AMBEDKAR COLLEGE
FATIKROY, UNAKOTI, TRIPURA
ESTD. : 1991

National Seminar

on

Aligning AI Tools with NEP's Holistic Vision

(AATNHV-2026)

04–05 November, 2026

ABSTRACT

Jointly Organized by:

Department of English & Department of Political Science
Ambedkar College, Fatikroy

In collaboration with
IQAC, Ambedkar College, Fatikroy

PREFACE

It is a matter of distinct privilege and pleasure to present this Abstract Booklet on the occasion of the Two-Day National Seminar on **"Aligning AI Tools with NEP's Holistic Vision,"** organized jointly by the Departments of English & Political Science, in collaboration with the Internal Quality Assurance Cell (IQAC), Ambedkar College, Fatikroy, Unakoti, Tripura, on the 4th and 5th of November 2026.This seminar brings together scholars and educators to explore how emerging AI technologies can support the National Education Policy 2020's vision of multidisciplinary, inclusive, and future-ready learning. This compilation features a selection of abstracts that highlight innovative research, practical applications, and critical reflections from scholars and educators across the region. We extend our sincere gratitude to our guest speakers, paper presenters, IQAC, and the organizing team for their valuable contributions and support.

We trust this booklet will serve as a useful reference and spark engaging discussions throughout the seminar.

Convenor.
National Seminar.

Organising Secretary
National Seminar

National Seminar
on
Aligning AI Tools with NEP's Holistic Vision
(AATNHV-2026)

04-05 November, 2026

LOCAL ORGANISING COMMITTEE

Patron:

Shri. Animesh Debbarma

Director, Directorates of Higher Education, Govt. Of Tripura.

Chairman:

Dr Raghunandan Das

Principal, Ambedkar College

Convenor:

Dr. Satyajit Das

HoD, Dept. Of Political Science

Organising Secretary:

Mrs Jacinta Zirsangzeli Darlong

HoD, Dept. Of English

Treasurer:

Dr Manish Nandi

Coordinator IQAC, Ambedkar College

Shri Animesh Debbarma

Additional Secretary & Director
Education (Higher) Department
Government of Tripura
Tel : 0381-232-4689
Email :- dir.hed-tr@gov.in

Date: 02-11-2026

MESSAGE

It gives me immense pleasure to learn that a Two-Day National Seminar on **"Aligning AI Tools with NEP's Holistic Vision"** is being organized on 4th and 5th of November, 2026 by the Department of English and Political Science in collaboration with IQAC, Ambedkar College Fatikroy. The theme of the seminar is highly relevant and timely, considering the transformative role of Artificial Intelligence (AI) in reshaping the landscape of education, research and knowledge creation.

The National Education Policy (NEP) 2020 envisions an education system that is holistic, multidisciplinary, flexible, inclusive and rooted in the development of critical thinking, creativity and innovation. In this context, Artificial Intelligence offers significant opportunities to enhance teaching-learning practices, promote personalized learning, strengthen research capabilities and improve educational accessibility. However, the integration of AI into education must be guided by ethical responsibility, human values, academic integrity and the broader objectives of holistic development.

It is important to recognize that technology should complement human intelligence and enrich the teaching-learning process rather than replace the essential role of teachers, human interaction and independent thinking. Therefore, aligning AI tools with the holistic vision of NEP 2020 requires a balanced approach that combines technological advancement with ethical awareness, inclusiveness and educational responsibility.

I believe that this National Seminar will provide a meaningful platform for academicians, researchers, policymakers and students to exchange ideas, share experiences and deliberate upon the opportunities and challenges associated with the application of AI in higher education. The publication of this **Abstract Book** is a valuable initiative that will preserve the research contributions and intellectual insights emerging from this academic engagement.

I sincerely appreciate the initiative taken by the organizing committee and the host institution in organizing this important academic event. I extend my best wishes to all the resource persons, paper presenters, researchers and participants for their valuable contributions.

I am confident that the deliberations of this seminar will encourage innovative thinking, responsible adoption of emerging technologies and meaningful academic collaboration, thereby contributing towards the realization of the holistic and transformative vision of NEP 2020.

I extend my heartfelt greetings and best wishes for the grand success of the National Seminar.

2/11/26

Animesh Debbarma
Director
Higher Education Department
Government of Tripura

আম্বেদকর কলেজ
ফটিকরায়, উনকোটি, ত্রিপুরা
Ambedkar College
A Govt. Degree College Affiliated to Tripura University
(**UGC 2f &12B recognized and NAAC Accredited**)
Fatikroy, Unakoti, Tripura – 799 290

MESSAGE

I am very glad to know that Department of English and political Science in collaboration with IQAC, Ambedkar College, Fatikroy is organizing a National Seminar on **"Aligning AI Tools with NEP's Holistic Vision"** on 4-5 November, 2026. In order to commemorate the occasion, an Abstract Volume is also being published.

I feel quite indebted to all those distinguished guests, research scholars and the galaxy of academicians who have given their kind consent to grace the occasion by their kind presence keeping aside their busy academic schedules.

The main objective of this seminar is to discuss and enlighten the young researchers about the recent trends and development of AI tools in multidimensional arena. This is further aimed at strengthening and encouraging research in this emerging area of application of AI tools in successful implementation of National Education policy 2020 throughout the country.

Now-a-days, there is an increasing trend of using AI tools word wide in resolving complex and fundamental issues in the field of education too. In this context, I expect that this AATNHV-2026 conference can help us to exchange our ideas and widen the horizon of knowledge on the subject and also to pursue better research in the national and international levels.

The proposed national seminar is undoubtedly an important milestone in the sphere of carrying out NEP's Holistic Vision Aligning with AI Tools. It is my firm conviction that this seminar will foster the needs and requirement of teachers and students alike.

I convey my heartfelt wishes to the organizers and the participants and also wish the AATNHV-2026

Raghunandan Das.

(Dr. Raghunandan Das)
Principal

MESSAGE

I am delighted to place before the academic community this collection of **research abstracts** prepared for the Two-Day National Seminar on **"Aligning AI Tools with NEP's Holistic Vision"**, to be held on 4th and 5th November, 2026. This publication brings together diverse scholarly perspectives and research engagements on a subject that has acquired considerable significance in the rapidly evolving landscape of contemporary education.

An academic seminar derives much of its significance from the ideas, inquiries and scholarly perspectives that it brings together. In this regard, the publication of an **Abstract Book** is not merely a formal component of the seminar; it represents a collective intellectual endeavour that captures the essence of ongoing research, emerging arguments and critical reflections on a subject of contemporary relevance.

The growing integration of Artificial Intelligence into the educational domain has opened up new possibilities while simultaneously raising important questions concerning pedagogy, academic integrity, accessibility, ethical responsibility and the future of knowledge. Against this backdrop, the present seminar seeks to examine how AI-driven innovations can be meaningfully accommodated within the broader educational philosophy of the National Education Policy (NEP) 2020, which places particular emphasis on holistic development, multidisciplinary learning, critical thinking, creativity and human values.

The abstracts included in this volume reflect the diverse academic interests, research perspectives and intellectual engagements of scholars and researchers working in this evolving field. Each contribution, in its own way, offers an opportunity to understand the emerging possibilities of Artificial Intelligence in education, while critically examining the challenges associated with its adoption. I hope this compilation will serve as a useful academic resource, stimulate further scholarly inquiry and encourage meaningful dialogue beyond the duration of the seminar.

As Convener, I consider it a privilege to be associated with this academic initiative. I express my sincere gratitude to all the contributing authors for entrusting us with their scholarly work. I am equally grateful to the distinguished experts, members of the academic community, reviewers and organising committee whose encouragement, cooperation and commitment have contributed to bringing this publication to fruition.

I sincerely hope that readers will find this collection intellectually stimulating and academically enriching. May the ideas presented in these pages encourage new perspectives, inspire further research and contribute to a more informed understanding of the relationship between Artificial Intelligence and the holistic aspirations of contemporary education.

With best wishes for a meaningful academic exchange and the successful completion of the seminar.

