Abilities, Digital Competency, Digitalization, Teacher Educator.*

12.6 digital pedagogy as a catalyst for Teacher re-skilling and up-skilling

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Abstract

The digital transformation of education in India has prompted a significant shift in the professional development of teachers, making it essential to focus on re-skilling and up-skilling for achieving educational excellence. This paper explores how digital pedagogy acts as a driving force for enhancing teacher capacity within the context of Indias National Education Policy (NEP) 2020. By analyzing current initiatives like DIKSHA, SWAYAM, and NISHTHA, this study delves into the various aspects of teacher professional development in the digital era. The research points out both the opportunities and challenges faced, such as the digital divide, limitations in infrastructure, and resistance to adopting technology. With more than 27.5 crore users on DIKSHA and notable improvements in teacher competency ranging from 20-30%, digital platforms have shown a significant effect on teacher development. Nevertheless, ongoing issues in rural regions, where 66% of Indias population lives with restricted digital access, highlight the pressing need for equitable technology distribution. The paper wraps up with strategic suggestions for the sustainable execution of digital pedagogy initiatives, stressing the importance of ongoing professional development, collaborative learning communities, and support systems driven by policy. By closing the digital skills gap, India can revamp its teaching workforce to fulfil the educational requirements of the 21st century and improve learning outcomes across various socio-economic backgrounds.

Keywords: *Pedagogy, teacher professional development, re-skilling, up-skilling, NEP*

2020, educational technology.

12.7 Empowering Teachers for the Future: Artificial Intelligence in Teacher Education

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Abstract

This paper will examine the concept of artificial intelligence (AI) is impacting the change in teacher training in India, specifically how the concept of artificial intelligence affects governmental education reports with respect to professional development. The analysis of both policy literature and the current research on AI-enabled learning highlights the ways of how AI can be used to improve pre-service and in-service teacher training and be in line with the national goals of professional-development.The opportunities identified are adaptive and individualized professional learning options, scalable micro-credentialing, classroom coaching driven by data, automated formative feedback on pedagogical practice, and access to high-quality instruction models to teachers who work in under-resourced settings. As the points in these findings are further developed, the paper offers a policy responsive framework to integrate AI in teacher development that prefigures (a) alignment with current government professional-development requirements, (b) capacity building of teacher educators and school leaders, (c) strong frameworks of governance to protect data and to provide transparency on the algorithm, and (d) mechanisms of continued evaluation to synthesize qualitative and quantitative indicators. The paper argues that substantive impact requires technological investment as well as a long-term focus on curriculum redesign to support professional learning, incentives to encourage teacher use of AI tools, and governmental, teacher-education, and EdTech sector partnerships. This study will provide a policy-makers, teacher educators, and developers of AI-based professional learning systems with practical solutions to empowering teachers in the future by placing the technological opportunities within the bounds and priorities defined in Indian government documents on professional development.

Keywords: *Artificial intelligence; Teacher education; Professional development; Indian education policy; Digital pedagogy; Capacity building.*

12.8 Empowering Youth Through Re-skilling and Up-skilling in Digital Pedagogy

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Abstract

In 21st century, youth are considered as the keystone to transform a society. In the face of economic disparity, climate change, political instability, and technological disruption, empowering the next generation with leadership skills is imperative. Traditional methods of youth development often fail to tap into the creativity and agency of young people. This paper explores innovative, evidence-based strategies for youth empowerment and leadership development. These include digital engagement, experiential learning, social entrepreneurship, gamification, and youth participation in governance. Moreover, the paper presents policy recommendations aimed at integrating these innovative strategies into national development plans, educational institutions, non-governmental programs, and intergovernmental frameworks. These recommendations focus on fostering youth inclusion, promoting digital equity, scaling successful pilot programs, and building cross-sector collaborations that place young people at the center of change-making.

Keywords: *Leadership, Youth, Innovative Strategies, Experiential Learning, Sustainable Development.*

12.9 From Traditional Teaching to AI-Augmented Classrooms :A Conceptual Review of Pedagogical Transformation

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Abstract

Artificial intelligence, meanwhile, has been infused in education for influencing learningcontent, assessment strategies and teacher professional development. While substantive research has explored online and blended learning environmentsthat are supported by AI, conceptual discussions of pedagogical propositions in mundane face-to-face classrooms, particularly in policy-driven contexts have so far received little focus. In this context, as a conceptual review the article questioningly and critically discusses the pedagogic metamorphosis between teacher-dominated instruction and AI-transformed education classroom where intelligent technologies act more as enablers than replacersof teachers. Drawing on a firm understanding of constructivist learning theory, connectivism, the Technological Pedagogical Content Knowledge framework, and approaches to human-AI collaboration, in this paper we envisage AI as being able to provide support for instructional planning, formative assessment activities, differentiated pedagogy, andreflective practices. The review also presses the questions of teacher preparedness, professional readiness, and ethical concerns regarding in-classroomAI implementation. It is situated vis-à-vis recent educational reforms, and the paper interpretsAI implementation through the policy prism of National Education Policy 2020 and National Professional Standards for Teachers 2023. The paper puts forward ateacher-focused perspective framework for AI-infused classrooms and presents some future research and professional development priorities geared towards sustainable, context-sensitive pedagogic change.

Keywords: *Artificial Intelligence, Traditional Teaching, AI-Augmented Classrooms, Teacher Readiness, Pedagogical Transformation, NEP 2020, NPST 2023.*

12.10 Global Trends in Education Technology and Innovation

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Abstract

The rapid transformation of education in the 21st century has been strongly influenced by technological innovations and global educational reforms. The integration of digital technologies such as artificial intelligence (AI), virtual and augmented reality (VR/AR), learning analytics, and cloud-based platforms has reshaped pedagogical practices and redefined the learning environment. This paper explores global trends

in educational technology and innovation, focusing on digital learning ecosystems, the rise of open educational resources (OER), personalized learning, gamification, micro-credentials, and global collaborations in higher education. The study reviews empirical research, policy reports, and case studies from 2010 to 2025 to highlight the opportunities and challenges of these technological advancements. Findings suggest that while technology fosters inclusivity, equity, and lifelong learning, issues of digital divide, ethical concerns regarding data, and sustainability remain critical. The paper concludes that future educational systems will rely on a hybrid model, blending traditional pedagogy with disruptive innovations to create flexible, learner-centered environments.

Keywords: *Educational Technology, Innovation, Digital Learning, Artificial Intelligence in Education, Virtual Reality, Global Trends, OER, Lifelong Learning.*

12.11 Innovative Classroom Practices through Digital Pedagogy to Enhance Higher Order Thinking Skills

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Abstract

The rapid advancement of digital technologies has brought significant changes to contemporary educational practices, urging educators to move beyond traditional teacher-centred approaches. In this evolving educational environment, digital pedagogy has emerged as a meaningful and effective approach for promoting innovative classroom practices that foster Higher Order Thinking Skills (HOTS) among learners. Higher Order Thinking Skills, including critical thinking, problem-solving, analysis, evaluation, and creativity, are essential for preparing students to meet the intellectual and social demands of the twenty-first century. This paper explores the role of digital pedagogy in reshaping classroom practices to support the development of these higher-level cognitive skills.

Grounded in constructivist and cognitive learning theories, the study conceptualizes digital pedagogy as a learner-centred approach that encourages active engagement, inquiry-based learning, and collaborative knowledge construction through the use of digital tools. The paper examines various innovative instructional strategies such as blended learning, flipped classrooms, project-based learning, virtual simulations, and online collaborative platforms, which enable learners to engage deeply with content and apply knowledge in meaningful and creative ways. The study adopts a

conceptual and analytical methodology, drawing insights from recent research literature, educational policy documents, and best practices in digital education. Special attention is given to the alignment of digital pedagogy with Blooms revised taxonomy, particularly the higher cognitive domains. The paper also highlights the implications of the National Education Policy (NEP) 2020, emphasizing technology-enabled and competency-based education. The study concludes by underscoring the importance of teacher re-skilling and up-skilling to effectively implement HOTS-oriented digital pedagogy for sustainable educational innovation.

Keywords: *Digital Pedagogy, Higher Order Thinking Skills, Innovative Classroom Practices, Teacher Professional Development, NEP 2020, 21st-Century Learning.*

12.12 Integrating AI-Enabled Interactive Multimedia in School Education: Implications for Student Motivation and Cognition

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Abstract

The rapid integration of Artificial Intelligence (AI) into school education has redefined the role of interactive multimedia as a pedagogical resource rather than a mere instructional aid. This conceptual paper critically examines how AI-enabled interactive multimedia can influence students achievement motivation and cognitive performance in school learning contexts. Drawing on selective and interdisciplinary literature from educational psychology, learning sciences, and technology-enhanced pedagogy, the paper synthesizes key theoretical perspectives such as constructivism, self-determination theory, and cognitive load theory to explain the motivational and cognitive mechanisms underlying AI-supported learning environments.The review highlights that AI-driven multimedia systemsthrough adaptive feedback, personalization, real-time analytics, and multimodal representationscan foster learner autonomy, sustained engagement, and goal orientation, thereby enhancing achievement

motivation. Simultaneously, these systems have the potential to support higher-order cognitive processes such as problem-solving, critical thinking, and metacognition by aligning instructional content with learners prior knowledge and cognitive capacity. However, the paper also identifies pedagogical challenges, including risks of cognitive overload, superficial engagement, algorithmic bias, and over-reliance on automation, which may undermine meaningful learning if not carefully designed.By integrating insights from existing scholarship, this paper proposes a pedagogically grounded framework for the effective use of AI-enabled interactive multimedia in school education. The study contributes conceptually by clarifying the conditions under which AI-supported multimedia can positively impact student motivation and cognition, and it offers implications for teachers, curriculum designers, and policy-makers seeking to harness AI responsibly for educational improvement.

Keywords: *Artificial Intelligence in Education; Interactive Multimedia; Achievement Motivation; Cognitive Performance; School Pedagogy; Adaptive Learning; Educational Technology.*

12.13 Re-skilling and Up-skilling in Digital Pedagogy: A Critical Imperative for Higher Education in the 21st Century

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Abstract

The rapid proliferation of digital technologies has profoundly transformed the landscape of higher education, compelling institutions to move beyond traditional lecture-centric models toward blended, hybrid, and fully online modes of instruction. This transition has fundamentally redefined the role of educators, making re-skilling and up-skilling in digital pedagogy a critical imperative. While up-skilling involves enhancing existing teaching competencies through the integration of digital tools and platforms, re-skilling refers to the acquisition of new pedagogical and technological competencies required for non-traditional and technology-mediated learning environments.This paper critically examines the theoretical foundations of digital pedagogy and identifies essential competencies for contemporary educators, including technological fluency, instructional design for online learning, data literacy, and the ability to promote digital inclusion and equity. It also explores systemic and institutional challenges such as resistance to pedagogical change, limited infrastructural and financial resources, and the persistent digital divide affecting both educators and learners. Drawing on a review of current literature and selected institutional case studies, the

paper proposes a comprehensive professional development framework that moves beyond tool-based training toward a holistic pedagogical transformation. The study argues that sustainable and meaningful digital integration in higher education requires strong institutional support systems that emphasize continuous professional learning, peer collaboration, reflective teaching practices, and the strategic alignment of digital technologies with learning outcomes. Finally, the paper highlights emerging trends such as Artificial Intelligence (AI), learning analytics, and adaptive learning systems as future frontiers that demand immediate pedagogical preparedness among higher education faculty.

Keywords: *Digital Pedagogy, Re-skilling, Up-skilling, Higher Education, Professional Development, Educational Technology, Digital Competence.*

12.14 Re-skilling and Up-skilling in Digital Pedagogy

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Abstract

The accelerating digital transformation of the Fourth Industrial Revolution (4IR) is intensifying the demand for workforce re-skilling and up-skilling, particularly within digital pedagogy. As automation, artificial intelligence (AI), and cyber-physical systems reshape the labor market, educational institutions face the urgent task of equipping both new learners and incumbent professionals with future-ready digital competencies. This thematic paper critically examines the potential of generative AIspecifically large language models (LLMs) and Retrieval-Augmented Generation (RAG) frameworksin facilitating adaptive, personalized, and scalable digital pedagogy for skill development. Drawing on recent empirical studies, the analysis explores how generative AI can bridge skill gaps by delivering personalized instruction, supporting experiential learning, and enabling rapid, context-sensitive content adaptation. The discussion further addresses the economic and organizational imperatives of cross-skilling, the importance of maintaining learner agency, and the behavioral and structural challenges encountered during AI-driven educational transformation. Ultimately, the findings highlight that while generative AI offers significant promise for democratizing and individualizing digital pedagogy, its integration must be guided by human-centered frameworks that balance efficiency, equity, and agency to ensure meaningful and sustainable up-skilling outcomes.

Keywords: *Artificial Intelligence, Large language models,Augmented Generation,Digital pedagogy, Generative AI.*

12.15 Reimagining Teacher Education: Preparing Teachers to Thrive in an AI-Driven World

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Abstract

Teachers' preparation for the classroom has to change fundamentally as a result of the quick adoption of Generative Artificial Intelligence (GenAI) in education. AI must be incorporated into the core of pedagogical training in teacher education programs; treating technology as an add-on is no longer adequate. This paper makes the case for a paradigm change from "technology integration" to "AI-human collaboration." It suggests a framework for teacher education that gives ethical judgment, AI literacy, and the development of the TPACK (Technological Pedagogical Content Knowledge) model top priority. Teacher education can equip educators to succeed alongside increasingly complex algorithmic systems by emphasizing the special human aspects of teaching, such as empathy, mentorship, and critical inquiry.

Keywords: *Artificial Intelligence; Teacher education; TPACK; Pedagogy.*

12.16 Self-Regulated Learning in the Age of Artificial Intelligence: Theoretical Perspectives for Teacher Educators

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Abstract

In the age of artificial intelligence teaching and learning processes are rapidly changing, the creating of new learning environment through artificial intelligence has significantly reshaped contemporary teacher education, which makes self-regulated learning a crucial skill for teachers and students to plan, monitor and reflect on their learning processes within the context of contemporary teacher education. This theoretical paper explores self-regulated learning from multiple theoretical perspectives within the emerging AI-support educational environment by offering a theoretical synthesis of existing perspectives. This paper synthesizes cognitive, metacognitive and socio-constructivist learning theories to understand how artificial intelligence can support self-regulatory practices. The study focuses on conceptual analysis and critical reflection on existing literature. The paper highlights the evolving role of teacher educators in guiding future teachers to use AI responsibly while fostering autonomy, motivation and reflective learning habits. It also discusses how AI-driven feedback, personalization and adaptive learning environments can strengthen self-regulated learning when addressed through sound pedagogical principles. To conclude, the paper offers theoretical insights that can guide teacher educators in integrating self-regulated learning within AI-enhanced teaching practice to inform policy, practice and future research. The study contributes a clear conceptual understanding that may inform future research and empower teacher educators in the age of artificial intelligence.