Convener
Two-Day National Seminar

MESSAGE

It’s a matter of great joy to bring forth the Abstract booklet of the Two-Day National Seminar on **"Aligning AI Tools with NEP’s Holistic Vision,"** hosted by the Departments of English and Political Science with IQAC at Ambedkar College, Fatikroy, on November 4–5, 2026.

As AI rapidly changes the classroom, our goal over the next two days is to explore how these powerful tools can truly serve the National Education Policy 2020’s commitment to inclusive, creative, and human-centered learning. By bridging literature, language, and policy, we hope to build a space for open dialogue on using technology responsibly without losing sight of the human element in education.

This booklet brings together diverse ideas and practical research from scholars across disciplines. We extend our warmest thanks to our speakers, presenters, and colleagues for making this gathering possible.

May these pages inspire thoughtful conversations during the seminar and beyond.

Organizing Secretary
National Seminar
AATNHV-2026
Ambedkar College, Fatikroy

CONTENTS:

Title	Speaker	Page No.
Aligning AI Tools with NEP's Holistic Vision **(Keynote Speech)**	Shiladitya Munshi	**7**
Technology With a Human Heart: Aligning AI Tools With The Holistic Vision Of NEP 2020 (**Plenary Lecture)**	Himadri Sekhar Das	**8**
Artificial Intelligence And Socioeconomic Inclusivity In Mass Communication: Promoting Equitable Access And Empowering Marginalized Voices	Sanchayita Chakraborty	**9**
Digital Equity And Inclusive Education: Addressing The Digital Divide Through Equitable Infrastructure	Dipanwita Chakraborty	**10**
Who Controls The Human Imagination? AI, Literature And The Science Of Cultural Homogenisation	Mouvik Debnath *et. al.*	**11**
Digital Humanities, Indian Knowledge Systems, And NEP 2020: Reading Swades (2004) In The Age Of AI	Puja Debdas*et. al.*	**12**
Revisiting Cognitive Development In The Light Of Sri Aurobindo's Educational Philosophy	Ruman Debnath	**13**
Student Mental Health And Well-Being: An AI Prospective	Akumnaro Alley	**14**
Between Trust And Verification: How College Students Evaluate AI-Generated Academic Information	Bappa Aditya Malakar	**15**
Synthesis, Spectroscopic Analysis, Optical, Electrical, and Cytotoxic Characteristics of Mixed-Ligand M(II) Complexes Containing 1, 1-Dicyanoethylene-2,2-dithiolate and 4,4′-Bipyridine	Arijit Das *et. al.*	**16**
Empowering The Educators: The A-C-E-S Framework For AI-Based Professional Development Of Educators	Uttam Mitra	**17**
From Policy To Pedagogy: Integrating Digital Humanities And Indian Knowledge Systems Into Higher Education	Anamika Kar*et. al.*	**18**
AI For Preserving Tribal Cultural Heritage In Tripura, India: Opportunities, Ethical Challenges And A Community-Centred Framework	Himabati Reang*et. al.*	**19**
Selection Of Vocational Skill Development Courses: Bridging The Employability Gap Among Undergraduate Students In NEP-2020	Ashish Bhattacharjee *et. al*	**20**
Distributed Leadership And AI-Enabled Collaborative School Management: Aligning Shared Governance With The Holistic Vision Of NEP 2020	Pranab Das	**21**
Generative AI-Driven Cognitive Offloading In Higher Education: A Review Of Student Academic Fatigue And Problem-Solving Self-Efficacy	Ramengzaua Kaipeng *et. al*	**22**
Artificial Intelligence And Multidisciplinary Education: Advancing The Holistic Vision of NEP 2020	Pawan Kumar Yadav	**23**
Outcome-Based Education Using Artificial Intelligence For Personalised Learning: Opportunities, Challenges, And Future Directions	Sanjay Das	**24**
Artificial Intelligence As A Catalyst For The Preservation, Revitalization, And Global Dissemination Of Indian Knowledge Systems	Astami Das *et. al*	**25**
Cognitive Development In AI-Driven Classrooms: A Botany Perspective	Manna Das	**26**

Artificial Intelligence And Multidisciplinary Education: Advancing The Holistic Vision Of NEP 2020	Pawan Kumar Yadav	**27**
From Instructor To Mentor: Leveraging AI For Teacher Professional Development Aligning With NEP 2020'S Holistic Vision	Soumyadeep Pal	**28**
Generative AI In Higher Education: Cognitive Offloading, Metacognitive Engagement And The Challenge Of Meaningful Learning Under NEP 2020	Mitali Meska	**29**
Artificial Intelligence-Assisted BirdWatching: Bridging Classical Zoology, Environmental Awareness And Psychological Well-Being Under NEP 2020	Ujjal Kishor De *et. al*	**30**
Insect-Antenna Bio-Hybrid Odor Sensing For Drone Based Odor Source Localization	Sandipan Datta	**31**
AI For Socio-Economic Inclusivity In Urban Governance: A Proposed AI-GIS Framework Of Agartala, Tripura	PeterPrasanta Debbarma *et. al*	**32**
Contestable Delegation: A Practical Model For Governing Artificial Intelligence In Educational Administration	Satyajit Das *et. al*	**33**
Generative AI As A Tool For Creative Writing, Literary Analysis And Translation	Piyali Deb *et. al*	**34**
Bridging Fundamental Physics And Frontier Artificial Intelligence: A Review Of Theoretical Foundations, Emerging Applications, And Future Directions	Raghunandan Das *et. al*	**35**
Molecules, Minds and Machines: The Chemistry and Physiology of Learning in AI-Driven Classrooms	Niranjan Das *et. al*	**36**
NEP 2020: Higher Education (**Plenary Lecture)**	Reshmi Maity *et. al*	**37**

Abstract (Keynote Speech)

Aligning AI Tools with NEP's Holistic Vision

Dr. Shiladitya Munshi

School of Engineering & Architecture
Techno India University, Tripura, India

The rapid evolution of Artificial Intelligence, particularly Generative AI and Large Language Models, is transforming the landscape of higher education. While these technologies offer unprecedented opportunities for personalized learning, knowledge creation, research assistance and institutional efficiency, their integration into education must be guided by a broader pedagogical and societal vision. The National Education Policy (NEP) 2020 provides an appropriate framework for this alignment through its emphasis on holistic development, multidisciplinary learning, critical thinking, experiential education, creativity and ethical responsibility.

This keynote explores how contemporary AI tools can become meaningful enablers of NEP's educational aspirations rather than merely instruments of automation. It examines the potential of AI in personalized and outcome-based learning, multilingual education, creative writing, literary analysis, translation, digital humanities, Indian Knowledge Systems and interdisciplinary knowledge development. Particular attention is given to the opportunities AI presents for educational institutions in geographically and socioeconomically diverse regions, including the North-East of India.

The discussion also addresses emerging concerns surrounding algorithmic bias, data privacy, academic integrity, overdependence on automated systems, the digital divide and the preservation of human agency. It argues for a responsible AI adoption framework built upon educator empowerment, institutional governance, digital equity and human-centred pedagogy.

Ultimately, the keynote proposes a shift from an AI-centric approach to an education-centric approach to AI adoption. It advocates a future in which technology augments human intelligence, strengthens creativity, preserves cultural diversity and expands equitable access to quality education. Such an approach can help translate the holistic vision of NEP 2020 into meaningful educational practices while preparing learners to become technologically competent, ethically grounded and socially responsible citizens.

Abstract (Plenary Lecture)

TECHNOLOGY WITH A HUMAN HEART: ALIGNING AI TOOLS WITH THE HOLISTIC VISION OF NEP 2020

Dr. Himadri Sekhar Das
Department of Physics, Assam University, Silchar-788011
Email: *himadri.sekhar.das@aus.ac.in*

ABSTRACT

India's National Education Policy (NEP) 2020 envisions an education system that develops the whole learner: cognitively, socially, ethically, and emotionally. It stresses critical thinking, creativity, multidisciplinary learning, experiential pedagogy, flexibility, and impartial access. At the same time, artificial intelligence (AI) tools, namely adaptive learning platforms, intelligent tutoring systems, generative AI assistants, automated assessment engines, and language translation technologies, are entering classrooms rapidly. This paper studies how these tools can be purposefully aligned with the NEP's holistic vision rather than adopted merely for efficiency or novelty.

Drawing on a conceptual analysis of NEP 2020's core principles and a review of current AI applications in education, the presentation maps specific AI capabilities to key policy goals. These include customized and competency-based learning, multilingual instruction through real-time translation, support for inclusive education and learners with special needs, formative and continuous assessment, teacher professional development, and lessened administrative burden. The discussion also identifies risks that may undermine the policy's intent, including the digital divide, algorithmic discrimination, data protection issues, excessive dependence on automated answers, erosion of analytical thinking and creativity, and the neglect of socio-emotional and value-based learning.

The presentation argues that alignment depends on a human-centered framework in which AI augments, rather than replaces, teachers and learners. It proposes guiding principles for ethical integration: pedagogy-first design, equity and availability, disclosure and ethical administration, culturally and linguistically relevant content, teacher capacity building, and continuous assessment of learning outcomes beyond assessment scores. The study finds that when thoughtfully governed, AI can enable NEP's transformative goals, but its success will hinge on policy coherence, infrastructure investment, and sustained attention to the human values at the heart of education.

Keywords: Artificial Intelligence, National Education Policy 2020, Holistic Education, Personalized Learning, Ethical AI, Inclusive Education, Teacher Empowerment

ARTIFICIAL INTELLIGENCE AND SOCIOECONOMIC INCLUSIVITY IN MASS COMMUNICATION: PROMOTING EQUITABLE ACCESS AND EMPOWERING MARGINALIZED VOICES

Sanchayita Chakraborty
Ph.D. Research Scholar, Department of Journalism and Mass Communication, Mangalayatan University, Aligarh, Uttar Pradesh, India.

Dr. Dipanwita Chakraborty
Associate Professor, Department of Philosophy, Government Degree College, Dharmanagar, North
Tripura, Tripura, India.

ABSTRACT

Artificial Intelligence (AI) is transforming mass communication by reshaping news production, information dissemination, audience engagement, and public participation. AI-powered technologies offer new opportunities to promote socioeconomic inclusivity through multilingual communication, accessible media content, personalized information delivery, and broader representation of diverse communities. However, the equitable distribution of these benefits remains a significant challenge, particularly for rural populations, economically disadvantaged groups, linguistic minorities, persons with disabilities, and other underrepresented communities.

This paper examines the role of AI in promoting socioeconomic inclusivity in mass communication, focusing on its potential to expand access to information, strengthen participatory communication, and empower marginalized voices. It explores applications such as AI-driven translation, speech recognition, automated content creation, and accessible digital platforms that can facilitate communication across linguistic, educational, and socioeconomic boundaries. The study also critically analyses challenges associated with algorithmic bias, misinformation, data privacy, unequal technological access, and the concentration of media power within dominant digital platforms. These concerns raise important ethical questions about representation, transparency, accountability, and social justice in AI-mediated communication.

Adopting a critical and interdisciplinary approach, the paper emphasizes the importance of inclusive communication policies, affordable technological infrastructure, AI and media literacy, culturally responsive innovation, and ethical governance. It argues that AI can contribute to a more democratic and socially inclusive media environment only when technological progress is accompanied by equitable opportunities, human-centred design, and institutional accountability. The paper concludes that responsible AI integration can strengthen media participation, amplify marginalized perspectives, and support inclusive socioeconomic development.

Keywords: Artificial Intelligence, Mass Communication, Socioeconomic Inclusivity, Marginalized Voices, Inclusive Communication, Digital Literacy, Media Ethics.

DIGITAL EQUITY AND INCLUSIVE EDUCATION: ADDRESSING THE DIGITAL DIVIDE THROUGH EQUITABLE INFRASTRUCTURE

Dr. Dipanwita Chakraborty
Associate Professor, Department of Philosophy
Government Degree College, Dharmanagar, North Tripura, Tripura, India

ABSTRACT

Digital infrastructure has emerged as a fundamental determinant of educational access, quality, and social inclusion in the contemporary digital era. Internet connectivity, affordable digital devices, reliable electricity, accessible learning platforms, and digital literacy are essential for ensuring meaningful participation in education. However, the expansion of digital technologies does not automatically guarantee equitable educational opportunities.

Socioeconomic inequalities, geographical isolation, gender disparities, disability, linguistic barriers, and unequal digital competencies continue to shape access to and participation in digital learning. This paper critically examines the relationship between digital infrastructure, digital equity, and inclusive education, with particular reference to higher education in India.

Adopting a qualitative and conceptual approach based on secondary literature, policy perspectives, and critical analysis, it explores the structural determinants of the digital divide and their implications for educational achievement, institutional participation, and social mobility. The paper argues that digital equity extends beyond the physical availability of technological resources to encompass affordability, accessibility, reliability, digital competence, and meaningful participation. It proposes an inclusive framework integrating infrastructure development, affordable connectivity, accessible educational content, multilingual resources, digital literacy, and institutional accountability. Furthermore, the paper highlights the ethical responsibilities of governments and educational institutions in preventing technological exclusion and promoting distributive justice. It emphasizes that digital transformation must prioritize disadvantaged communities and learners with diverse educational needs. The paper concludes that equitable digital infrastructure should be treated as a public-interest foundation for inclusive, accessible, and quality education. Such an approach can reduce educational inequalities, strengthen social justice, and advance inclusive human development in an increasingly technology-dependent society.

Keywords: Digital equity, inclusive education, digital divide, digital infrastructure, higher education, social justice, digital literacy.

WHO CONTROLS THE HUMAN IMAGINATION? AI, LITERATURE AND THE SCIENCE OF CULTURAL HOMOGENISATION

Mouvik Debnath[1], Sagar Sharma[2]
UG Student [1] Department of Chemistry, [2] Department of Physics
1,2 Government Degree College, Dharmanagar, Tripura (N), India
Email: mouvikdebnath@gmail.com, Contact Number: 9612998730

ABSTRACT

Generative Artificial Intelligence (GenAI) is transforming literary creation, translation and creative expression, raising a fundamental question: can machines that expand human creativity also make our stories, ideas and cultural identities increasingly alike? This paper explores the relationship between generative AI, literary creativity and cultural homogenisation through an interdisciplinary perspective encompassing literature, cognitive science, computer science and political thought.

The paper argues that GenAI may contribute to cultural homogenisation when trained on datasets dominated by widely represented languages and literary traditions, particularly when its outputs are adopted without critical human intervention. Conversely, multilingual models and culturally representative datasets may create new opportunities for regional storytelling, literary experimentation and the preservation of underrepresented voices. The discussion examines how AI-generated content may influence originality, narrative diversity, authorship and the representation of marginalised cultural identities. It also considers the implications of algorithmic influence for linguistic equality, cultural power and the future of human imagination. Drawing on existing research on AI-assisted writing, narrative diversity and cultural representation, the paper critically examines whether generative systems broaden creative possibilities or encourage standardised forms of expression. Rather than viewing AI as inherently harmful or beneficial, it emphasises that its cultural impact depends on dataset representation, technological design, equitable access and meaningful human participation.

The paper ultimately highlights the importance of responsible AI development, regional-language resources, transparent governance and human oversight in ensuring that technological progress supports cultural plurality rather than diminishing it.

Keywords: Generative Artificial Intelligence, Literary Creativity, Cultural Homogenisation, Human Imagination, Narrative Diversity, Cultural Identity, Regional Languages, AI Ethics.