Keywords: *Self-Regulated Learning, Artificial intelligence in Education Teacher Education and Teacher Educators.*

12.17 The Influence of Artificial Intelligence on Smart Living

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Abstract

Artificial Intelligence has a big impact on today's world by making tasks easier, tailoring experiences to people's needs, and bringing smart innovations that improve how we live. It is the quickest growing area in the current time of technology and innovation. It is very important for smart cities. Smart cities use technology to make tasks easier and better the way people live. It uses smart technologies to make infrastructure better and help the government respond quickly, so people can take

part in running the city. AI technologies and methods help create smarter services that make processes more efficient and improve how things work in healthcare, transportation, energy, education, smart homes, infrastructure, and other areas. IoT and AIoT technologies are making a big difference in how cities are built and how people live their daily lives. AI technology's smartness is transforming human lives through advanced automation. AI is helping people by doing tasks that save them time and handling different activities that improve the quality of life. One of the things made possible by AI technology is the smart home. The AI technology can do many things by following voice commands. AI virtual assistants such as Alexa, Siri, and Google Assistant are playing a big role in helping run many homes. AI is changing the smart home by using smart and intelligent technology. AI does not just follow orders and give the right answers, but it also thinks about what people like and prefer, so it makes choices that are easy and helpful for them. AI-powered smart home devices are really helpful for making a home smarter.

Keywords: *AI, AIoT, Smart, City, Technology, Innovation.*

12.18 Transforming Teacher Education with Artificial Intelligence (AI) A Game Changer

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Abstract

The introduction of Artificial Intelligence (AI) into teacher education is changing paradigms. The teaching-learning continuum is becoming more personalized, efficient, and effective due to the growing use of AI-powered tools and technologies that are improving the continuum.One of the main benefits of AI in this sphere is a promotion of individualized learning. Machine-based learning algorithms in the form of adaptive learning systems serve the unique needs of individual students, thus providing teachers with the leeway to focus on high-touch, high-value pedagogical activities. These systems interpret information about students and provide feedback that is personalized and, therefore, helps student-teachers to improve their teaching skills. This does not only enhance their level of instructional capability but it also enhances self-confidence in the classroom. Along with these advantages, the introduction of AI into teaching education is also accompanied by significant difficulties. It is important to make sure that the benefits of AI will be distributed fairly among students with different socioeconomic and ability backgrounds.To actualize the potential of AI in teacher education, it would be necessary to intentionally invest in

teacher training and development. It is imperative to upgrade teachers to competently incorporate AI in their teaching framework.AI has a transformative potential in teacher training, whereby it can improve the quality of instruction and performance of students. Through prudent implementation of AI and a careful approach in solving the issues that it presents, it is possible to develop a more personalized, efficient, and effective educational ecosystem. The present paper is an attempt to highlight challenges and opportunities of AI in teacher education.

Keywords: *Artificial Intelligence (AI), Teacher Education, Adaptive Learning Systems.*

12.19 Pedagogical Empowerment through AI from Digital Resistance to Digital Fluency: A Study of Indian Higher Education

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force in higher education, offering significant potential to enhance pedagogy, personalization, and academic decision-making. In India, despite strong policy support under the National Education Policy 2020, AI integration in higher education remains uneven, largely due to faculty-level digital resistance. This study examines pedagogical empowerment through AI by analyzing the transition from digital resistance to digital fluency among faculty in Indian higher education institutions. Using a descriptive and analytical research design based on secondary data, the study synthesizes evidence from peer-reviewed literature, government reports, institutional surveys, and international assessments. The study tests two hypotheses: first that higher levels of institutional support reduce digital resistance, and second, that lower resistance is associated with higher digital fluency in pedagogical practice. Findings confirm both hypotheses, demonstrating a strong inverse relationship between institutional support and resistance, and a positive association between reduced resistance and pedagogical fluency. The analysis reveals that digital resistance is primarily pedagogical and contextual rather than ideological, and that digital fluency emerges when faculty are empowered through targeted training, ethical clarity, and supportive institutional cultures.
The study contributes to the literature by framing AI adoption as a developmental

pedagogical process rather than a technological challenge. It offers policy-relevant recommendations for fostering faculty empowerment and sustainable AI integration in Indian higher education.

Keywords: *Artificial Intelligence in Education; Digital Resistance; Digital Fluency; Pedagogical Empowerment; Indian Higher Education; Faculty Development.*

12.20 Skill Development in Education: The Imperative of Teacher Re-skilling and Up-skilling in Digital Pedagogy

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Abstract

One of the key objectives of the National Education Policy (NEP) 2020 is to integrate technology into flexible, holistic, and inclusive learning pathways to prepare globally competitive citizens for the 21st century. However, a significant gap remains between policy intent and pedagogical practice, particularly in higher education, where the effective integration of digital pedagogy depends heavily on teachers technological competence and pedagogical readiness. Although India has made substantial progress through government-led digital initiatives in the rapidly growing EdTech sector still the systematic re-skilling and up-skilling of teachers in digital pedagogy remains insufficient. Existing literature and policy discourse primarily focus on digital infrastructure, platforms, and access, with limited scholarly attention given to teachers digital pedagogical competencies, professional development, and equity-oriented skill enhancement, especially within higher education institutions (HEIs). Moreover, challenges related to digital infrastructure, digital literacy, affordability, awareness, and inclusion persist in hindering the meaningful adoption of digital pedagogy. Studies such as the McKinsey report highlight that a lack of skills among teachers, combined with issues of affordability and awareness, form major barriers to digital literacy in India. In this context, reskilling and upskilling teachers become essential to bridging the gap between technological availability and effective teaching and learning outcomes. This is a descriptive study based on secondary sources, including policy documents, government reports, and existing literature, to examine the role of teachers and the need for skill development in digital pedagogy while addressing the challenges and the way forward. The paper further emphasises the critical role of government interventions and institutional support in strengthening teachers digital competencies so that they can further train the future workforce, enabling technology-driven, inclusive, and lifelong learning in making Indias future

workforce more dynamic, competent, innovative, and adaptive to technological advancements.

Keywords: *Skill Development, NEP 2020, Digital Pedagogy, Reskilling & Upskilling, Technological Transformation.*

12.21 Google Classroom as a Foundation for AI-Supported Teacher-Student Interaction in B.Ed. Pre-Service Teacher Education

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Abstract

This study investigated how Google Classroom functions as a primary digital platform for enabling teacher-student interactions and engagement in preservice teacher education. It specifically examined the views of preservice teachers enrolled in a 2-year B.Ed. program about the benefits associated with the key features of the application; such as the features associated with assignments, learning materials, Google Forms for Quizzes, and Collaborative Communication tools. A descriptive survey design was employed to collect information from the sample of 86 participants using a detailed structured questionnaire. The data from the survey was analysed using descriptive statistics (i.e., mean and standard deviation). Results of the analysis revealed that Google Classroom has allowed preservice teachers to have increased levels of engagement, self-direction in learning, and increased levels of interactions with their instructors. The assignments and quizzes received the highest scores from participants regarding feedback and formative assessments. The findings shows that Google Classroom has provided an effective platform to establish AI-empowered, data-driven educational practices in the preparation of teachers. Future recommendations include enhanced institutional digital infrastructures, increased promotion of digital literacy, and the use of AI-based analytics to guide individualize learning experiences moving forward.

Keywords: *Google Classroom, B.Ed. preservice teachers, AI-supported pedagogy, teacherstudent interaction, educational technology.*

12.22 TeacherStudentAI Interaction in Digital Learning Environments

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Abstract

The increasing role of Artificial Intelligence (AI) in digital learning environments is giving a new direction to the teaching-learning process, where traditional teacher-student interaction has now transformed into a dynamic Teacher-Student-AI interaction framework. The primary objective of this study is to analyze the impact of AI-mediated interaction in digital learning settings on teaching practices, student engagement, learning effectiveness, and the overall learning experience. The study also explores how AI-based tools such as adaptive learning systems, intelligent content recommendation, and automated feedback are redefining the pedagogical role of teachers without undermining their central instructional authority. The findings indicate that well-integrated AI systems strengthen teachers' decision-making processes, improve classroom management and assessment efficiency, and help in creating personalized learning pathways. For students, Teacher-Student-AI interaction significantly enhances self-regulated learning, conceptual clarity, and active participation, as AI provides support according to the individual pace and needs of the learners. However, the study also reveals that if AI is used without pedagogical guidance, learning can become superficial, and students may develop over-dependence. The research highlights that teachers' digital competence, ethical understanding, and AI literacy are critical enabling factors for effective interaction. Overall, the study concludes that AI can be a powerful facilitator in digital learning environments, but its maximum educational potential is realized only when teachers integrate AI with intentional design, human judgment, and emotional support. In this context, Teacher-Student-AI interaction provides the foundation for a balanced, inclusive, and future-ready education system that can effectively address the diverse learning needs of 21st-century learners.

Keywords: *TeacherStudent Interaction, Artificial Intelligence in Education, Digital Learning Environment, Personalized Learning, Smart Technology in Teaching.*

12.23 Role of AI and EdTech in reducing the Digital Gaps in Rural Areas

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Abstract

In 21st century era of education, the AI and EdTech are viable to use in every setting in educational settings. Teachers are preparing their selves to use the digital tools in urban as well as rural erea, but there are some digital gap between schools in urban areas and schools in rural areas is still one of the most significant problem that needs to be fixed for all in-service , preservice teachers training programmes to grow and learn. Rural area students not able to fully get benefitted from the digital change accured in 21st century because they don't have easy access to technology, and the infrastructure in rural Ares arent good enough, and they don't know how to use technology properly and efficiently. Educational Technology (EdTech) and Artificial Intelligence (AI) are the main sources that emerged as promising facilitators for addressing these disparities. When we offer personalized learning settings and adaptive content delivery systems capable of being expanded or adapted to accommodate growth for educational solutions, AI and EdTech-driven content are the potentials to improve both access and quality of education in rural areas. This paper will introduce the idea of how AI and EdTech can contribute to constricting digital gaps by supporting inclusive learning practices in rural and urban areas, strengthening teaching capacities, and promoting digital participation in rural and urban areas. While technology alone cannot eliminate structural disparities, its thoughtful integration with supportive local and national policies, community engagement, and capacity-building programs can significantly enhance educational equity in rural and urban areas accordingly.

Keywords: *AI (Artificial Intelligence), EdTech (Educational Technology), Digital Divide, Rural Education, Digital Inclusion.*

12.24 The Entagogical Paradigm: AI-Supported Reflective Self-Design in Teacher Education

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Abstract

The rapid integration of generative artificial intelligence (AI) into educational contexts necessitates new theoretical frameworks for understanding teacher learning and professional development. Traditional models of pedagogy, andragogy, and heutagogy inadequately capture the emerging co-constructive relationships between human learners and intelligent systems. Drawing on entagogy, a post-humanist, systems-theoretical framework that conceptualizes learning as autopoietic co-construction between humans and AI,this paper proposes the model of AI-Supported Reflective Self-Design (ASRSD) in teacher education. Anchored in theories of reflective practice and design thinking, the model positions teachers as reflective designers of their own professional learning, engaging AI as a cognitive and metacognitive partner within an entangled Zone of Proximal Development (e-ZPD). Through a critical synthesis of contemporary literature on reflective practice, AI-mediated teacher development, and entagogical theory, the paper articulates a cyclical framework encompassing problem identification, AI-supported planning, pedagogical implementation, and reflective iteration. The study further outlines a qualitative research agendaincluding scenario-based reasoning, trace ethnography, and longitudinal case studiesto empirically investigate teacherAI co-adaptation. The proposed framework advances understanding of AI not merely as a tool, but as a co-evolving partner in reflective professional self-design, offering significant implications for ethical, agentic, and future-oriented teacher education.

Keywords: *Entagogy; Reflective Practice; Artificial Intelligence in Teacher Education; Self-Design Learning.*

12.25 Smart Classrooms: How Artificial Intelligence Is Reshaping Teaching Practices and Student Assessment

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Abstract

The rapid-fire enhancement of artificial intelligence (AI) has significantly converted instructional systems across the sphere. One of the showiest issues of this metamorphosis is the emergence of smart classrooms technology- meliorated literacy surroundings that use AI to support tutoring, literacy, and valuation. Artificial Intelligence(AI) is revolutionizing smart classrooms by allowing substantiated literacy lines that acclimatize to individual pupil needs, furnishing 24/7 training via chat bots, automating tedious executive tasks for preceptors(like categorizing), and offering real- time feedback for deeper, customized understanding, relocating tutoring towards mentorship and data- driven strategies for meliorated engagement and bettered issues. AI- powered tools dissect pupil interpretation and geste , allowing preceptors to produce further operative, acclimatized, and popular literacy surroundings for different learners. This paper explores how AI reshapes tutoring practices and pupil valuation within smart classrooms. It critically examines AI- driven personalization, adaptive instruction, mastering analytics, automated valuation, and prophetic evaluation models. The study adopts a methodical review methodology, synthesizing rulings from recent transnational exploration, case inquiries, and procedure crashes. Effects indicate that AI enhances educational forcefulness, improves learner engagement, supports constructive valuation, and enables data- driven resolution- timber. still, expostulations similar as data sequestration, algorithmic bias, schoolteacher preparedness, and ethical enterprises remain significant walls. The paper concludes with recommendations for policymakers, preceptors, and institutions to insure the responsible and indifferent integration of AI in smart classrooms.