DIGITAL HUMANITIES, INDIAN KNOWLEDGE SYSTEMS, AND NEP 2020: READING SWADES (2004) IN THE AGE OF AI

Puja Debdas, Jui Barai, Tania Sarkar, Shubhadra Ghashi
5th Semester, Department of English,
Ramthakur College, Agartala

ABSTRACT

The National Education Policy (NEP) 2020 promotes holistic education that joins modern skills with Indian Knowledge Systems (IKS), ethical values, and service to society. This paper studies Swades (2004), directed by Ashutosh Gowariker, s a cultural text that reflects these ideas. The film follows Mohan Bhargava, a NASA scientist who returns to the village of Charanpur and slowly learns that real development depends on understanding local people, their traditions, and their needs.Using a digital humanities approach, the study applies simple methods such as film annotation, thematic tagging, and dialogue analysis. These help show how Swades presents local wisdom, self-reliance, community cooperation, and learning beyond the classroom. The village's small hydroelectric project is a strong example of how traditional community effort can work together with modern science. The film also raises important concerns about education, caste and gender inclusion, and the role of the mother tongue, which connect closely with NEP's focus on multidisciplinary and experiential learning.The paper further explores how AI tools, such as text-mining software, digital archives, and translation tools, can help teachers and students study films like Swades as learning material for IKS. It also notes that AI must be used with care, since technology cannot replace human values, teachers, or community participation.The study concludes that Swades offers a meaningful model for aligning technology, tradition, and ethics in education. Such an approach supports NEP's goal of developing skilled, thoughtful, and socially responsible citizens.

Keywords: NEP 2020, Digital Humanities, Indian Knowledge Systems, Swades, Ashutosh Gowariker, AI Tools, Holistic Education, Rural Development, Experiential Learning

REVISITING COGNITIVE DEVELOPMENT IN THE LIGHT OF SRI AUROBINDO'S EDUCATIONAL PHILOSOPHY

Ruman Debnath, Research Scholar
Department of Philosophy
Tripura University

ABSTRACT

Cognitive development is a fundamental aspect of education, encompassing the growth of intellectual abilities, critical thinking, creativity, memory, reasoning, and understanding.However, such an understanding may overlook the deeper dimensions of human consciousness and the individual's potential for holistic growth.

This paper revisits cognitive development through the educational philosophy of Sri Aurobindo, offering an alternative perspective that integrates intellectual advancement with psychological, ethical, and spiritual development. His educational thought emphasizes that learning should emerge from the learner's inner potential rather than depend exclusively on external instruction, standardized practices, or predetermined academic expectations.

The study explores how his principles of self-discovery, freedom in learning, and the harmonious development of human faculties can contribute to contemporary understandings of cognition. Particular attention is given to the interconnected roles of the mind, emotions, intuition, and consciousness in shaping meaningful learning experiences. Using a conceptual and analytical approach, the study interprets Sri Aurobindo's educational philosophy in relation to learner-centred pedagogy, reflective thinking, creativity, and independent understanding. It argues that cognitive development should not be restricted to the accumulation of knowledge but should involve the transformation of the learner's capacity to understand, interpret, and apply knowledge meaningfully.

The paper concludes that Sri Aurobindo's educational vision offers valuable insights for reimagining contemporary education as a process that nurtures intellectual clarity, inner awareness, and the holistic development of human being.

Keywords: Cognitive Development, Psychological, Ethical, Spiritual, Intuition, consciousness.

STUDENT MENTAL HEALTH AND WELL-BEING: AN AI PROSPECTIVE

Akumnaro Alley
Principal, St. John School
Patiri, Assam
alleyakum@gmail.com

ABSTRACT

According to World Health Organization (WHO), mental health is a state of wellbeing where an individual realizes their own potential, copes with normal life stresses, works productively, and contributes to their community. Mental health and well-being of an individual is one of the most ignored topics in our country, especially that of a school student.

With the advancement of artificial intelligence (AI) in various field, it is also reshaping the flow of the education system. There have been studies which shows a diverse range of mental health concerns among the school children and adolescents.

It is important to guide students from their young age to recognize and understand the challenges that comes with mental health. This will enable them to grow and develop better in all the aspects of their lives− physical, emotional and social. This study will help to understand and highlight the need of AI in the mental well being of a student. As AI becomes more implemented in education, it also has its share of negative impact. It can raise concerns regarding isolations, anxieties, and digital tiredness from too much screen time. AI based mental health tools are being implemented in the education system which can help in early detection, thereby helping the student to improve and understand better about their mental health.

With this study, we can gain an understanding of mental health from the prospective of students' mind and also to create awareness and adopt a holistic approach to improve the mental health and the well-being among the school students.

Keywords: Mental health, school children, awareness, holistic approach, artificial Intelligence

BETWEEN TRUST AND VERIFICATION: HOW COLLEGE STUDENTS EVALUATE AI-GENERATED ACADEMIC INFORMATION

Bappa Aditya Malakar, Fifth Semester, Geography Major
Department of Geography, Maharaja Bir Bikram College,
Agartala, Tripura, India

Email: adityamalakar748@gmail.com
Contact Number (WhatsApp): 6909253748

ABSTRACT

The growing use of generative Artificial Intelligence (AI) in higher education has made academic information more accessible, but it has also raised questions about the reliability of AI-generated responses and the ways students assess their credibility. While AI tools can provide quick explanations and answers, their responses may contain inaccurate or misleading information. Understanding how students perceive such information and approach its verification is therefore important for examining critical information-seeking practices in higher education.

This study aims to examine college students' perceptions of the reliability of AI-generated academic information, their reported approaches to information verification, and the relationship between perceived reliability and information-seeking approaches. The study area is Agartala city, Tripura, India, focusing on students from selected colleges and higher education institutions. A cross-sectional survey design is adopted using responses collected through a structured Google Forms questionnaire. The analysis will focus on students' perceived reliability of AI-generated information, their reported use of other sources to verify information, and their usual approaches to obtaining academic information. Descriptive statistics will be used to summarise response patterns, while an appropriate association test will be considered to examine the relationship between perceived reliability and information-seeking approaches, subject to the suitability of the data.

By examining trust and verification as distinct but related dimensions of AI-assisted academic information seeking, the study seeks to contribute to a better understanding of how college students navigate the opportunities and limitations of generative AI in higher education.

Keywords: Generative Artificial Intelligence; Information Credibility; Trust; Verification; Information-Seeking Behaviour; College Students; Agartala.

Synthesis, Spectroscopic Analysis, Optical, Electrical, and Cytotoxic Characteristics of Mixed-Ligand M(II) Complexes Containing 1, 1-Dicyanoethylene-2,2-dithiolate and 4,4′-Bipyridine

Arijit Das, Syed Arshad Hussain,
Debasish Maiti, Pratima Debnath
Abhijit Bhattacharya, Kartik Lal Bhowmik, Paresh Debnath

Department of Chemistry, BBM College
Agartala, West Tripura-799004, India

Thin film and Nanoscience Laboratory
Tripura University, Suryamaninagar, Tripura 799022, India

Department of Human Physiology
Tripura University, Suryamaninagar, 799022, India

ABSTRACT

Mixed-ligand transition metal complexes of the common formula [M(4,4′-Bipy)2(i-MNT)] (where M = Ni(II), Co(II), Zn(II), and Cd(II); i-MNT2- = 1,1-dicyanoethylene-2,2-dithiolate; 4,4′-Bipy = 4,4′-bipyridine) have been synthesized and comprehensively studied. The respective metal nitrates reacted chemically with potassium 1,1-dicyanoethylene-2,2-dithiolate and 4,4′-bipyridine to form the complexes, which were isolated in good yields. The suggested chemical composition and their non-electrolytic nature were validated by elemental analysis and molar conductance studies. The i-MNT2-ligand was successfully coordinated through sulfur donor atoms and nitrogen coordination from 4,4′-bipyridine, according to UVVis and FT-IR spectroscopic investigations. Coordination considerably alters the excitedstate behavior of the ligand, according to steady-state fluorescence measurements. Ni(II) complexes showed strong fluorescence quenching, while Zn(II) and Cd(II) complexes maintained significant ligand-centered emission due to their closed-shell d10 electronic configurations. Metal coordination significantly affects the compounds' self-assembly, resulting in compact sheet-like thin-film morphologies appropriate for electronic applications, according to FESEM research. All manufactured thin-film devices show electroforming-free WORM resistive switching behavior with irreversible high-resistance to low-resistance position transitions, according to electrical characterization. While the Co(II), Zn(II), and Cd(II) compounds similarly demonstrated sustained non-volatile memory capabilities with lower switching voltages and ON/OFF ratios, the ligand and Ni(II) combination showed the biggest memory windows (~2.7×104)

Studies on cytotoxicity employing Beas-2B normal lung epithelial cells and A549 lung adenocarcinoma showed concentration-dependent anticancer activity with relatively modest toxicity toward normal cells, suggesting selective cytotoxic behavior. These mixed-ligand 1,1-dithiolate complexes are interesting multifunctional materials with prospective uses in molecular memory devices and anticancer therapies, according to the combined optical, electrical, morphological, and biological research.

Keywords: Mixed-ligand metal complexes; 1,1-Dithiolate (i-MNT2-) ligand; 4,4′-Bipyridine; WORM resistive switching memory; Cytotoxic activity E-mail address of corresponding authors: arijitdas78chem@gmail.com (A.D.); sahussain@tripurauniv.ac.in (S.A.H.); debasish.maiti@tripurauniv.ac.in (D.M.); pareshchem1990@gmail.com (P.D.

EMPOWERING THE EDUCATORS: THE A-C-E-S FRAMEWORK FOR AI-BASED PROFESSIONAL DEVELOPMENT OF EDUCATORS

Dr. Uttam Mitra, Assistant Professor in Education,
IASE, Kunjaban Email: uttamitra@gmail.com Mobile: 8730891800

ABSTRACT

Like all other spheres of life, Artificial Intelligence (AI) is reshaping teaching, learning, and assessment, yet the benefits of AI-enabled education depend largely on the readiness and competency of the educators who must select, use, supervise, and critique these tools. This paper examines what the educators must know about AI and how AI can be used for the capacity building of the educators. Using a conceptual-analytical design supported by a structured review of international and Indian literature and policy documents, the paper identifies four recurring themes: (i) AI literacy and competency gaps among the educators, (ii) AI-driven personalised and just-in-time professional learning, (iii) workload reduction and pedagogical redesign, and (iv) ethical, equity, and governance concerns. Drawing on the TPACK model, UNESCO's AI Competency Framework for Teachers, and adult-learning theory, the paper proposes the A-C-E-S Framework (Awareness, Competence, Ethics, Sustainability) for AI-based capacity building of educators and a phased implementation roadmap suited to the Indian context under the National Education Policy 2020. The paper concludes that AI should augment, not replace, the professional judgment of teachers, and that systemic investment in training, infrastructure, language-inclusive tools and ethical safeguards is essential. The paper offers practical steps that policymakers, teacher educators, and school leaders can take to support educators, and suggests how future research can test these ideas in practice.

Keywords: Artificial Intelligence,Professional Development; AI Literacy, TPACK, Generative AI, Teacher Education, NEP 202o.

FROM POLICY TO PEDAGOGY: INTEGRATING DIGITAL HUMANITIES AND INDIAN KNOWLEDGE SYSTEMS INTO HIGHER EDUCATION

Dr. Anamika Kar, Assistant Professor (Grade III),
Amity Institute of Education, Amity University, Kolkata
Contact Number- 9957568201
Mail id- anamika.kar1@gmail.com

Dr. Adrija Chattopadhyay, Assistant Professor (Grade I),
Amity Institute of Education, Amity University, Kolkata
Contact Number- 9163999383
Mail id- adadrija89@gmail.com

ABSTRACT

The National Education Policy (NEP 2020) plays a significant role in integrating Indian Knowledge Systems, multidisciplinary learning, cultural heritage and technology-enabled education in Indian Higher Education. Digital humanities through digital archives, computational tools, interactive learning resources and digital storytelling provide opportunities to preserve, interpret, document and disseminate the intellectual tradition. Proper critical examination is required to understand the opportunities, challenges and institutional conditions. The potential of digital humanities was explored in this study for facilitating the integration of Indian Knowledge Systems into higher education focusing attention to teaching-learning practices, curriculum development, interdisciplinary engagement and knowledge accessibility. A qualitative evidence synthesis approach was adopted and relevant academic literature, scholarly discussions and policy documents were examined for the identification of recurrent themes. The analysis was done based on- i. digital preservation and representation of Indian Knowledge traditions, ii. Pedagogical integration of IKS through digital resources, iii. Institutional and technological opportunities and barriers, iv. Ethical considerations of cultural-authenticity, linguistic-diversity and equitable knowledge-representation. The main aim of this study was to develop an interpretative understanding of digital humanities in bridging the gap of policy intentions and classroom practices for contributing a conceptual foundation in higher education and at the same time the complexities of digitising diverse knowledge traditions were recognized. The study can help curriculum designers, higher education institutions, teacher educators and policy-makers in advancing the educational objectives of NEP2020.

Keywords: Digital Humanities, Indian Knowledge Systems, National Education Policy 2020, Higher Education, Pedagogical Integration, Interdisciplinary Education, Cultural Heritage.

AI FOR PRESERVING TRIBAL CULTURAL HERITAGE IN TRIPURA, INDIA: OPPORTUNITIES, ETHICAL CHALLENGES AND A COMMUNITY-CENTRED FRAMEWORK

Himabati Reang, Astt. Professor
Department of Political Science
College of Teacher Education (CTE), Kumarghat
& RS of Mahatma Gandhi University, Meghalaya

Peter Prasanta Debbarma, Astt.Professor
Department of Geography
Affiliation: Ramkrishna Mahavidyalaya, Kailashahar

ABSTRACT

Tripura, home to 19 Scheduled Tribe communities, possesses rich cultural heritage, including indigenous languages, oral traditions, performing arts, rituals, crafts and traditional ecological knowledge. However, these traditions face growing threats from language shift, migration, changing lifestyles and limited documentation. Artificial Intelligence (AI), through natural language processing, speech recognition, machine learning and digital archiving, offers opportunities to document, preserve and transmit this heritage, along with place of inhabitants of ethnic communities of the State. This paper examines the potential and ethical challenges of using AI for tribal cultural preservation in Tripura. Using a qualitative, document-based approach, it proposes a community-centred digital preservation framework based on six stages: community consultation and consent, documentation, secure storage, AI-assisted processing, community validation and intergenerational transmission. It highlights key concerns, including data ownership, privacy, cultural misrepresentation, intellectual property and unequal digital access. The paper argues that AI should complement, not replace, indigenous knowledge holders. Sustainable preservation requires tribal communities to retain control over their cultural knowledge, its use, accessibility and benefits.

Keywords: Artificial Intelligence; Tribal Cultural Heritage; Tripura; Indigenous Knowledge; Language Preservation; Digital Preservation; Data Sovereignty

SELECTION OF VOCATIONAL SKILL DEVELOPMENT COURSES: BRIDGING THE EMPLOYABILITY GAP AMONG UNDERGRADUATE STUDENTS IN NEP-2020

Dr. Ashish Bhattacharjee[1], Jayanta Saha[2]
Associate Professor, Department of Mathematics M.B.B College, Agartala[1,2]

ABSTRACT

Skill development under New Education Policy 2020 shifts Undergraduate education from a rigid, theoretical memorization model to a flexible, multidisciplinary and job-ready format with Major, Minor, Ability Enhancement Compulsory Courses (AECC), Skill Enhancement Courses (SEC), Value Added Courses (VAC) and Multidisciplinary Courses (MDC). Along with these there are different Vocational Skill Development Courses which can make the students skilled in different aspects.

Traditional general degree programmes may provide disciplinary knowledge but the employers continuously seeking graduates to have technical competence, skill of communicative language, digitally literate, problem solving efficiency, capability of coordinated team work, adaptability criteria and work place readiness.

This study proposes a Multi Criteria Decision Making (MCDM) frameworks to select the students' Vocational Skill Development Courses and also assists them in holistic-all round development with skill proficiency and expand their employability.

Keywords: NEP 2020, SEC, AECC, Vocational Skill Development, MCDM.