Keywords: *Artificial Intelligence, Smart Classrooms, Teaching Practices, Student Assessment, Adaptive Learning, Educational Technology.*

12.26 The Role of Artificial Intelligence in Transforming Teacher Education in the Field of Management

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Abstract

As the global business environment in 2026 becomes increasingly defined by algorithmic decision-making, the mandate for management educators has shifted from delivering static knowledge to fostering AI-augmented strategic thinking. This research paper investigates the transformative role of Artificial Intelligence (AI) in teacher education within the management discipline. Through a mixed-methods approach, the study evaluates how AI-driven adaptive learning, predictive analytics, and generative tools are reshaping pedagogical competencies. The findings indicate a significant increase in instructional efficiency (up to 40% reduction in administrative load) and a shift in the faculty role from "lecturer" to "learning architect." However, the study also highlights critical gaps in faculty readiness and ethical governance that must be addressed to ensure sustainable integration.

Keywords: *Artificial Intelligence, Teacher Education, Management Education, NEP 2020.*

12.27 Artificial Intelligence And The Integrated Teacher Education Programme (Itep): Reimagining Teacher Preparation For The Digital Future

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Abstract

The rapid expansion of Artificial Intelligence (AI) has significantly altered the epistemological, pedagogical, and organizational foundations of education. Teacher education, as the cornerstone of educational reform, must adapt to these technological transformations to prepare teachers capable of responding to complex, technology-rich learning environments. In India, the Integrated Teacher Education Programme (ITEP), introduced under the National Education Policy (NEP) 2020, represents a transformative initiative aimed at developing professionally competent, multidisciplinary, and ethically grounded teachers. This paper presents a comprehensive conceptual and analytical examination of the integration of AI within the ITEP framework. It explores how AI can enhance curriculum design, personalize teacher learning, strengthen assessment and evaluation practices, support school-based internships, and promote reflective professional development. The paper also critically examines ethical concerns, issues of digital equity, data privacy, algorithmic bias, and the need to preserve the humanistic essence of teaching. Drawing upon policy documents, contemporary research, and emerging global practices, the study argues that AI, when thoughtfully integrated into ITEP, can function as a pedagogical enabler and professional support system rather than a replacement for human educators. The paper concludes by proposing strategic recommendations for curriculum redesign, faculty capacity building, institutional readiness, and policy implementation to ensure that AI integration in ITEP contributes meaningfully to the development of future-ready teachers in India.

Keywords: *Artificial Intelligence, Integrated Teacher Education Programme, Teacher Education, NEP 2020, Digital Pedagogy, Educational Technology, Teacher Professional Development*

12.28 Use of Artificial Intelligence in Lesson Planning at Primary Level

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Abstract

Artificial Intelligence (AI) is increasingly transforming the field of education by of-

fering innovative tools and solutions to support teachers in instructional planning and classroom practices. At the primary level, effective lesson planning is essential as it lays the foundation for students cognitive, emotional, and social development. However, primary teachers often face challenges such as limited preparation time, diverse learning needs, and increasing administrative responsibilities. This paper explores the use of Artificial Intelligence in lesson planning at the primary level and highlights how AI-based tools can support teachers in designing structured, engaging, and learner-centered lessons.

Keywords: *Artificial Intelligence, Lesson Planning, Primary Education, Teacher Education, Educational Technology.*

12.29 Role of AI in Awareness of Environment and E-Waste Among Urban and Rural School Students

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Abstract

Abstract Introduction: The natural environment encompasses all living and non living things occurring naturally, environment encompasses the interaction of all livin species, climate, weather and natural resources that affect human survival and economical activity and E-waste is the issue of electronic garbage its also harm of living animals .AI offers powerful tools for environmental protection, from early warning systems to optimizing sustainable practices, but requires careful, ethical development to ensure its benefits outweigh its environmental footprint. Objectives:1] To find out the role of AI in awareness and knowledge about environment among the school students 2]. To find out the role of AI in awareness and knowledge about E-waste among the school students. Materials and Methods: Self administered questionnaire was used to collect information from 1050 randomly selected school students of three different medium. Statistical analyses were performed with the percentage of each questions Ethical clearance, informed consent and assent were obtained. Results: a) 22.9% of the student have high level of about the knowledge of the role of ai in environment and e-waste b) 25.9% of the student have high level of awareness about the causes of the environment and e-waste c) 27.6% of the student have high level of awareness about effect of the environment and e-waste d) 28% of the student have high level of awareness of global problem. e) 25.1% of the student have high level of awareness of environment and e-waste in total. Conclusion:. Periodic health education regarding role of ai in environment and e-waste is still needed to increase

awareness and knowledge among the school students.

Keywords: *environment, E-waste, Awareness, Green House gases, electronic materials, Knowledge, School student.*

12.30 Is Digital Learning Fostering Critical Thinking In Classrooms

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Abstract

Learning is an important factor for every human being. Today in this new generation every student requires a world of information of revolution where mass media plays an important role in creating an awareness among students. Digital learning is a different kind of communication through which the information is sended and received. Education is a process of adopting the digital learning where every individual in society can learn and make others to learn in easy way. It is the way to adopt the technology in classroom for better understanding of students which provides a good result of teaching and learning in the field of education. The use of digital learning improves the effectiveness and efficiency of learning at different stages of learning in students in their classrooms and by replacing the traditional method of teaching in classrooms with the increase of digital learning which creates interest and motivate the students to learn more and make them to engage in pursuing the knowledge in various aspects of their studies. Digital learning helps out to increase in professional aspects of education which could help students in providing educational research works in pursuing educational strategies, educational objectives, project works, etc. It may also include a meaningful aspects of educational instructions which are to be followed and achieved with increasing critical thinking abilities,problem solving abilities etc.among students.

Keywords: *Digital learning, online learning, educational technology, educational strategies.*

12.31 Building Digital Competence in Teacher Education

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वर्तमान वैश्विक परिदृश्य में शिक्षा प्रणाली तीव्र गति से डिजिटल रूपांतरण की ओर अग्रसर है। विकसित भारत 2047 की परिकल्पना में ज्ञान, तकनीक, नवाचार और मानव संसाधन की गुणवत्ता को केंद्रीय स्थान दिया गया है। इस संदर्भ में शिक्षक शिक्षा में डिजिटल दक्षता का निर्माण अत्यंत आवश्यक हो गया है, क्योंकि शिक्षक ही शैक्षिक परिवर्तन के प्रमुख वाहक होते हैं। प्रस्तुत शोध पत्र में शिक्षक शिक्षा में डिजिटल दक्षता की आवश्यकता, स्वरूप, भूमिका और प्रभाव का विश्लेषण किया गया है। शोध में विकसित भारत 2047 के लक्ष्य के आलोक में शिक्षा में परिवर्तन के नवीन आयामों, अकादमिक क्षेत्र की बहुआयामी भूमिका राजनीतिक, सामाजिक, शैक्षिक, सांस्कृतिक, वैश्विक, लोक साहित्य एवं रोजगार के क्षेत्र का विस्तृत विवेचन किया गया है। साथ ही डिजिटल शिक्षक शिक्षा से जुड़ी संभावनाओं और चुनौतियों को रेखांकित करते हुए यह निष्कर्ष प्रस्तुत किया गया है कि डिजिटल रूप से दक्ष शिक्षक ही भविष्य की पीढ़ी को वैश्विक प्रतिस्पर्धा, सामाजिक उत्तरदायित्व और सांस्कृतिक चेतना से युक्त बना सकते हैं।

मुख्य शब्द- शिक्षक शिक्षा, डिजिटल दक्षता, विकसित भारत 2047, अकादमिक क्षेत्र, शिक्षा में तकनीक, भारतीय ज्ञान परंपरा, रोजगार, वैश्वीकरण

Sub-Theme 13:
Indian Knowledge System and AI

13 Indian Knowledge System and AI

13.1 Indian Knowledge Systems, Artificial Intelligence, and Mathematics Education: Integrating Ancient Wisdom with Contemporary Pedagogy

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Abstract

The integration of Artificial Intelligence (AI) into mathematics education has opened new possibilities for personalized learning, intelligent tutoring, and data-driven instructional practices. Simultaneously, Indian Knowledge Systems (IKS), with their rich traditions in mathematics, logic, epistemology, and pedagogy, offer valuable conceptual and ethical resources for reimagining mathematics education in culturally responsive and human-centered ways. This paper examines the intersection of Indian Knowledge Systems and Artificial Intelligence with specific reference to mathematics education. Drawing upon classical Indian mathematical traditions, philosophical frameworks such as Nyya and Vednta, and indigenous pedagogical practices, the study explores how IKS can inform AI-enabled mathematics teaching and learning. The paper argues that concepts such as multiple means of knowledge (pramas), algorithmic thinking evident in ancient Indian mathematics, and value-oriented learning grounded in dharma can enhance mathematical reasoning, conceptual understanding, and ethical use of AI in classrooms. Further, the paper discusses applications of IKS-informed AI in mathematics education, including adaptive learning systems, assessment, teacher education, and inclusive pedagogy. By adopting an interdisciplinary approach, the study highlights the potential of integrating Indian Knowledge Systems with AI to develop contextualized, equitable, and meaningful mathematics education aligned with the goals of the National Education Policy (NEP) 2020. The paper concludes by emphasizing the need for curriculum reform, teacher preparation, and research frameworks that bridge traditional knowledge and emerging technologies in mathematics education.

Keywords: *Indian Knowledge Systems, Artificial Intelligence, Mathematics Education, AI in Education, Indigenous Pedagogy, NEP 2020.*

13.2 Arthashastra to Algorithms: Integrating Indian Knowledge System and AI in Commerce Pedagogy

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Abstract

The Indian Knowledge System (IKS) represents a rich intellectual tradition encompassing ancient principles of commerce, governance, accounting, and ethical economic practices, as reflected in classical texts such as the Arthashastra. Artificial Intelligence (AI) has become a potent technology instrument that can revolutionise teaching-learning processes in the modern educational setting, especially in commerce education. With particular reference to B.Ed. students, this article investigates the integration of artificial intelligence and the Indian Knowledge System in commerce pedagogy within the context of teacher education programs. The study is to investigate prospective commerce teachers' understanding, views, and preparedness for implementing AI-enabled pedagogical approaches while firmly establishing instruction on indigenous economic knowledge and values. Data were gathered using a descriptive survey approach by giving a structured questionnaire to B.Ed. students with a focus on commerce. The results show a favourable attitude towards the combination of IKS and AI, emphasising the potential of this hybrid method to advance analytical abilities, ethical reasoning, and contextual understanding in commerce education. The study emphasises how AI techniques, such as simulations, data analysis, and interactive learning environments, may effectively support the teaching of conventional economic topics. The study comes to the conclusion that combining artificial intelligence and the Indian Knowledge System provides a comprehensive and forward-thinking approach to commerce education. In addition to being in line with the goals of the National Education Policy (2020), this kind of integration gives aspiring teachers culturally aware, technologically proficient, and morally conscious teaching methods.

Keywords: *Indian Knowledge System, Artificial Intelligence, Commerce Pedagogy, Teacher Education, B.Ed. Students, NEP 2020, Educational Technology, Ethical Commerce Education.*

13.3 Artificial Intelligence as a Catalyst for Reviving Indian Knowledge Systems in Teacher Education: A Framework for Holistic Pedagogy

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Abstract

The rapid integration of Artificial Intelligence (AI) in education presents a transformative opportunity to reimagine teacher education in India through the lens of Indian Knowledge Systems (IKS). This study explores AI not merely as a technological tool but as a catalyst for reviving indigenous pedagogical wisdom, such as holistic development, experiential learning, ethical responsibility, and the GuruShishya tradition, within contemporary teacher preparation programs. Drawing on the principles expressed in the National Education Policy (NEP) 2020, the study proposes a conceptual framework for holistic pedagogy that integrates AI-driven learning analytics, adaptive mentoring platforms, and digital resource repositories with culturally grounded teaching philosophies.The framework emphasizes four key pillars: (1) Holistic Development, promoting cognitive, emotional, spiritual, and social growth through reflective AI tools; (2) Experiential and Community-Based Learning, supported by AI-enabled simulations and localized content generation; (3) Ethical and Value-Oriented Practice, embedding dharmic principles into AI literacy and professional ethics modules; and (4) Knowledge Preservation and Accessibility, using AI to archive, digitize, and disseminate classical, folk, and indigenous knowledge traditions. This synthesis positions AI as an enabler of cultural continuity rather than a disruptive external force.The study argues that aligning AI innovations with IKS fosters more contextually relevant, human-centered, and ethically grounded teacher education. Such integration can enhance reflective practice, learner diversity inclusion, and sustainable educational transformation. The proposed framework offers implications for curriculum design, faculty development, policy formulation, and in-

stitutional practice, ultimately preparing future teachers to navigate technological change while remaining rooted in Indias rich epistemic heritage. By reframing AI through an indigenous philosophical lens, this study contributes to ongoing dialogues on decolonizing education, culturally responsive pedagogy, and the creation of spiritually aware and socially responsible educators in the digital age.

Keywords: *Artificial Intelligence, Indian Knowledge Systems, Teacher Education, Holistic Pedagogy, NEP 2020.*

13.4 Artificial Intelligence as a Medium for Revitalizing Indian Knowledge Systems in Education

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Abstract

Indian Knowledge Systems (IKS) is a treasure of native wisdom deeply rooted in various fields, including philosophy, science, pedagogy, ethics, and cultural heritage. In the times of fast digital transformation and the increasing dominance of Artificial Intelligence (AI) in the education sector, it becomes imperative that we investigate how AI could be used for the revival, preservation, and incorporation of IKS in current educational practices, specifically teacher education.Existing research mainly focuses on the use of AI in education and the revival of Indian Knowledge Systems as two distinct areas. Only a few studies have examined the overlap between these two areas; however, those that have done so are not comprehensive in nature. A detailed and systematic study is lacking on the potential of AI technologies in empowering Indian Knowledge Systems (IKS) to provide a culturally embedded, value-oriented, and inclusive education, which also integrates the traditions and knowledge inherited from our ancestors.The objectives of this study are to study the potential of AI in revitalizing Indian Knowledge Systems in education. The second objective is to explore the relevance of IKS-informed AI applications in teacher education, and the

third objective is to identify the challenges and opportunities in integrating AI with IKS.This study employs a qualitative and descriptive research design. It is based on the analysis of the NEP-2020 policy documents, a review of secondary sources, scholarly articles, reports, and digital initiatives related to AI and the Indian Knowledge System.This research reveals that technologies of Artificial Intelligence (AI), such as natural language processing, digital archives, and adaptive learning systems, have the potential to facilitate easy access to IKS and foster contextualized learning greatly. Additionally, AI facilitates multilingual distribution and tailored interaction with indigenous knowledge.This research reveals that technologies of Artificial Intelligence (AI), such as natural language processing, digital archives, and adaptive learning systems, have the potential to greatly facilitate easy access to IKS and foster contextualized learning. Additionally, AI facilitates multilingual distribution and tailored interaction with indigenous knowledge.The results suggest that the integration of AI and Indian Knowledge Systems may lead to an improvement in teacher education through the cultivation of moral awareness, preservation of culture, and the creation of a more engaging teaching approach. The paper is a valuable resource for policymakers and curriculum developers who wish to align their efforts with the NEP 2020.

Keywords: *Indian Knowledge System, Artificial Intelligence in education, Teacher Education, NEP-2020, Technology- Integrated Pedagogy.*

13.5 Bridging Tradition and Technology: Integrating Indian Knowledge System and AI in English Pedagogy

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Abstract

An extensive collection of indigenous knowledge covering language, literature, pedagogy, ethics, and holistic learning methods is represented by the Indian Knowledge System (IKS). Artificial Intelligence (AI) has become a revolutionary force in teaching-learning processes in the modern educational landscape, especially in language instruction. In order to demonstrate the possibilities of fusing traditional educational ideals with contemporary technology tools, this article investigates the integration of Indian Knowledge System and Artificial Intelligence in teaching English pedagogy among B.Ed. students. The study intends to investigate the understanding, attitudes, and preparedness of aspiring teachers to use IKS-based methods

in English language instruction along with AI-enabled instructional strategies.Data was gathered using a standardised questionnaire given to B.Ed. students with a focus on English pedagogy using a descriptive survey method. The results show that students have a favourable attitude towards incorporating IKS and AI, acknowledging its potential to improve learner engagement, contextual comprehension, and ethical sensitivity in language instruction. It has been discovered that AI tools like digital storytelling platforms, intelligent tutoring systems, and language assessment programs facilitate the efficient delivery of culturally relevant information and customised learning experiences. The study comes to the conclusion that integrating artificial intelligence with the Indian Knowledge System provides a well-rounded and forward-thinking educational framework for the training of English teachers. This kind of integration supports the goals of the National Education Policy (2020) and provides future teachers with pedagogically creative, technologically proficient, and culturally sensitive training.

Keywords: *Indian Knowledge System, Artificial Intelligence, English Pedagogy, B.Ed. Students, Teacher Education.*

13.6 Cultural Neutrality of Artificial Intelligence based learning of Indian Knowledge System: A Management Perspective

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Abstract

The rapid adoption of artificial intelligence (AI) in highereducation has raised concerns regarding its cultural neutrality, particularly in the teaching and learning of the Indian Knowledge System (IKS) within management studies. In this study, cultural neutrality of AI is defined as the ability of AI-based learning tools to present Indian knowledge system accurately, without cultural distortion, oversimplification, or reinterpretation through dominant Western management frameworks. This study focuses on three related dimensions: first, it examines how students perceive the cultural neutrality of artificial intelligence when it is used for learning Indian Knowledge Systems; second, it looks at whether frequent use of AI-based learning tools shapes or

alters these perceptions over time; and third, it explores how learning Indian Knowledge Systems through AI influences students ethical outlook and decision-making orientation as future managers.

Keywords: *Cultural Neutrality , Artificial Intelligence , Indian Knowledge System , Future Manager , Perception.*

13.7 Indian Knowledge System and AI

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Abstract

Artificial Intelligence (AI) is rapidly changing the field of education, especially teacher education. AI tools help teachers and teacher trainees through personalized learning, smart assessment systems, virtual classrooms, and continuous professional development. At the same time, the Indian Knowledge System (IKS) provides strong educational values such as holistic development, ethical thinking, self-reflection, and experiential learning. These traditional principles can guide the effective and responsible use of AI in teacher education. This paper focuses on how AI and IKS can be meaningfully combined to improve the future of teacher education. Traditional Indian teaching approaches, such as the GuruShishya tradition, emphasize mentorship, moral values, and learner-centered education. When these ideas are integrated with modern AI-based technologies, teacher education programs can become more inclusive, balanced, and value-oriented. The paper discusses the use of AI in teacher training for lesson planning, classroom simulations, student performance analysis, and professional skill development. The study also highlights important challenges such as lack of digital skills among teachers, unequal access to technology, and ethical concerns related to data privacy and over-dependence on machines. By combining AI technologies with the wisdom of IKS, teacher education can move towards a human-centered approach that respects culture, promotes ethical teaching, and supports sustainable educational development. The paper concludes that the integration of AI and IKS can help prepare future teachers who are technologically skilled, culturally aware, and socially responsible.

Keywords: *Artificial Intelligence, Teacher Education, Indian Knowledge System, Ethics in Education, Educational Development.*

13.8 Indian Knowledge Systems And Artificial Intelligence

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Abstract

India, with its rich history and diverse cultural heritage, has long been the birthplace of knowledge systems that have shaped its culture for thousands of years. Rooted in ancient scriptures, philosophical treatises and empirical knowledge, the Indian knowledge system is a wealth that has stood the test of time. In recent years, the country has witnessed a dynamic confluence of tradition and modernity, particularly in the field of artificial intelligence. This article explores the symbiotic relationship between the Indian knowledge system and Artificial Intelligence, highlighting the potential for collaboration that can lead India into a new era of technological innovation. Indian Knowledge Systems (IKS) constitute a comprehensive body of knowledge that has evolved over millennia, encompassing diverse fields such as philosophy, science, arts, and medicine. These systems reflect Indias rich intellectual traditions and their influence on global thought. Indias philosophical contributions include the Vedas and Upanishads, which delve into metaphysical and ethical questions. Thinkers such as Adi Shankaracharya and Swami Vivekananda advanced these ideas, providing frameworks for understanding the self and society (Chakrabarty & Roy, 2021). Indian scientists and mathematicians made remarkable contributions, with Aryabhata developing early astronomical models and the concept of zero, and Varahamihira advancing meteorology and hydrology. Medical systems like Ayurveda, as documented in texts such as the Charaka Samhita and Sushruta Samhita, laid the foundation for holistic healthcare practices (Mishra, 2020). Indian linguistic traditions, particularly Paninis grammar in the Ashtadhyayi, represent one of the earliest codifications of a language, showcasing an advanced understanding of linguistics. Literary works like those of Kalidasa highlight the richness of Sanskrit literature (Saha, 2022). Indias contributions to art and architecture include classical music and dance forms like Bharatanatyam and Kathak, as well as architectural marvels such as the temples of Khajuraho and the caves of Ajanta and Ellora, which reflect a synthesis of spirituality and artistic excellence (Sen, 2018). While this knowledge remains an invaluable cultural treasure, challenges such as language barriers, incomplete documentation, and a

lack of digitization have hindered its accessibility and preservation in the modern era.

Keywords: *Artificial Intelligence, Education, Indian Knowledge System.*

13.9 Integrating Indian Knowledge Systems with Artificial Intelligence: A Framework for Ethical and Culturally-Grounded Teacher Education in the Digital Age

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Abstract

AI (Artificial Intelligence) is changing the future of teacher education at a very fast pace. This research paper aims to draw the attention on the need of amalgamation of IKS (Indian Knowledge Systems) with AI. A very strong ethical-base or underlying-principle is required for AI-driven education. This strong underlying-principle or ethical-base can be provided by concepts of prama theory, yoga teaching methodology and comprehensive growth from Indian Philosophy. Inclusion of IKS is essential in teacher education as per NEP (National Education Policy) 2020.This research paper proposes that concepts like universal-consciousness from Vedanta philosophy and theory-of-knowledge from Nyaya philosophy ensures the morality/ ethics and equality/ equity in AI. In this contemporary digital era teachers are not just imparting knowledge, along with this they are also acting as mentor, coach or advisor and facilitator or enabler. AI and tools developed with AI are helpful in taking decisions, which are based on data, emotional intelligence/ affective development and personalized learning/ tailored education. But without indigenous knowledge and traditions of India, these technologies are just going to remain mechanical and automated. The concept of holistic Growth of mind, body, and intellect of IKS matches with the contemporary SEL (Social Emotional Learning). This research paper gives suggestion that, AI courseware which are based on IKS must be developed and should be part of training and development programs of teachers. The teacher-disciple tradition (guru-shishyaparampara) along with collaborative AI can prepare an innovative and contemporary learning model. A healthy equilibrium between digital competency/ proficiency and cultural anchoring is necessary and very much needed. This framework doesnt only make teachers technically competent but also make them culturally competent and along with IQ (Intelligence Quotients) this framework gives them EQ (Emotional Quotients) and CQ (Cultural Quotients). This synergy of AI and Indian tradition of knowledge can lay the foundation of inclusive and sustainable education system.

Keywords: *Indian Knowledge Systems, Artificial Intelligence, Technology-Enhanced Learning (TEL), Ethical AI, Comprehensive Growth.*

13.10 Reimagining Indian Knowledge Systems through Artificial Intelligence: A Political Science Perspective

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Abstract

Indian Knowledge Systems (IKS) represent an elaborate and richtraditional intellectual legacy that consists of political ideas, governance practices, ethical frameworks, and community-based traditions evolved over the centuries. In the modern era, the growing use of Artificial Intelligence (AI) as a technology in research provides new chances to explore indigenous knowledge systems. This study investigates how AI might be effectively used to reinvent Indian Knowledge Systems via the lens of Political Science, ensuring that they are not viewed solely as data sets or technological products. It contends that AI, when used with contextual awareness and ethical concern, can help to recover ancient political literature, evaluate local knowledge systems, and identify connections between historical concepts and current political issues.The research employs an interdisciplinary and qualitative methodology, integrating insights from Indian political thought, political theory, IKS literature, and the latest discussions on AI ethics and governance.Concurrently, the paper critically examines issues related to use of old Indian traditions in contemporary context.The paper concludes that the convergence of AI and Indian Knowledge Systems has the potential to strengthen Political Science by promoting diversity, increasing cultural self-awareness, and encouraging novel research techniques.However, this promise can only be fulfilled through a careful framework that respects indigenous knowledge, ethical commitments, and democratic values. This technique has the potential to result in a more pluralistic, inclusive, and culturally relevant political science in India and elsewhere.

Keywords: *IKS, AI, Political Science, Indian traditions,Indigenous knowledge.*

13.11 Indian Knowledge System and Artificial Intelligence : Philosophical Foundations, Conceptual Parallels, and Contemporary Applications

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Abstract

The swift evolution of Artificial Intelligence (AI) has sparked a resurgence of interest in ancient knowledge systems globally. Among these, the Indian Knowledge System (IKS) is distinguished by its comprehensive, philosophical, and systematic outlook on intelligence, cognition, ethics, and reality. Grounded in foundational texts like the Vedas, Upanishads, Nyya, Vaieika, Skhya, Yoga, as well as Buddhist and Jain philosophies, IKS provides profound insights into epistemology, logic, language, consciousness, and decision-makingkey areas in modern AI research. This paper investigates the conceptual overlaps between IKS and AI while emphasizing similarities in cognition, reasoning, learning processes, ethics, and systems thinking. Furthermore, it evaluates how traditional Indian frameworks can enhance the development of explainable, ethical, and human-centered AI systems. By merging ancient wisdom with contemporary computational paradigms, this study advocates for an approach to AI development that is culturally informed and philosophically sound.

Keywords: *Indian Knowledge System; Artificial Intelligence; Epistemology; Consciousness; Ethics; Machine Learning; Cognitive Science.*

13.12 Indian Knowledge System and Artificial Intelligence:towards Ethical, Sustainable, and Human-Centric Innovation

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Abstract

The rapid advancement of Artificial Intelligence (AI) has reshaped contemporary knowledge production, decision-making, and learning systems. However, the ethical, cultural, and human-centric dimensions of AI development remain significant

challenges. The Indian Knowledge System (IKS), rooted in ancient philosophical, scientific, and ethical traditions, offers a holistic framework that can meaningfully complement modern AI technologies. This paper explores the conceptual convergence between IKS and AI, examining how traditional Indian epistemologiessuch as Dharma, Nyaya logic, Paninian linguistics, and ecological wisdomcan inform ethical AI design, culturally responsive algorithms, and sustainable technological practices. The study highlights applications in education, healthcare, language preservation, and governance, while also addressing challenges related to epistemological translation, data bias, and intellectual property. The paper argues that integrating IKS with AI can foster responsible innovation that balances technological efficiency with human values.

Keywords: *Indian Knowledge System, Artificial Intelligence, Ethics, Dharma, Human-Centric AI, Sustainability.*

13.13 The Convergence of Indian Knowledge Systems (IKS) and Artificial Intelligence (AI)

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Abstract

This paper explores the emerging synergy between the ancient Indian Knowledge Systems (IKS) and modern Artificial Intelligence (AI). By examining the structural parallels between Paninian Sanskrit grammar and Natural Language Processing (NLP), as well as the logical frameworks of Nyaya Shastra and expert systems, this research illustrates how traditional Indian wisdom can inform the next generation of computational intelligence.

Keywords: *Knowledge Systems, modern, traditional.*

13.14 Indian Knowledge System and Artificial Intelligence : Philosophical Foundations, Conceptual Parallels, and Contemporary Applications

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Abstract

The swift evolution of Artificial Intelligence (AI) has sparked a resurgence of interest in ancient knowledge systems globally. Among these, the Indian Knowledge System (IKS) is distinguished by its comprehensive, philosophical, and systematic outlook on intelligence, cognition, ethics, and reality. Grounded in foundational texts like the Vedas, Upanishads, Nyya, Vaieika, Skhya, Yoga, as well as Buddhist and Jain philosophies, IKS provides profound insights into epistemology, logic, language, consciousness, and decision-makingkey areas in modern AI research. This paper investigates the conceptual overlaps between IKS and AI while emphasizing similarities in cognition, reasoning, learning processes, ethics, and systems thinking. Furthermore, it evaluates how traditional Indian frameworks can enhance the development of explainable, ethical, and human-centered AI systems. By merging ancient wisdom with contemporary computational paradigms, this study advocates for an approach to AI development that is culturally informed and philosophically sound.