DISTRIBUTED LEADERSHIP AND AI-ENABLED COLLABORATIVE SCHOOL MANAGEMENT: ALIGNING SHARED GOVERNANCE WITH THE HOLISTIC VISION OF NEP 2020

Pranab Das, Research Scholar,
Department of Education,
Ram Krishna Dharmarth Foundation (RKDF) University, Ranchi
Supervisor: Dr. Sonali Roy Chowdhury (Ghosh),
Department of Education, RKDF University, Ranchi

ABSTRACT

Distributed leadership (DL) treats leadership as a collective practice spread across principals, teachers, students, parents and community members, rather than a position held by one head. This paper draws on the author's doctoral research on the role of distributed leadership in promoting collaborative school management in West Bengal, and extends its findings to the seminar sub-theme "AI in Educational Administration". The doctoral study, qualitative and interpretive in design, found that DL is widely perceived as empowering and inclusive; that it strengthens collaboration through committees, professional learning communities, councils and parent–teacher associations; that trust, open communication, professional development and formal structures enable it, while hierarchical traditions, workload pressure and accountability complexities constrain it; and that it reshapes school culture and helps build a shared vision. The literature review of that study also identified the integration of technology with distributed leadership as an under-researched gap. Building on this gap, the paper proposes a conceptual framework in which AI tools support, but do not replace, shared leadership. Examples include reducing administrative load, supporting evidence-informed collective decisions, widening stakeholder voice and enabling peer learning, provided that safeguards for data privacy, algorithmic bias, equity of access and human accountability are in place. The framework is aligned with the emphasis of the National Education Policy (NEP) 2020 on decentralised governance, teacher empowerment and technology integration. The AI-related section is conceptual and has not been empirically tested; it is offered as a basis for future research and policy discussion.

Keywords: distributed leadership, collaborative school management, artificial intelligence, educational administration, NEP 2020, West Bengal

GENERATIVE AI-DRIVEN COGNITIVE OFFLOADING IN HIGHER EDUCATION: A REVIEW OF STUDENT ACADEMIC FATIGUE AND PROBLEM-SOLVING SELF-EFFICACY

[1]Ramengzaua Kaipeng, [2]Dr. Suman Das
[1]Assistant Professor, Department of Education, Ramkrishna Mahavidyalaya, Kailashahar, Tripura
[2]Assistant Professor, Department of Geography, Ramkrishna Mahavidyalaya, Kailashahar, Tripura

ABSTRACT

Generative Artificial Intelligence (GenAI) tools like ChatGPT, Claude, and Gemini have changed how university students approach academic work. Students frequently use these tools for cognitive offloading—delegating tasks like summarizing long texts, generating code, structuring essays, and breaking down hard concepts to AI. While offloading reduces immediate mental effort, its impact on student well-being and long-term confidence is complex. This review paper synthesizes current research on how GenAI-driven cognitive offloading affects two main areas: student academic fatigue (short-term well-being) and problem-solving self-efficacy (long-term mental confidence). The findings show a clear trade-off: GenAI offloading effectively reduces short-term stress and mental exhaustion, but heavy reliance on AI can erode students' confidence in solving problems independently. The paper ends with practical guidelines for teachers and researchers.

Keywords: Generative AI, Cognitive Offloading, Academic Fatigue, Problem-Solving Self-Efficacy, Educational Technology.

ARTIFICIAL INTELLIGENCE AND MULTIDISCIPLINARY EDUCATION: ADVANCING THE HOLISTIC VISION OF NEP 2020

Dr. Pawan Kumar Yadav,Assistant Professor,
Department of History
Government Degree College, Dharmanagar, North Tripura

ABSTRACT

The National Education Policy (NEP) 2020 envisions an inclusive, flexible, multidisciplinary and learner-centric education system that promotes critical thinking, creativity, innovation and holistic development. In this context, Artificial Intelligence (AI) has emerged as a transformative tool with the potential to reshape teaching-learning practices and strengthen multidisciplinary education. The integration of AI into higher education can facilitate personalized learning, interdisciplinary research, intelligent assessment and the development of essential digital competencies among students. This paper explores the role of Artificial Intelligence in advancing the multidisciplinary and holistic objectives of NEP 2020. It examines how AI-powered educational tools can bridge different academic disciplines, encourage experiential learning and connect theoretical knowledge with practical applications. Furthermore, it highlights the potential of AI in integrating humanities, social sciences, natural sciences and technological education to develop a comprehensive understanding of contemporary challenges. Special attention is given to the role of AI in promoting accessibility, multilingual education and equitable learning opportunities. However, the adoption of AI in education also raises significant concerns regarding data privacy, algorithmic bias, digital inequality, academic integrity and the possible decline of independent thinking. Therefore, responsible and ethical integration of AI, supported by effective institutional policies and adequate digital infrastructure, is essential. The paper argues that Artificial Intelligence should be considered a supportive educational instrument rather than a replacement for teachers or human intelligence. Its meaningful integration with NEP 2020 can contribute to an inclusive, innovative and multidisciplinary educational environment that prepares learners for the emerging demands of the twenty-first century. Keywords Artificial Intelligence; NEP 2020; Multidisciplinary Education; Holistic Development; Higher Education; Digital Learning; Educational Technology.

OUTCOME-BASED EDUCATION USING ARTIFICIAL INTELLIGENCE FOR PERSONALISED LEARNING: OPPORTUNITIES, CHALLENGES, AND FUTURE DIRECTIONS

Dr. Sanjay Das, Assistant Professor (Education)
Ambedkar College, Fatikroy, Unakoti, Tripura

ABSTRACT

Outcome-Based Education (OBE) specifies what learners should know and demonstrate, then aligns curriculum, teaching, assessment, and feedback with those outcomes. Artificial intelligence (AI) may make OBE more responsive by using learner data to adapt content, recommend resources, tutor students, and inform instructional decisions. This critical review examines how these capacities support personalisation, what outcomes are reported, and what constrains implementation. A structured search and synthesis covered English-language literature from 2015 through 2025, alongside quality-assurance and policy documents. It distinguishes AI-assisted personalisation from outcome-aligned pedagogy: adaptive sequencing or automated feedback does not itself establish mastery of complex outcomes. Higher-education reviews describe applications in prediction, assessment, tutoring, and personalisation, while evaluations report promising but context-specific effects. A randomized trial of a scaffolded AI tutor found stronger short-term learning gains than an active-learning comparison in one undergraduate physics course; a small medical trial and a school mathematics trial also reported positive results, but do not establish general effects. Direct evidence on integrated AI–OBE models is thinner and includes non-randomized cohort comparisons vulnerable to confounding. Recurring concerns include construct validity, narrow measurement of higher-order competencies, privacy, bias, unequal infrastructure, educator workload, and limited long-term evidence. The review argues for human-led integration in which AI decisions are traceable to explicit outcomes, formative evidence remains contestable, and access and subgroup effects are monitored. Future studies should test aligned models longitudinally, compare implementation costs, and involve learners and educators in design and governance.

Keywords: outcome-based education; artificial intelligence; personalised learning; learning analytics; constructive alignment; assessment; equity

ARTIFICIAL INTELLIGENCE AS A CATALYST FOR THE PRESERVATION, REVITALIZATION, AND GLOBAL DISSEMINATION OF INDIAN KNOWLEDGE SYSTEMS.

Astami Das[1], Rahul Das[2], ,

[1]5th Semester student, Department of English, Ambedkar College Fatikroy

[2]3rd Semester student, Department of English, Ambedkar College Fatikroy

ABSTRACT

Today's generation lives in an AI-driven world: students use chatbots for learning, creators use generative tools for content, and researchers use machine learning for discovery. This presents a powerful opportunity to make Indian Knowledge Systems (IKS)—including Yoga, Ayurveda, Sanskrit and regional-language literature, mathematics, astronomy, architecture, ecology, arts, ethics, and philosophy—accessible, engaging, and relevant to young learners worldwide.This paper proposes Artificial Intelligence as a catalyst for the preservation, revitalization, and global dissemination of IKS. AI can help digitize manuscripts, transcribe and translate classical texts, recognize scripts, build searchable knowledge repositories, and create multilingual conversational learning assistants. Generative AI can convert complex ideas into stories, quizzes, videos, comics, virtual tours, and interactive simulations that match the digital habits of Gen Z. Machine learning can support research by identifying patterns across texts, mapping traditional practices, and connecting ancient insights with modern science, sustainability, health, and design.At the same time, AI must be used responsibly. Safeguards are needed to prevent misinformation, cultural distortion, loss of context, biased interpretation, and unauthorized commercial use of traditional knowledge. The proposed approach combines AI with expert scholarship, community participation, open-access digital archives, and ethical governance. By placing IKS into the platforms young people already use, AI can transform heritage from material stored in archives into a living, participatory, and globally shared knowledge ecosystem. The paper concludes that an AI-enabled IKS framework can strengthen cultural confidence, support NEP 2020 goals, and present India's intellectual heritage as a source of solutions for contemporary global challenges.