Keywords: *Indian Knowledge System; Artificial Intelligence; Epistemology; Consciousness; Ethics; Machine Learning; Cognitive Sciences.*

13.15 IKS-Based Digital Pedagogy in Social Sciences: A Competency Development Approach

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Abstract

The study aimed to develop pre-service social science teachers competency in the creation of e-content on Indian Knowledge System. This was single group- pretest

and post-test experimental study. Fifteen social science pre-service teachers were selected under purposive sampling. Pretest was conducted to understand the theoretical knowledge of pre-service teachers on IKS and its integration in social science education, theoretical understanding of digital content creation. To develop the IKS based digital pedagogical competency in pre-service teachers, the orientation was given on IKS and its integration as per the recommendations of NEP-2020 and guidelines given by NCFSE-2023 on areas and approaches to integrate IKS in social sciences. In addition, students were oriented about e-content creation as per the guidelines prepared by Consortium for Educational Communication, (An Inter University Centre of University Grants Commission). Moreover, model of e-content module was given in order to facilitate trainees to develop e-content module. Each student was assigned a topic related to IKS to develop e-content module on it. After the intervention post-test was conducted to measure theoretical understanding of IKS and e-content creation. And also e-content modules on IKS created by trainees were evaluated on the basis of criteria of e-content development. Collected data was analyzed in SPSS. This study was effective in building competency in pre-service teachers in creating IKS based e-content in social sciences.

Keywords: *Indian Knowledge System, Educational Communication.*

13.16 Womens Discourse in the rmad Bhgavata (Pura)

श्रीमद्भागवतमहापुराणं भारतीयधार्मिक-सांस्कृतिक-दार्शनिकपरम्परायाः एकं महत्त्वपूर्णं ग्रन्थम्। अस्मिन् ग्रन्थे नारीणां स्थानं, भूमिकाः, अधिकाराः, आध्यात्मिकगौरवं च विविधानां चरित्राणां माध्यमेन प्रकटितम्। अस्य शोधपत्रस्य उद्देश्यं श्रीमद्भागवते वर्णितं नारीविमर्शं समीक्षात्मकदृष्ट्या विश्लेषणं कर्तुम् अस्ति। कुन्ती, द्रौपदी, देवहूति, गान्धारी, यशोदा, रुक्मिणी, गोपीकाः इत्यादीनां नारीपात्राणां चरित्रैः नारीशक्तेः, भक्तेः, त्यागस्य, धैर्यस्य च स्वरूपं प्रकाशते।श्रीमद्भागवतपुराणं वैष्णवपरम्परायाः सर्वोत्तमं महापुराणं मन्यते। अत्र केवलं भगवतो लीलाः, भक्तितत्त्वं, ज्ञान-वैराग्ययोः विवेचनं च न दृश्यते, अपि तु समाजजीवनस्य सूक्ष्मा दृष्टिः अपि प्रकाशते। अस्मिन् महापुराणे नारीणां स्वरूपं, महत्त्वं, कर्तव्यं, आध्यात्मिकगौरवं च अत्यन्तं प्रभावशालिन्या शैल्या निरूपितम् अस्ति।नारी श्रीमद्भागवते न केवलं गृहिणी वा सहचरी, अपि तु माता, पत्नी, पुत्री, भगिनी, भक्ताः, तपस्विनी, देवी इत्यादि बहुविधस्वरूपैः दृश्यते। नारीशक्तेः महत्त्वं भगवतो लीलासु, भक्तिसाधनायां, धर्मसंरक्षणे च प्रतिपादितम् अस्ति।

बीजशब्दाः – श्रीमद्भागवतम्, नारीविमर्शः, भक्तिः, स्त्रीशक्तिः, पुराणम्

प्रस्तावना - नारी भारतीयसंस्कृतेः मूलाधारः अस्ति। वैदिककालादारभ्य पुराणकालपर्यन्तं नारीणां स्थानं समाजे, धर्मे, आध्यात्मे च निरन्तरं चर्चितम्। श्रीमद्भागवतमहापुराणं केवलं भक्तिग्रन्थः न, अपि तु सामाजिकदृर्शनात्मकदृष्ट्या अपि महत्त्वपूर्णः। अस्मिन् ग्रन्थे नारी केवलं सहचरी वा माता न, अपि तु स्वतंत्रा साधिका, भक्ताः, उपदेष्ट्र्यः च रूपेण निरूपिता।

श्रीमद्भागवते नारीस्वरूपम् -

श्रीमद्भागवते नारीणां स्वरूपं बहुआयामी अस्ति। नारी–माता, पत्नी, पुत्री, भक्ताः

श्रीमद्भागवते नारी–मातृस्वरूपम् मातृत्वं नारीजीवनस्य परमं गौरवं मन्यते। श्रीमद्भागवते मातृस्वरूपे नारी धर्मस्य, संस्कारस्य, भक्तेः च मूलाधाररूपेण वर्णिता अस्ति।

(क) देवकी

देवकी भगवतः श्रीकृष्णस्य जननी। सा केवलं शारीरिकमाता न, अपि तु दैवीयधैर्यस्य, त्यागस्य, भक्तेः च प्रतीकः। कंसस्य अत्याचारान् सहमानापि सा भगवतो अवतारहेतुं दुःखं स्वीकृतवती।

"नाहं शोचामि पुत्रान् मे तुरेः सान्निध्यकारणात्" (भावार्थः)

देवक्याः मातृत्वं तपःस्वरूपं, सहिष्णुतायाः आदर्शः च।

(ख) यशोदा

यशोदा श्रीकृष्णस्य वात्सल्यभक्तेः सर्वोत्तमा प्रतिमा। भगवानेव बालकत्वेन बद्धो यशोदया।

"नेमं विरिञ्चो न भवो न लक्ष्मीः

प्रसादलेशानुगृहीत एवं"

(भागवत १०.९)

13.17 Artificial Intelligence, the Indian Knowledge System, and Shaping the Future of Teacher Education

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اکیسویں صدی میں تعلیم ایک ایسے دور میں داخل ہو چکی ہے جہاں تیزی سے بدلتی ہوئی ٹیکنالوجی اور ثقافتی شناخت کی بحالی کے درمیان ایک نازک موڑ پر کھڑی ہے ڈیجیٹل ٹیکنالوجی تدریسی عمل کو بنیادی طور پر تبدیل کر رہے ہیں۔ مصنوعی ذہانت (Artificial gence)Intelli نے تعلیم بالخصوص اساتذہ کی تعلیم میں تدریس، تشخیص، تربیتی منصوبہ بندی اور پیشہ ورانہ ترقی کے نئے امکانات پیدا کیے ہیں (UNESCO, 2021)۔ تاہم، صرف تکنیکی جدت تعلیم کو مؤثر اور انسانی بنانے کے لیے کافی نہیں، بلکہ اخلاقی اقدار، ثقافتی حساسیت اور سماجی ذمہ داری کی شمولیت بھی ناگزیر ہے۔ اس تناظر میں انڈین نالج سسٹم (Indian Knowledge System) ایک قدیم مگر ہمہ گیر علمی روایت کے طور پر سامنے آتا ہے جو تعلیم کو انسانی، اخلاقی اور ہمہ جہتی تشکیل کا ذریعہ سمجھتا ہے (Government of India, 2020)۔ یہ مقالہ ایک نظریاتی و تجزیاتی مطالعہ (conceptual and analytical study) پر مبنی ہے جس کا مقصد اساتذہ کی تعلیم کے تناظر میں مصنوعی ذہانت اور انڈین نالج سسٹم کے باہمی امتزاج کا جائزہ لینا ہے۔ مطالعے میں موجودہ اساتذہ تربیتی نظام کے مسائل، مصنوعی ذہانت کے امکانات، اور انڈین نالج سسٹم کی اقدار کو یکجا کرنے کی ضرورت پر روشنی ڈالی گئی ہے۔ مقالہ اس نتیجے پر پہنچتا ہے کہ اگر مصنوعی ذہانت کو انڈین نالج سسٹم کی اخلاقی اور ثقافتی اقدار کے ساتھ مربوط کیا جائے تو اساتذہ کی تعلیم زیادہ مؤثر، ذمہ دار، انسانی اور مستقبل کے تقاضوں سے ہم آہنگ بن سکتی ہے۔

Sub-Theme 14:
Learning Management Systems Using AI

14 Learning Management Systems Using AI

14.1 Integrating Artificial Intelligence and Virtual Reality in Management Education: Development of an AI-Driven VR-Based Training Model (AI-VRBTM)

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Abstract

Business keeps getting more complicated, and universities are racing to keep up, especially as everything goes digital. Theres a big push now for new teaching models that mix hands-on learning with the latest tech. One approach thats really catching attention is using Artificial Intelligence with Virtual RealityAI-driven VR. Basically, it lets students dive into realistic business scenarios, get instant feedback, and learn in a way that adapts to them.

This paper introduces the AI-Driven Virtual RealityBased Training Model (AI-VRBTM). Its built to help students in management programs pick up key skillslike making tough decisions, leading teams, solving problems, and working well with othersby putting them right into lifelike, risk-free simulations. The model leans on ideas from experiential learning and constructivism, blending VR business simulations with smart AI features: personalized learning, real-time analytics, tailored feedback, and assessments that actually fit each student.

To build this model, the study pulls together research on management training, immersive tech, and AI-powered education. It lays out a clear framework for how schools can use these tools in a practical, scalable way. The paper doesnt ignore the tough partshurdles like tech requirements, making sure the content feels real, training faculty, handling data properly, and keeping costs reasonable.

By mapping out both the theory and practical side of this new model, the research adds something fresh to the conversation around digital teaching and learning with technology. It also gives universities some solid ideas for curriculum, strategy, and where to take future research in AI-driven management education.

Keywords: *Artificial Intelligence in Education, Virtual RealityBased Training, Management Education, Experiential Learning, Managerial Skill Development.*

14.2 A Detailed study on Learning Management Systems Using Artificial Intelligence

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Abstract

The rapid evolution of educational technology has shifted the focus from traditional online platforms to intelligent, learner-centric environments. This research provides a detailed study on the integration of Artificial Intelligence into Learning Management Systems, exploring how machine learning algorithms and data analytics are redefining the digital classroom.

Traditional LMS platforms often provide a "one-size-fits-all" approach, which can lead to low student engagement and inconsistent learning outcomes. This paper examines how AI addresses these limitations through personalised learning pathways, which adapt content and pacing to the unique needs of each student. Key features analysed include intelligent tutoring systems, automated grading, and predictive analytics that identify at-risk students before they fall behind.

Furthermore, the study highlights the administrative benefits of AI-driven systems, such as the automation of routine tasks, allowing educators to focus more on instructional quality. While the benefits are significant including improved student retention and 24/7 accessibility the research also addresses critical challenges. These include data privacy concerns, the risk of algorithmic bias, and the "digital divide" in technology adoption.

The findings suggest that when implemented ethically and thoughtfully, AI-powered LMS platforms significantly enhance institutional efficiency and student performance. This study concludes by offering a roadmap for future developments, emphasising the need for human-AI collaboration to create more inclusive and effective educational ecosystems.

Keywords: *Learning Management Systems (LMS), Artificial Intelligence (AI), Personalized Learning, Adaptive Learning, Educational Technology (EdTech), Machine Learning in Education, Predictive Analytics, Automated Assessment.*

14.3 Artificial Intelligence in Learning Management Systems: Implications for Teacher Education and Professional Development

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Abstract

The integration of Artificial Intelligence (AI) into Learning Management Systems (LMS) is redefining the landscape of teacher education and professional development in the digital era. As teacher preparation and continuous training increasingly adopt technology-enabled models, AI-powered LMS platforms offer innovative solutions for personalized learning, adaptive instruction, automated assessment, and data-driven professional growth. This paper examines the implications of Artificial Intelligence in Learning Management Systems for teacher education and lifelong professional development, with a focus on enhancing pedagogical competencies, reflective practice, and instructional effectiveness.

The study explores how AI-enabled features such as intelligent tutoring systems, learning analytics, predictive performance monitoring, and automated feedback mechanisms can support both pre-service and in-service teachers in acquiring subject knowledge, pedagogical skills, and classroom management strategies. Special attention is given to the role of adaptive learning pathways and competency-based training models in addressing diverse learning needs and fostering continuous professional improvement. The paper also discusses key challenges and ethical considerations, including data privacy, algorithmic transparency, digital equity, and the

responsible use of AI in teacher education programs. By aligning AI-driven Learning Management Systems with educational theory and professional standards, this research advocates a sustainable, learner-centered, and future-oriented framework for strengthening teacher education and professional development in the age of intelligent technologies.

Keywords: *Artificial Intelligence, Learning Management Systems, Teacher Education, Professional Development, Personalized Learning, Learning Analytics, Educational Technology.*

14.4 Enhancing Personalized Learning in Learning Management Systems through AI

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Abstract

Learning Management Systems (LMS) have become essential tools for delivering content and tracking progress in the field of teaching and learing. It also indicates the fast-changing world of educational technology. Traditional LMS platforms may not be suitable to the needs of all learners, which can lead to disengagement of learners leading to and less than expected results. This paper examines the incorporation of Artificial Intelligence (AI) algorithms to transform personalized learning within Learning Management System (LMS) environments, enhancing adaptability and inclusivity in education.

An AI-powered LMS could suggest personalized modules for a student who is having trouble with math by comparing them to other students with similar learning styles. It could also help advanced users by giving them more difficult challenges. For example, Moodle plugins that use TensorFlow to show how these algorithms not only improve retention rates but also help people understand things better. This study proposes a framework for implementing AI in Learning Management Systems (LMS), encompassing data preprocessing and real-time adaptation to personalize the learning experiences. This study emphasize that AI is not merely an adjunct

but a transformative catalyst for LMS, enabling educators to cultivate equitable and engaging experiences. By connecting technology and teaching, it makes it possible for future LMS designs to really fit the learner, not the other way around. Future endeavors may expand this to multimodal AI, integrating auditory and visual inputs for enhanced immersive customization.