Keywords: Artificial Intelligence; Indian Knowledge Systems; Digital Preservation; Cultural Heritage; Natural Language Processing; Generative AI; Sanskrit and Indian Languages; Traditional Knowledge; NEP 2020; Global Dissemination; Ethical AI; Digital Humanities

COGNITIVE DEVELOPMENT IN AI-DRIVEN CLASSROOMS: A BOTANY PERSPECTIVE

Manna Das

Assistant Professor, Department of Botany

Government Degree College Dharmanagar, North Tripura

ABSTRACT

The integration of Artificial Intelligence (AI) into modern classrooms is transforming teaching and learning by providing personalised instruction, interactive learning experiences, and immediate feedback. Cognitive development, which involves the growth of attention, memory, understanding, critical thinking, problem-solving, and scientific reasoning, is an essential component of effective botanical education. In the field of Plant Science, AI-driven learning environments offer new opportunities to improve student's understanding of complex biological concepts through visualisation, data analysis, image-based plant identification, and interactive simulations.

AI-assisted tools can support the study of plant morphology, anatomy, physiology, ecology, plant pathology and mycology by helping students observe biological structures, compare plant characteristics, interpret experimental data, and develop scientific hypotheses. AI-based data analysis can help learners investigate seed germination, plant growth, and environmental influences on vegetation. These activities may promote inquiry-based learning, independent thinking and evidence based decision making.

However, the effective integration of AI in botanical education requires careful consideration of its limitations. Overdependence on AI-generated information may reduce independent reasoning, while inaccurate outputs, data privacy concerns, and unequal access to digital resources may create additional challenges.

This paper highlights the potential role of AI-driven classrooms in supporting cognitive development and enhancing teaching and learning in Plant Science. It emphasises the importance of combining AI-assisted learning with practical botanical experiences, critical evaluation of information, and responsible digital practices to develop scientifically competent, independent, and reflective learners.

Keywords: Artificial Intelligence, Cognitive Development, AI-Driven Classrooms, Plant Science, Botany Education, Critical Thinking, Personalised Learning, Scientific Reasoning.

ARTIFICIAL INTELLIGENCE AND MULTIDISCIPLINARY EDUCATION: ADVANCING THE HOLISTIC VISION OF NEP 2020

Dr. Pawan Kumar Yadav
Assistant Professor, Department of History
Government Degree College, Dharmanagar, North Tripura

ABSTRACT

The National Education Policy (NEP) 2020 envisions an inclusive, flexible, multidisciplinary and learner-centric education system that promotes critical thinking, creativity, innovation and holistic development. In this context, Artificial Intelligence (AI) has emerged as a transformative tool with the potential to reshape teaching-learning practices and strengthen multidisciplinary education. The integration of AI into higher education can facilitate personalized learning, interdisciplinary research, intelligent assessment and the development of essential digital competencies among students.

This paper explores the role of Artificial Intelligence in advancing the multidisciplinary and holistic objectives of NEP 2020. It examines how AI-powered educational tools can bridge different academic disciplines, encourage experiential learning and connect theoretical knowledge with practical applications. Furthermore, it highlights the potential of AI in integrating humanities, social sciences, natural sciences and technological education to develop a comprehensive understanding of contemporary challenges. Special attention is given to the role of AI in promoting accessibility, multilingual education and equitable learning opportunities.

However, the adoption of AI in education also raises significant concerns regarding data privacy, algorithmic bias, digital inequality, academic integrity and the possible decline of independent thinking. Therefore, responsible and ethical integration of AI, supported by effective institutional policies and adequate digital infrastructure, is essential.

The paper argues that Artificial Intelligence should be considered a supportive educational instrument rather than a replacement for teachers or human intelligence. Its meaningful integration with NEP 2020 can contribute to an inclusive, innovative and multidisciplinary educational environment that prepares learners for the emerging demands of the twenty-first century.

Keywords
Artificial Intelligence; NEP 2020; Multidisciplinary Education; Holistic Development; Higher Education; Digital Learning; Educational Technology.

FROM INSTRUCTOR TO MENTOR: LEVERAGING AI FOR TEACHER PROFESSIONAL DEVELOPMENT ALIGNING WITH NEP 2020'S HOLISTIC VISION

Soumyadeep Pal

Ambedkar College Fatikroy, Unakoti Tripura, 799290, India

Email: palsoumyadeep03@gmail.com

Contact number: 7085856092

ABSTRACT

The advancement of Artificial Intelligence (AI), particularly Generative AI (GenAI), is reshaping educational practices and redefining the professional roles of educators. In alignment with the holistic vision of India's National Education Policy (NEP) 2020, this study explores the potential of AI, in strengthening educator capacity building and facilitating the transition from traditional instruction towards mentorship and learner-centred education.

Adopting a descriptive and qualitative comparative approach based secondary sources, the paper examines AI-driven teacher development initiatives in the United Kingdom, United States, China, Estonia and South Korea. It explores the applications of AI in lesson planning, assessment, personalised instruction and continuous professional development while examining India's existing educational frameworks, including NEP 2020, NISHTHA and DIKSHA. Furthermore, it identifies challenges associated with AI integration, including digital inequality, inadequate technological preparedness, data privacy and ethical concerns. The study proposes a teacher-centred approach to AI integration in India, emphasising continuous professional development, technological accessibility and responsible AI adoption. It argues that AI should complement rather than replace educators, empowering them to become more effective mentors and facilitators of holistic learning.

Keywords: Artificial Intelligence, Generative AI, Educator Capacity Building, Professional Development, NEP 2020.

GENERATIVE AI IN HIGHER EDUCATION: COGNITIVE OFFLOADING, METACOGNITIVE ENGAGEMENT AND THE CHALLENGE OF MEANINGFUL LEARNING UNDER NEP 2020

Mitali Meska

Department of Zoology, Ambedkar College Fatikory, 799290.

ABSTRACT

Generative Artificial Intelligence (GenAI) is rapidly transforming higher education by providing instant access to information, personalized feedback and automated academic assistance. However, its growing integration into classroom practice raises important questions about its influence on students' cognitive development, independent thinking, and intellectual autonomy. This study examines the potential paradox of AI-supported learning within the framework of the National Education Policy (NEP) 2020, which emphasizes critical thinking, creativity, problem-solving and higher-order cognitive competencies. Drawing upon Cognitive Load Theory and emerging research on the AI Learning Paradox, the study investigates how excessive dependence on generative AI tools, including ChatGPT and other large language models (LLMs), may influence attention, working memory, critical analysis, metacognition and independent knowledge construction among undergraduate students in a rural Higher Education Institution (HEI). Particular attention is given to cognitive offloading, reduced mental effort and metacognitive disengagement, including the phenomenon described as metacognitive laziness. Based on preliminary classroom observations at Ambedkar College, Fatikroy, Unakoti, Tripura, the study identifies a potentially dual role of AI in learning. While AI-supported tutoring and personalized feedback may facilitate problem formulation, conceptual clarification and learning accessibility, excessive reliance may discourage unaided information retrieval, sustained cognitive engagement and original knowledge synthesis.

To address these challenges, this study proposes a three-tier pedagogical framework: (1) AI-assisted inquiry – encouraging independent thinking before AI interaction; (2) AI-mediated collaboration – positioning AI as a critical evaluator rather than a substitute author; and (3) AI-independent reflection – incorporating structured offline activities to strengthen memory consolidation, metacognition and independent reasoning.

This study argues that generative AI should function as a cognitive scaffold rather than a replacement for intellectual effort. Its purposeful and ethically guided integration can support NEP 2020's vision of inclusive, experiential and outcome-based education while preserving the essential human dimensions of learning, particularly in resource-constrained rural educational settings.

Keywords: Working Memory; Critical Thinking; Independent Learning; AI Learning Paradox; Higher Education; Outcome-Based Education; Rural Higher Education; AI-Assisted Pedagogy.