Keywords: *Artificial Intelligence, Personalized Learning, Learning Management Systems, Educational Technology.*

14.5 Learning Management Systems Using Artificial Intelligence: Opportunities in Teacher Education Programs

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Abstract

The emergence of Artificial Intelligence has permeated almost every aspect of human life. Within a remarkably short span of time, it has significantly transformed the field of education. Artificial Intelligence is now being increasingly integrated into various educational programmes, reshaping teachinglearning processes and educational practices. The integration of Artificial Intelligence (AI) into Learning Management Systems (LMS) has brought transformative changes to the field of education, particularly in teacher education programs. AI-enabled LMS platforms offer personalized learning pathways, adaptive content delivery, automated assessment, learning analytics, and intelligent feedback systems that enhance teachinglearning effectiveness. In teacher education, such systems provide opportunities to develop pedagogical competencies, digital literacy, reflective practices, and continuous professional growth among pre-service and in-service teachers. This paper studies the concept of AI-based Learning Management Systems and explores their opportunities in teacher education programs. It highlights the role of AI in enhancing curriculum delivery, learner engagement, assessment, mentoring, and professional development. The paper also discusses the relevance of AI-driven LMS in achieving the goals of the

National Education Policy (NEP) 2020, including equity, access, quality, and lifelong learning. The paper concludes that the effective integration of AI-powered LMS can significantly improve the quality and relevance of teacher education programs, making them more learner-centred, inclusive, and future-ready.

Keywords: *Artificial Intelligence, Learning Management System, Teacher Education, Educational Technology, NEP 2020.*

14.6 Role of AI-Enabled Learning Management Systems in Teacher Education

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force in higher education, particularly through AI-enabled Learning Management Systems (LMS). In the context of teacher education, these intelligent systems offer personalized learning pathways, real-time feedback, adaptive assessments, and data-driven insights that enhance both pedagogical training and professional competence of future teachers. The study explores the role of AI-enabled LMS in teacher education programs by synthesizing existing literature, policy documents, and global best practices. Using a qualitative review methodology, the study examines how AI-integrated LMS platforms support instructional design, learner engagement, assessment practices, and reflective teaching among pre-service and in-service teachers. The paper also discusses challenges related to digital readiness, ethical concerns, data privacy, and equity in access. Special emphasis is placed on the Indian teacher education context, aligning with the National Education Policy (NEP) 2020 and the growing emphasis on digital competence and lifelong learning. The findings highlight that AI-enabled LMS, when thoughtfully implemented, can significantly strengthen teacher preparation through adaptive learning, continuous professional development, and evidence-based teaching practices. The paper offers implications for teacher educators, institutions, and

policymakers who seek to integrate AI responsibly into teacher education.

Keywords: *Artificial Intelligence, Learning Management Systems, Teacher Education, Digital Pedagogy, NEP 2020, Adaptive Learning.*

14.7 The Impact of Artificial Intelligence on Educational Effectiveness and Instructional Design

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Abstract

The twenty-first century is widely recognized as the era of information and technology, marked by rapid advancements in artificial intelligence (AI) across diverse sectors. Education, as a dynamic and evolving field, has experienced significant transformations in response to changing societal and pedagogical needs, thereby creating a strong demand for innovation and creativity in teaching and learning processes. Artificial intelligence has emerged as a powerful tool to support and enhance educational practices by assisting with routine and systematic tasks. This study aims to examine the role and application of artificial intelligence in education, with particular emphasis on its impact on teaching and learning processes. The research is based on a library research methodology, drawing upon existing scholarly literature, reports, and documented applications of AI in educational contexts. The analysis reveals that AI has been extensively integrated into various educational technology platforms, including virtual guides, voice assistants, smart content development tools, presentation translators, global online curricula such as MOOCs, automated assessment systems, personalized learning platforms, educational games, and Intelligent Tutoring Systems.

Keywords: *AI, Teaching & Learning,Tools, Moocs, Translator.*

14.8 Artificial Intelligence in Learning Management Systems: An Empirical Analysis of user Adoption

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Abstract

Artificial Intelligence (AI) is increasingly being integrated into Learning Management Systems (LMS) to enhance personalization, engagement, and instructional effectiveness in education. Despite the growing adoption of AI-enabled LMS, empirical evidence on users awareness, perceptions, and adoption-related factors remains limited, particularly based on primary data. The present study aims to examine the level of awareness and usage of Artificial Intelligenceenabled Learning Management Systems among users, analyze users perceptions regarding the usefulness and ease of use of AI features, and identify the key factors influencing the adoption of AI-integrated LMS in education. The study adopted a descriptive and analytical research design and collected primary data from 240 respondents using a structured questionnaire. Chi-square analysis was employed to examine the association between demographic and academic variables and awareness and usage of AI-enabled LMS. Descriptive statistics were used to assess users perceptions of usefulness and ease of use of AI features. Exploratory Factor Analysis was conducted to identify the underlying dimensions influencing adoption. The results revealed that variables such as age, level of education, field of study, type of institution, and prior knowledge significantly influenced awareness and usage of AI-enabled LMS, while gender and place of residence showed no significant association. Descriptive findings indicated generally positive perceptions regarding the usefulness and ease of use of AI features.

Keywords: *Artificial Intelligence, Learning Management Systems, User Adoption, Institutional Support, Higher Education.*

14.9 AI Transforming Online Education: Smarter Lms Solutions

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Abstract

Artificial Intelligence (AI) is fundamentally transforming online education by enabling smarter, more adaptive Learning Management Systems (LMS). Traditional LMS platforms often rely on static content delivery and uniform assessment methods, which may not adequately address the diverse learning needs of students. AI-powered LMS solutions leverage machine learning, natural language processing, and predictive analytics to create personalized learning pathways, provide real-time feedback, recommend resources tailored to individual performance, and detect learning difficulties before they escalate. These systems also streamline administrative tasks such as grading, scheduling, and engagement tracking, allowing educators to focus on instruction and meaningful student interaction. Additionally, AI supports interactive and collaborative learning experiences through virtual tutors, adaptive content recommendations, and intelligent discussion facilitation. Despite these advantages, AI integration raises challenges related to data privacy, algorithmic bias, and the need for faculty training. This study examines the ways in which AI-driven LMS solutions are redefining online education, highlighting both technological innovation and practical implications for educators and learners. By adopting AI, online education can evolve from passive content delivery to an intelligent, responsive, and inclusive ecosystem that enhances engagement, improves learning outcomes, and meets the unique needs of diverse learners.

Keywords: *Artificial Intelligence, Learning Management System, Online Education, Personalized Learning, Adaptive Learning.*

14.10 Modern Library Management

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Abstract

With the advancement of technology, it is imperative to exalt all the systems into a user-friendly manner. The Library Management system (LMS) Acts as a tool to transform traditional libraries into digital libraries. In Traditional Libraries, the students/user has to search for books which are a hassle process and there is no proper maintenance of database about issues/fines. The overall progress of work is slow and it is impossible to generate a fast report. The Librarians have to work allotted for arranging, sorting books in the book sells. At the same time, they have to check and monitor the lend/Borrow book details with its fine. It is a tedious process to work simultaneously in different sectors. LMS will assist the librarians to work easily. The LMS supports the Librarians to encounter all the issues concurrently. The users need not stand in queue for a long period to return/borrow a book from the library. The provide an entry in it. Through LMS the Librarian can find the book in the bookshelves. The LMS is designed with the basic features such as librarian can add/view/update/delete books and students, details in it.

The SQL server is exploiting as database. The authorized person can only access the LMS system, they have to log in with their user id and password. As aforementioned that the LMS is designed in a user- friendly manner, so the admin can smoothly activate the system without expert advice. Every data is storing and retrieving from the SQL database so it is highly secure. Thus our system contributes its new approach towards the digital library setup.

Keywords: *Management System Net, SQL Server LAN DBMS.*

14.11 The Role of Artificial Intelligence in Transforming Teacher Education in the Field of Management

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Abstract

As the global business environment in 2026 becomes increasingly defined by algorithmic decision-making, the mandate for management educators has shifted from delivering static knowledge to fostering AI-augmented strategic thinking. This research paper investigates the transformative role of Artificial Intelligence (AI) in teacher education within the management discipline. Through a mixed-methods approach, the study evaluates how AI-driven adaptive learning, predictive analytics, and generative tools are reshaping pedagogical competencies. The findings indicate a

significant increase in instructional efficiency (up to 40% reduction in administrative load) and a shift in the faculty role from "lecturer" to "learning architect." However, the study also highlights critical gaps in faculty readiness and ethical governance that must be addressed to ensure sustainable integration.

Keywords: *Artificial Intelligence, Teacher Education, Management Education, NEP 2020.*

14.12 Artificial Intelligenceenabled Learning Management Systems in Teacher Education

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Abstract

Recent advancements in Artificial Intelligence (AI) have significantly reshaped the design, functionality, and pedagogical potential of Learning Management Systems (LMS), creating new possibilities for innovation in teacher education. Contemporary AI- enabled LMS platforms support personalized learning trajectories, adaptive instructional content, intelligent assessment systems, learning analytics, and data-driven feedback mechanisms. These features enable more responsive and learner-center educational environments, which are particularly valuable in preparing prospective teachers for digitally mediated and technology-rich classrooms. Within the context of teacher education, AI-integrated LMS play a crucial role in enhancing instructional effectiveness, professional reflection, and continuous skill development. Such systems assist teacher educators in monitoring learner progress, identifying individual learning needs, and fostering reflective teaching practices through analytics-based insights. Additionally, AI- supported tools promote self-directed learning and professional autonomy among student-teachers, aligning teacher preparation programmes with the demands of twenty- first-century education.

This descriptive research paper explores the application of AI-integrated Learning Management Systems in teacher education institutions. It discusses the conceptual foundations of AI-enabled LMS, examines their pedagogical applications, and analyses their contribution to teacher preparation and professional growth. The paper also addresses key challenges associated with the implementation of AI-based LMS, including ethical concerns, data privacy, digital accessibility, and the preservation of pedagogical autonomy. Furthermore, strategic measures are proposed to support the effective and responsible integration of AI-enabled LMS in teacher education. The

paper concludes that, when guided by sound pedagogical principles and reinforced by ethical and institutional safeguards, AI-integrated Learning Management Systems can substantially enhance the quality, flexibility, and inclusiveness of teacher education programmes.

Keywords: *Artificial intelligence, learning management systems, teacher education, adaptive learning, digital pedagogy, educational innovation.*

14.13 Title of Chapter: Learning Management Systems Using AI

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Abstract

Learning Management Systems (LMS) have become a central component of digital education by facilitating online content delivery, assessment, communication, and learner management. However, traditional LMS platforms often function as static repositories of learning materials and lack personalization and adaptive support for learners. The integration of Artificial Intelligence (AI) into Learning Management Systems has significantly enhanced their functionality by enabling intelligent automation, personalized learning pathways, real-time feedback, predictive analytics, and learner-centered instruction. This research paper examines the role of Artificial Intelligence in modern Learning Management Systems and explores how AI technologies are reshaping teachinglearning processes. The study adopts a qualitative and conceptual research approach based on the review and analysis of existing literature in the fields of educational technology and artificial intelligence. The paper highlights the educational benefits, pedagogical implications, challenges, and ethical considerations of AI-based LMS. It concludes that Artificial Intelligence-driven Learning Management Systems have the potential to transform education by making learning more adaptive, inclusive, efficient, and outcome-oriented.

Keywords: *Learning Management Systems, Artificial Intelligence in Education, Adaptive Learning, Personalized Learning, Learning Analytics, Intelligent Tutoring Systems, Educational Technology.*

14.14 Impact Of AI-Driven LMS Tools On Skill Acquisition Among Commerce Students In Kerala

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Abstract

This study examines how Artificial Intelligence (AI)-driven Learning Management System (LMS) tools affect skill acquisition among commerce students in Kerala. Using a structured questionnaire data from 250 respondents, the research explores correlations between LMS usage, AI features, and development of skills such as analytical ability, communication, and problem-solving. Results indicate significant positive relationships between the use of AI features in LMS and improvements in core commerce skills.

Keywords: *E-learning, Digital literacy,Challenges and opportunities in e-learning, Access to technological resources, Global adoption of e-learning.*

14.15 AI Transforming Online Education: Smarter Lms Solutions

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Abstract

Artificial Intelligence (AI) is fundamentally transforming online education by enabling smarter, more adaptive Learning Management Systems (LMS). Traditional LMS platforms often rely on static content delivery and uniform assessment methods, which may not adequately address the diverse learning needs of students. AI-powered LMS solutions leverage machine learning, natural language processing, and predictive analytics to create personalized learning pathways, provide real-time feedback, recommend resources tailored to individual performance, and detect learning difficulties before they escalate. These systems also streamline administrative tasks

such as grading, scheduling, and engagement tracking, allowing educators to focus on instruction and meaningful student interaction. Additionally, AI supports interactive and collaborative learning experiences through virtual tutors, adaptive content recommendations, and intelligent discussion facilitation. Despite these advantages, AI integration raises challenges related to data privacy, algorithmic bias, and the need for faculty training. This study examines the ways in which AI-driven LMS solutions are redefining online education, highlighting both technological innovation and practical implications for educators and learners. By adopting AI, online education can evolve from passive content delivery to an intelligent, responsive, and inclusive ecosystem that enhances engagement, improves learning outcomes, and meets the unique needs of diverse learners.

Keywords: *Artificial Intelligence, Learning Management System, Online Education, Personalized Learning, Adaptive Learning.*

14.16 Artificial Intelligence in Learning Management Systems: An Empirical Analysis of user Adoption

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Abstract

Artificial Intelligence (AI) is increasingly being integrated into Learning Management Systems (LMS) to enhance personalization, engagement, and instructional effectiveness in education. Despite the growing adoption of AI-enabled LMS, empirical evidence on users awareness, perceptions, and adoption-related factors remains limited, particularly based on primary data. The present study aims to examine the level of awareness and usage of Artificial Intelligenceenabled Learning Management Systems among users, analyze users perceptions regarding the usefulness and ease of use of AI features, and identify the key factors influencing the adoption of AI-integrated LMS in education. The study adopted a descriptive and analytical research design and collected primary data from 240 respondents using a structured questionnaire. Chi-square analysis was employed to examine the association between demographic

and academic variables and awareness and usage of AI-enabled LMS. Descriptive statistics were used to assess users perceptions of usefulness and ease of use of AI features. Exploratory Factor Analysis was conducted to identify the underlying dimensions influencing adoption. The results revealed that variables such as age, level of education, field of study, type of institution, and prior knowledge significantly influenced awareness and usage of AI-enabled LMS, while gender and place of residence showed no significant association. Descriptive findings indicated generally positive perceptions regarding the usefulness and ease of use of AI features. Factor analysis identified four key adoption determinants: perceived usefulness, ease of use, institutional support, and trust and security. The study concludes that both technological attributes and institutional readiness play a critical role in promoting the effective adoption of AI-integrated Learning Management Systems in educational settings.

Keywords: *Artificial Intelligence, Learning Management Systems, User Adoption, Institutional Support, Higher Education.*

14.17 AI Transforming Online Education: Smarter Lms Solutions

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Abstract

Artificial Intelligence (AI) is fundamentally transforming online education by enabling smarter, more adaptive Learning Management Systems (LMS). Traditional LMS platforms often rely on static content delivery and uniform assessment methods, which may not adequately address the diverse learning needs of students. AI-powered LMS solutions leverage machine learning, natural language processing, and predictive analytics to create personalized learning pathways, provide real-time feedback, recommend resources tailored to individual performance, and detect learning difficulties before they escalate. These systems also streamline administrative tasks such as grading, scheduling, and engagement tracking, allowing educators to focus on instruction and meaningful student interaction. Additionally, AI supports interactive and collaborative learning experiences through virtual tutors, adaptive content recommendations, and intelligent discussion facilitation. Despite these advantages, AI integration raises challenges related to data privacy, algorithmic bias, and the need for faculty training. This study examines the ways in which AI-driven LMS solutions are redefining online education, highlighting both technological innovation and

practical implications for educators and learners. By adopting AI, online education can evolve from passive content delivery to an intelligent, responsive, and inclusive ecosystem that enhances engagement, improves learning outcomes, and meets the unique needs of diverse learners.

Keywords: *Artificial Intelligence, Learning Management System, Online Education, Personalized Learning, Adaptive Learning.*

14.18 The Role of Digital Literacy and Artificial Intelligence in Teacher Education: In the Context of Madrasa and School Teachers

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موجودہ علمی اور معلوماتی معاشرے میں ڈیجیٹل لٹریسی اساتذہ کے لیے ایک بنیادی اور ناگزیر صلاحیت بن چکی ہے۔ انفارمیشن اینڈ کمیونیکیشن ٹیکنالوجی (ICT) اور مصنوعی ذہانت (Artificial Intelligence) میں تیز رفتار ترقی نے تدریس، سیکھنے کے طریقوں، اساتذہ کی تربیت اور تعلیمی نظم و نسق کو نمایاں طور پر متاثر کیا ہے۔ یہ سیمینار پیپر مدرسہ اور اسکول اساتذہ میں ڈیجیٹل لٹریسی کی سطح کا جائزہ لیتا ہے اور اس بات کا تجزیہ کرتا ہے کہ مصنوعی ذہانت مستقبل کی اساتذہ کی تعلیم کو کس طرح متاثر کر رہی ہے۔

یہ مطالعہ نوعیت کے اعتبار سے نظری اور تجزیاتی (Conceptual and Analytical) ہے، جس میں ڈیجیٹل لٹریسی، تعلیم میں مصنوعی ذہانت اور اساتذہ کی پیشہ ورانہ ترقی سے متعلق موجودہ تحقیقی ادب، پالیسی دستاویزات اور مطالعات کا سہارا لیا گیا ہے۔ مقالہ مدرسہ اور اسکول اساتذہ کے درمیان ڈیجیٹل ٹیکنالوجی تک رسائی، مہارتوں اور استعمال کے حوالے سے موجود فرق کو اجاگر کرتا ہے۔ مقالہ اس نتیجے پر پہنچتا ہے کہ اگر اساتذہ کی تعلیم میں ڈیجیٹل لٹریسی اور AI سے متعلق تربیت کو منظم انداز میں شامل نہ کیا گیا تو بالخصوص مذہبی تعلیمی اداروں سے وابستہ اساتذہ ڈیجیٹل تعلیمی نظام میں پیچھے رہ سکتے ہیں۔ آخر میں اس بات پر زور دیا گیا ہے کہ تمام اساتذہ کے لیے جامع، مساوی اور پالیسی پر مبنی ڈیجیٹل تربیت ناگزیر ہے۔

کلیدی الفاظ: ڈیجیٹل لٹریسی، مصنوعی ذہانت، مدرسہ اساتذہ، اسکول اساتذہ، اساتذہ کی تعلیم، مستقبل کی تعلیم۔

14.19 Building Digital Competence in Teacher Education: Integrating AI and Indian Knowledge Systems

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مصنوعی ذہانت اور ڈیجیٹل ٹیکنالوجیز کی تیز رفتار ترقی نے معاصر تعلیم کو نمایاں طور پر تبدیل کر دیا ہے، جس کے نتیجے میں اساتذہ کی تربیت میں ڈیجیٹل اہلیت کو مضبوط بنانے کی فوری ضرورت پیدا ہو گئی ہے۔ اسی کے ساتھ قومی تعلیمی پالیسی 2020 ہندوستانی نظامِ علم (Indian Knowledge Systems) کے انضمام پر زور دیتی ہے تاکہ ہمہ گیر، اقدار پر مبنی اور ثقافتی طور پر مربوط تعلیم کو فروغ دیا جا سکے۔ یہ مقالہ قومی تعلیمی پالیسی 2020 کے تناظر میں اس بات کا جائزہ لیتا ہے کہ مصنوعی ذہانت اور ہندوستانی نظامِ علم کا انضمام قبل از ملازمت اور دورانِ ملازمت اساتذہ میں ڈیجیٹل اہلیت کو کس طرح بہتر بنا سکتا ہے۔ یہ مطالعہ معیاری اور تصوری تحقیقی طریقۂ کار اختیار کرتا ہے، جو علمی لٹریچر، پالیسی دستاویزات اور اساتذہ کی تربیت میں ابھرتے ہوئے عملی طریقوں کے تجزیاتی مطالعے پر مبنی ہے۔ ڈیجیٹل اہلیت کو ایک کثیر جہتی تصور کے طور پر پیش کیا گیا ہے، جس میں تکنیکی مہارت، تدریسی انضمام، اخلاقی شعور، تنقیدی سوچ اور ثقافتی حساسیت شامل ہیں۔ مقالہ مصنوعی ذہانت پر مبنی آلات جیسے موافق تعلیمی پلیٹ فارمز، ذہین تدریسی نظام، قدرتی زبان کی پروسیسنگ اور ڈیجیٹل ذخائر کے کردار کا جائزہ لیتا ہے، جو ہندوستانی نظامِ علم کی تدریس و تعلم میں معاون ثابت ہوتے ہیں۔ یہ آلات اساتذہ کو سیکھنے والے مرکز تدریسی حکمتِ عملی، بین المضامینی تعلیم اور سیاق و سباق سے ہم آہنگ تعلیمی منصوبہ بندی میں مدد فراہم کرتے ہیں۔ ہندوستانی نظامِ علم اور مصنوعی ذہانت پر مبنی تدریس کا انضمام اساتذہ کو روایتی علمی تصورات اور جدید تعلیمی ٹیکنالوجیز کے درمیان پل قائم کرنے کے قابل بناتا ہے۔ یہ انضمام اقدار پر مبنی تعلیم، غور و فکر پر مبنی تدریسی عمل اور شمولیتی تعلیمی ماحول کو فروغ دیتا ہے، جبکہ مقامی علم کی فلسفیانہ گہرائی اور اخلاقی بنیادوں کو بھی محفوظ رکھتا ہے۔ یہ مطالعہ اساتذہ کی خود مختاری، مسلسل پیشہ ورانہ ترقی اور تجرباتی تعلیم پر زور دیتے ہوئے قومی تعلیمی پالیسی 2020 سے ہم آہنگ ہے۔ تاہم، ڈیجیٹل رسائی میں عدم مساوات، ادارہ جاتی انفراسٹرکچر کی کمی، ناکافی پیشہ ورانہ تربیت، اور ڈیٹا کی رازداری و الگورتھمی تعصب جیسے اخلاقی مسائل پر بھی تنقیدی بحث کی گئی ہے۔ مقالہ اس نتیجے پر پہنچتا ہے کہ نصاب کی از سر نو تشکیل، پالیسی ہم آہنگی اور ادارہ جاتی عزم کی صورت میں اساتذہ کی تربیت میں مصنوعی ذہانت اور ہندوستانی نظامِ علم کا انضمام مؤثر طور پر ڈیجیٹل اہلیت کو فروغ دے سکتا ہے۔ یہ طریقۂ کار ہندوستان میں تیزی سے بدلتے ہوئے ڈیجیٹل تعلیمی نظام کے لیے ثقافتی طور پر حساس، تکنیکی طور پر ماہر اور اخلاقی طور پر ذمہ دار اساتذہ کی تیاری میں معاون ہے، اور پائیدار جدت، مساوات، معیار اور قومی تعلیمی اہداف کی تکمیل میں مدد دیتا ہے۔

Sub-Theme 15:
AI in TLM Production

15 Sub-Theme : AI in TLM Production

15.1 AI in TLM Production

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Abstract

Artificial Intelligence (AI) is becoming an important part of modern education and is slowly changing the way TeachingLearning Materials (TLM) are prepared and used in classrooms. In a B.Ed. context, AI helps teachers to create simple, attractive, and effective learning materials according to the needs of students. With the help of AI tools, teachers can easily prepare lesson plans, worksheets, charts, presentations, quizzes, and digital content in less time and with better quality.

AI also supports personalized learning by helping teachers design different types of TLM for slow learners, average learners, and gifted students. It makes learning more interesting through images, videos, animations, and interactive activities, which improve students understanding and motivation. AI-based TLM is especially useful in teaching difficult or abstract concepts in subjects like science and mathematics.

Another important advantage of AI in TLM production is that it reduces the workload of teachers by saving time and effort. It also supports inclusive education by providing tools such as text-to-speech, captions, and multilingual materials for students with different learning needs.

However, the use of AI in education requires proper training for teachers and careful use to avoid over-dependence on technology. Ethical issues and data safety must also be considered.
In conclusion, AI plays a supportive role in TLM production and helps teachers make the teachinglearning process more effective, learner-centered, and innovative. When used properly, AI can greatly improve the quality of education.

Keywords: *Artificial Intelligence, TeachingLearning Materials (TLM), Modern Education, Classroom Teaching, Personalized Learning, Educational Technology, Inclusive Learning, Digital Tools.*

15.2 Artificial Intelligence Application for Development of Teaching & Learning Materials in Medical Radiology & Imaging Technology Education

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Abstract

Artificial Intelligence (AI) has the transformative potential in development of Teaching Learning Material (TLM) in Medical Radiology and Imaging Technology (MRIT) Education. Given that MRIT involves complex concepts and learning with practical skills relevant to image interpretation and diagnostic procedures, a personalised, interactive, and data-driven approach to learning can help improve learning outcomes significantly. AI-based platforms have the ability to personalize the content to meet the individual needs of each learner, thus having tailored learning paths that focus on their strengths and any areas that may need attention. Moreover, with artificial intelligence, simulations of realistic medical images can be generated automatically, helping learners train with the interpretation of a variety of radiological images, including X-rays, computerised tomography, magnetic resonances and ultrasonography. AI-enhanced simulation tools are dynamic and immersive learning environments for students that let them interact with three-dimensional imaging and receive on-the-spot feedback on their diagnostic interpretation. Natural Language Processing (NLP) methods are used for generating automated radiology reports and assessing student knowledge in the form of interactive quizzes. In addition, grading, performance tracking, and case-based learning are supported through the use of AI algorithms that give prompt and actionable feedback. Still, challenges such as data privacy concerns, insufficient technological infrastructure, and biases in AI models, need to be solved in order to ensure its effectiveness and fairness. Incorporating AI in MRIT education is a valuable proposition that can improve the skill development, knowledge retention and practical expertise in an area that holds great significance for healthcare growth.

Keywords: *Artificial Intelligence, Medical Radiology, Imaging Technology, Adaptive Learning, Simulation, Interactive Learning, Performance Tracking.*

15.3 Artificial Intelligence in TeachingLearning Material Production: Emerging Trends, Opportunities, and Challenges

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Abstract

Artificial Intelligence (AI) is increasingly influencing the production of TeachingLearning Materials (TLMs) in education. This paper examines how AI technologies are transforming traditional content development processes into more efficient, adaptive, and scalable systems. It focuses on the role of Generative AI and Large Language Models in creating personalized and multimodal learning resources that support diverse learner needs. The study highlights the potential of AI to reduce teacher workload, improve instructional efficiency, and expand access to quality educational materials, particularly in multilingual contexts such as India. These developments align with the objectives of the National Education Policy (NEP) 2020 and digital platforms like DIKSHA. At the same time, the paper discusses key challenges related to algorithmic bias, content accuracy, intellectual property, and ethical use. Emphasizing the importance of a human-in-the-loop approach, the study concludes that responsible AI integration can enhance TLM production while preserving pedagogical integrity and equity in education.

Keywords: *Artificial Intelligence, TeachingLearning Material, TLM Production, Teacher Education, Educational Technology, Personalized Learning, Inclusive Education.*

15.4 From Chalk to Chatbots: Developing TeachingLearning Material (TLM) through Artificial Intelligence in Teacher Education

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Abstract

Recent developments in Artificial Intelligence (AI) are significantly influencing teacher education, specifically in the development of TeachingLearning Materials (TLMs). Historically, TLMs in teacher education have been largely text-book based and teacher made, with limited opportunities for personalization and student participation. This paper analyses the transition from conventional chalk-and-talk methods to AI-supported digital, interactive, and adaptive TLMs in teacher education. It discusses how AI tools assist in generating lesson plans, multimedia resources, assessments, and personalized learning materials, thereby enhancing instructional effectiveness and inclusivity.

The paper compiles with transformation with the objectives of the National Education Policy (NEP) 2020, which focuses on technology integration, skill-based learning, and equal access to quality education. AI-enabled TLMs support NEP 2020s vision by enabling differentiated instruction, multilingualism, and student-centred pedagogical practices. Concurrently, this paper focus on key concern related to ethical use, data privacy, and the digital readiness of teacher educators. The paper argues that while AI has strong potential to strengthen TLM production and teacher preparation, its effective implementation requires appropriate policy guidance, capacity building, and ethical safeguards to ensure meaningful and responsible integration in teacher education institutions.

Keywords: *Artificial Intelligence, Teaching-Learning Material, Teacher Education.*

15.5 Integration of AI with Teaching Learning Materials (TLM) in Science Education

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Abstract

The rapid advancement of Artificial Intelligence (AI) has significantly influenced various sectors such as industrial, IT and education. In education sector, the integration of AI with Teaching Learning Materials (TLM) has transformed traditional science teaching methodologies into more interactive, personalized and learner-centred approaches using effective tools. The integration of artificial intelligence (AI) into teaching-learning materials (TLM) emerges as a transformative approach. This paper explores how AI can promote traditional TLM such as diagrams, models, and experiments into dynamic and effective tools that foster deeper understanding in science classrooms. AI-enabled TLM such as virtual laboratories, intelligent tutoring systems, simulations, and adaptive learning platforms enhance conceptual understanding, scientific inquiry, and critical thinking skills among learners. In this study, the main focus towards potential of AI-enhanced TLM to bridge gaps in resource-limited settings, enabling equitable access to high-quality science education. Ultimately, this paper argues that thoughtful AI integration not only enhances engagement and retention but also prepares students for a future intertwined with intelligent systems. It also discusses the benefits, challenges, and future prospects of integrating AI with TLM in science education.

Keywords: *Artificial Intelligence, Teaching-Learning Materials (TLM), Science Education, Educational Technology, Digital Learning.*

15.6 Precision Pedagogy: The AI-Driven Evolution of Personalised TLMs

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Abstract

The rapid advancement of Artificial Intelligence (AI) is fundamentally transforming the educational landscape, specifically in the production and adaptation of Teaching-Learning Materials (TLMs). For decades, the creation of quality TLMs has been a significant burden for educators, often resulting in "one-size-fits-all" resources that fail to meet the diverse needs of a modern, heterogeneous classroom. This paper examines the transition from manual, static content creation to dynamic, AI-powered tools, including generative AI and adaptive learning systems, that automate content creation, improve accessibility, and offer personalised learning pathways. this will examine the integration of AI in the TLM lifecycle, from initial drafting to real-time adaptation. It also examines AI bridges accessibility gaps for students with disabilities and tailors complex concepts to individual learning rhythms, fostering a more equitable environment. However, this technological leap is not merely about speed; it is about heart and inclusion. By synthesising recent literature, the study identifies key benefits such as reduced teacher workload and improved student engagement while addressing critical challenges regarding data privacy, algorithmic bias, and the potential for cognitive disengagement. While these tools offer immense value, we must remain vigilant. This study candidly addresses the "human" concerns of the digital age. Ultimately, this paper argues that while AI can produce the materials, the synergy between human intuition and machine efficiency is what truly unlocks a students potential.

Keywords: *Artificial Intelligence in Education (AIEd), Generative AI, Teaching-Learning Materials (TLMs), Adaptive Learning, Instructional Design, Educational Equity, Human-AI Collaboration.*

15.7 Transforming TeachingLearning Materials through Artificial Intelligence

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Abstract

The 21st Century demands changes in innovation and creativity in Teaching Learning Material in the field of Education. With the rapid advancement of AI in education, educational practices are undergoing a paradigm shift, especially in the production of learner centred Teaching Learning Material. AI has been widely applied to various educational technology platforms such as virtual mentor, Siri like voice Assistant, Google Assistant and Cortana, Smart content, Personalized learning, intelligent tutoring system, presentation translator, global courses like MOOCs, Udemy, Google AI, Alison, Khan Academy, edX, Udacity, Coursera etc, Educational games, Automatic assessment and Intelligent Computer Aided Instruction. This paper explores the conceptual foundations, applications, and emerging practices of AI in TLM production. Furthermore, the paper discusses the role of educators, ethical challenges, and future implications of AI-enabled TLM production in enhancing teaching effectiveness and learner engage.

textbfKeywords: *Artificial Intelligence, Teaching-Learning Material (TLM), Personalized Education, Educational Robots, Content Generation, EdTech, Learning Management Systems, Virtual Mentors.*

16 About the University

Maulana Azad National Urdu University (MANUU) is a Central University established by an Act of Parliament in 1998. The University is named after Maulana Abul Kalam Azad, the freedom fighter and an outstanding scholar, who was the first Education Minister of independent India envisioned and laid the foundation of various technical, scientific and higher education centers in India. The headquarters of MANUU is located at Gachibowli, Hyderabad. It has a sprawling campus with lush green sylvan glades spread over an area of 200 acres. MANUU started offering its educational programmes in the year 1998 in distance mode, but from 2004 onwards various programmes have been offered in regular mode. Regular-mode programmes are being offered through seven schools. These schools have 19 departments, which offer undergraduate, postgraduate, and PhD programmes. Besides, MANUU has nine technical and professional training and research centers. MANUU has three directorates: a) Directorate of Distance Education (DDE), b) Directorate of Physical Education and c) Directorate of Translation and Publication (DTP). It has five polytechnic colleges and three Urdu Model Schools. The distance education programmes of MANUU are offered through the Directorate of Distance Education (DDE), which has a network of nine regional and five sub-regional centers.

17 About the School of Education & Training

Since its inception, MANUU has dwelt on preparing candidates to teach in Urdu medium schools. Initially, only the D.Ed. programme was offered in 2001, eventually, the B.Ed. programme has also been offered since 2004. Now, it nestles in the School of Education & Training, established in 2006. The objective of the School of Education and Training is to prepare a community of school teachers and teacher educators rooted in knowledge and excellence. The emphasis of the school is on the functional relationship between knowledge generation, theory development and effective practice in Urdu medium. It has eight colleges of teacher education located at Asansol, Aurangabad, Bhopal, Bidar, Darbhanga, Nuh, Sambhal and Srinagar

18 About the Department of Education & Training

The Department of Education & Training is in the making of a community of excellent elementary, and secondary teachers and teacher educators ready to take off to explore the realms of teacher education and the future. The department has embarked upon a mission to emphasize capacity building, knowledge creation, and innovative practices. The Department of Education and Training is one among the 57 TEIs offering ITEP - B.A.B.Ed., B.Sc.B.Ed. and B.Com. B.Ed.

19 About the College

The College of Teacher Education, Bidar was established in 2015 to fulfill the teacher education needs of the Urdu-speaking undergraduates in Urdu as a medium of instruction. This college has grown from strength to strength, and it is known in the university for the individual caliber of the teachers and the teaching prowess.

20 List of Programmes organized at MANUU CTE, Bidar

Table 1: List of Programmes organized at MANUU CTE, Bidar

S. No	Name of the Programme	Dates
1	Republic Day Celebrations-	26-01-2025
2	Guest Lecture	25-02-2025
3	Independence day Celebration	15-08-2025
4	Special Campaign 5.0 & Swachhta in Govt offices	02-10-2025 to 31-10-2025
5	Student Induction Programme	05-10-2025 to 10-10-2025
6	150 Years Vande Mataram	07-11-2025
7	Azad Day Celebrations -2025 Chess & Carroms for Girls	07-11-2025
8	Azad Day Celebration- Chess & Carroms for Boys	07-11-2025
9	Azad Day Celebrations -2025 Badminton & 100 metres Running race for Girls	07-11-2025
10	Azad Day Celebrations -2025 Essay	08-11-2025
11	Azad Day Celebrations -2025 Speech Competition	08-11-2025
12	Azad Day Celebrations -2025 Poster Making	09-11-2025
13	Azad Day Celebrations -2025 Cricket & 400 meters running race for Boys	10-11-2025
14	Azad Day Celebrations-Prize and Certificated distribution	11-11-2025
15	Vigilance Awareness week	27-11-2025

21 College of Teacher Education, Bidar-Staff

Sl.No	Name	Designation	Academic / Professional Qualification		Date of Appointment	Joining at CTE Bidar	Photograph
			Subjects at PG	Methodology Subjects			
1.	Dr. Mohd Talib Ather Ansari	Associate Professor & Principal I/c	M.A. (History) (English) (Urdu.) M.Ed. M.Phil. UGC-NET, Ph.D. (Education)	Hindi Social Studies ICT	23-02-2007	25-05-2015	
2.	Dr. D. Vishwa Prasad	Associate Professor	M.A. (English). M.Ed, PGDTSE., Ph.D. UGC-NET	Bio-Science English	22-12-2006	27-05-2025	
3.	Dr. Hina Hasan	Associate Professor	M.Sc Organic Chemistry M.Ed. NET - JRF Ph.D. (Education)	Physical Sciences	05-05-2015	13-05-015	
4	Dr. Bondu Raju	Associate Professor	M.Sc. (Maths) M.Ed. M.Phil., Ph.D. (Education), UGC- NET	Mathematics	02-02-2012	27-05-2015	
5	Dr.Naveen Kumar M.	Assistant Professor	M.Sc. (Zoology),M.Ed. UGC-NET - JRF Ph.D. (Education)	Biological Sciences	17-04-2015	12-05-2015	

Figure 1: MANUU College of Teacher Education, Bidar-Staff

6	Dr. Telluri Aruna Kumari	Assistant Professor	M.Sc Organic Chemistry M.Ed. Ph.D. (Education)	Physical Sciences	27-10-2025	27-10-2025	
7	Dr. Md .Azeem	Assistant Professor	M.A. (Urdu.) M.Ed. M.Phil. K.SET-, Ph.D. (Urdu)	Urdu Social Studies	11-01-2022	11-01-2022	
8	Prof.(Dr.)Sadaquat Ali Khan	Professor Retd.,	M.A. (Geography) M.Ed. M.Phil (Population Studies) Specialization in Population Education Ph.D. (Population Studies)	Geography Economics	01-08-2025	01-08-2025	

Figure 2: MANUU College of Teacher Education, Bidar-Staff

SLNo	Name	Designation	Academic Qualifications	Date of Appointment	Joining at CTE Bidar	Photograph
1	Ms. Nusarat Begum	Lower Division clerk	PUC/DCA	16-06-2023	16-06-2023	
2	Md. Nazeer Ahmed Khan	Lab Assistant	Diploma in Electronics & Communications	12-03-2015	12-05-2015	
3	Mr. Syed Arif Hussain	Data Entry Operator	B.A/ DCA		25-01-2016	

Figure 3: MANUU College of Teacher Education, Bidar-Staff

4	Mr.Naveed Ahmed Siddiqui	Multi Task Assistance	Vocational Computer		25-01-2016	
5	Mr.Mirza Farooq Baig	Watch man	IX		17-01-2017	
6	Mr.Anwer Khan	Watch man	SSLC	-	14-12-2016	
7	Mr.Ghouse Pasha	Watch man	PUC	-	24-10-2025	
8	Ms.Sangeetha	Sweeper	SSLC		01-10-2016	

Figure 4: MANUU College of Teacher Education, Bidar-Staff



Figure 5: Photo Gallery



Figure 6: Photo Gallery



Figure 7: Photo Gallery



Figure 8: Photo Gallery



Figure 9: Photo Gallery

Table 2: Achievements of MANUU CTE, Bidar

S. No.	Name of the faculty	Details of Achievement
1	Dr. Mohd. Talib Ather Ansari	A Major Research Project of UGC on "Access and equity in terms of Enrolment, Retention and Employment, Role of Language Universities with reference to Mahatma Gandhi Antarrashtria Hindi Vishv Vidyalaya and Maulana Azad National Urdu University, Hyderabad".
2	Dr. Mohd. Talib Ather Ansari	NCTE (ERC), VT, Member - Since 2017
3	Dr. Mohd. Talib Ather Ansari	ASIAN EDUCATION AWARDS 2023 "Best Innovative Teacher of the Year-2023" Presented Organized by Kiteskraft Productions In Association with GCCR
4	Dr. D. Vishwa Prasad	E-Teacher Scholarship, Department of State, USA to pursue "Professional Development for Teacher Trainers at the Arizona State University, United States, 2020.
5	Dr. D. Vishwa Prasad	A Project on "An Endangered Language of India" funded by Foundation for Endangered Languages, England, 2018.
6	Dr. D. Vishwa Prasad	E-Teacher Scholarship, Department of State, United States, to pursue TESOL Methods at the University of Oregon, USA, 2014.
7	Dr. D. Vishwa Prasad	Doctoral Fellowship, Ford Foundation, Washington, United States, 2006.
8	Dr. Bondu Raju	THE MOST EVOCATIVE TEACHER Award 'Dr. Sarvepalli Radhakrishna Memorial Award' On the Teachers Day [05/09/2020] by 'Tejasvi Astitva Foudation', NGO Delhi
9	Dr. Bondu Raju	A project on 'Teaching Mathematics methodology in Teacher Education Institutions and Its Practices in Classroom'

Table 3: Achievements of MANUU CTE, Bidar

S. No.	Name of the faculty	Details of Achievement
10	All the faculty of CTE, Bidar	"Sociological Approaches and Impact to Development on Society". published in an Intellectual Property of India, Office of the Controller General of Patents, Designs & Trade Marks, Department of Industrial Policy & Promotion, Ministry of Commerce & Industry, Government of India, published on 01.09.2023
11	Prof. (Dr.) Sadaquat Ali Khan	NCTE (ERC) Visiting Team Member-2009 on-wards
12	Prof. (Dr.) Sadaquat Ali Khan	Member of Executive Members, MANUU, Hyderabad from 25.09.2019 to 24.09.2022
13	Prof. (Dr.) Sadaquat Ali Khan	Member of Academic Council, MANUU, Hyderabad from 31.10.2019 to on-wards
14	Prof. (Dr.) Sadaquat Ali Khan	Member of School Board, MANUU, Hyderabad
15	Prof. (Dr.) Sadaquat Ali Khan	Member of Board of Studies,Education & Training, MANUU, Hyderabad
16	Prof. (Dr.) Sadaquat Ali Khan	Member of Board of Edwin Group of Journals 2023 on-wards

About MANUU

Maulana Azad National Urdu University (MANUU) is a Central University established by an Act of Parliament in 1998. The University is named after Maulana Abul Kalam Azad, the freedom fighter and an outstanding scholar, who was the first Education Minister of independent India envisioned and laid the foundation of various technical,

About MANUU CTE, Bidar

The College of Teacher Education, Bidar was established in 2015 to fulfill the teacher education needs of the Urdu-speaking undergraduates in Urdu as a medium of instruction. This college has grown from strength to strength, and it is known in the university for the individual caliber of the teachers and the teaching prowess

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