ARTIFICIAL INTELLIGENCE-ASSISTED BIRDWATCHING: BRIDGING CLASSICAL ZOOLOGY, ENVIRONMENTAL AWARENESS AND PSYCHOLOGICAL WELL-BEING UNDER NEP 2020

Ujjal Kishor De and Mahir De

Department of Zoology, Ambedkar College, Fatikroy, 799290.

ABSTRACT

The National Education Policy (NEP) 2020 emphasizes multidisciplinary, experiential and learner-centred education to promote intellectual development, emotional well-being and environmental consciousness. However, contemporary students increasingly experience screen fatigue, academic stress and reduced engagement with natural ecosystems. Artificial intelligence (AI)-assisted birdwatching offers an innovative approach to integrating technological literacy, classical zoological education, biodiversity exploration and psychological restoration. Birdwatching has traditionally been an important component of classical zoology, facilitating direct observation of avian morphology, taxonomy, feeding behaviour, vocalization, reproductive strategies and ecological interactions. However, accurate identification of morphologically similar species often requires considerable taxonomic expertise. AI-powered applications can overcome these initial challenges through image recognition, bioacoustic analysis and machine-learning-based species classification. Tools such as Merlin Bird ID facilitate bird identification through vocalizations, iNaturalist employs computer-vision-assisted species recognition, while eBird supports biodiversity documentation, distribution mapping and ecological data analysis. AI offers significant advantages in zoological field studies by improving species identification, recognizing concealed or acoustically detectable birds, documenting geographical distribution and facilitating long-term biodiversity monitoring. Importantly, these technologies complement classical zoological approaches by enabling students to compare AI-generated identifications with morphological characteristics, taxonomic keys and established scientific descriptions. Thus, AI transforms conventional field observation into a technology-supported scientific learning experience while encouraging critical thinking, systematic documentation and research-oriented observation. Beyond academic applications, birdwatching promotes sensory engagement with natural environments, potentially supporting attention restoration, stress reduction and psychological resilience. AI-assisted identification can encourage students to explore local habitats rather than remain confined to digital environments.

This presentation proposes integrating AI-assisted birdwatching into zoology curricula, campus biodiversity assessments, citizen-science initiatives and institutional wellness programmes. Ultimately, combining artificial intelligence, classical zoology and nature-based learning provides an innovative multidisciplinary pathway towards scientific competency, ecological stewardship and holistic student development in alignment with NEP 2020.

Keywords: AI-assisted Birdwatching; Classical Zoology; Avian Biodiversity; Bioacoustic Monitoring; Machine Learning; Computer Vision; Species Identification; Taxonomy; Behavioural Ecology; and Citizen Science.

INSECT-ANTENNA BIO-HYBRID ODOR SENSING FOR DRONE BASED ODOR SOURCE LOCALIZATION

Sandipan Datta

Department of Physics, Ambedkar College, Fatikroy, 799290.

ABSTRACT

Insect antennae detect trace odors far better than artificial gas sensors, and recent work has mounted them on drones. This paper presents a complete signal chain for such a bio-hybrid odor sensor: a reference electroantennogram (EAG) front end (instrumentation amplifier, 10 Hzlow-passfilter,12-bitADC),adetectionalgorithm(movingaverage,trackedbaseline,3σ rule with persistence), a stepped-rotation search, and a machine-learning (AI) classifier for odoridentity.Nolaboratorydatawerecollected,sothealgorithmsareevaluatedonsynthetic EAG signals with slow drift, broadband noise and 50 Hz pickup. In simulation, the detector flagged every pulse of 300 µV or more, reached 50% detection near 115 µV, and gave 0.06 false alarms per minute against 6.0 for a naive threshold.Astepped-rotation search reached a simulated odor source from 4.5 m in all 300 runs, against 8% for a random walk.Arandom-forest classifier separated four synthetic odor classes with 95.3% cross-validated accuracy using kinetic features, against 26.3% from peak amplitude alone. The results show the processing design works under the stated assumptions; they do not replace measurements on real antennae.

Keywords: bio-hybrid robotics, electroantennogram, odor source localization, drone, signal processing, machine learning

AI FOR SOCIO-ECONOMIC INCLUSIVITY IN URBAN GOVERNANCE: A PROPOSED AI-GIS FRAMEWORK OF AGARTALA, TRIPURA

Peter Prasanta Debbarma
Asst. Professor, Dept. Of Geography
Ramkrishna Mahavidyalaya, Unakoti, Tripura
& RS of FM university, Odisha
Dr. Rabi Narayan Behera
Astt. Professor, PG Department of Geography
FM University, Odisha

ABSTRACT

Urban governance requires reliable, spatially organised information for inclusive service delivery and effective disaster response. However, fragmented household, property and infrastructure records often delay public services and emergency assistance. This paper proposes an Artificial Intelligence (AI) and Geographic Information System (GIS)-based framework for strengthening socio-economic inclusivity in urban governance, using Agartala as a case study. The proposed system integrates ward, locality, building and household records through standardised geospatial codes. It incorporates socio-economic categories, economic status, housing conditions and vulnerability indicators, alongside coded locations of government offices, hospitals, schools, hotels and other essential buildings. AI can support data validation, identification of service gaps, vulnerability assessment and emergency coordination, while GIS enables accurate spatial identification of people, properties and public facilities. As a conceptual and methodological study, the paper proposes a framework rather than an already operational system. It also emphasises data privacy, transparency, human oversight and protection against discriminatory profiling. The framework aims to promote accountable municipal administration, equitable service delivery and efficient emergency response in Agartala.

Keywords: Artificial Intelligence; GIS; Urban Governance; Socio-Economic Inclusivity; Household Database; Agartala; Emergency Response; GeoAI.

CONTESTABLE DELEGATION: A PRACTICAL MODEL FOR GOVERNING ARTIFICIAL INTELLIGENCE IN EDUCATIONAL ADMINISTRATION

Tridip Deb, Prasenjit Dey, Hirak Das, Lalnunpuya Darlong, Dr. Satyajit Das

Department of Political Science, Ambedkar College, Fatikroy

Email: hirakdas9856@gmail.com; tridipdeb93@gmail.com; pd8267406@gmail.com; nunpuiadarlong1@gmail.com
Contact: 9856419799, 9863002814, 8798151349, 9863736700, 9863248317

ABSTRACT

Educational institutions are increasingly using artificial intelligence (AI) to support administrative work. These uses include screening admission applications, monitoring attendance, preparing timetables, managing complaints and planning budgets. AI can complete many tasks quickly, but the rules and systems needed to oversee its use do not always develop at the same pace. A common response is to say that a human being should remain involved in the decision-making process. However, simply placing a person in the process does not ensure meaningful supervision. Staff may accept a system's recommendation without checking it, or they may lack the time, information or authority needed to correct it.

This paper argues that the key question is not only whether a human is involved, but whether a person affected by an AI-supported decision can find out about it, understand its main reasons, challenge it and obtain a fair review. To develop this argument, the paper proposes the Contestable Delegation Model (CDM). The model classifies administrative decisions into three accountability tiers according to two factors: how easily an incorrect decision can be reversed and how seriously it may affect a person's rights or opportunities. It also sets out five basic conditions for meaningful challenge: notice, reasons, authority, appeal and record-keeping.

The model is applied to six areas of educational administration and considered alongside India's National Education Policy 2020, the Digital Personal Data Protection Act 2023, relevant UNESCO guidance and the European Union's AI Act. The study uses qualitative document analysis and thematic analysis. It is conceptual and analytical; it does not report findings from fieldwork or original institutional data. The paper concludes that the level of human oversight should depend on the consequences of each decision, not simply on the type of AI product being used. It also identifies practical steps for policymakers, institutional leaders and staff training. The proposed model offers a framework for future empirical testing.

Keywords: artificial intelligence, educational administration, algorithmic accountability, contestability, data protection, educational governance, NEP 2020

GENERATIVE AL AS A TOOL FOR CREATIVE WRITING, LITERARY ANALYSIS AND TRANSLATION

Piyali Deb
Dept. of Physics, Ambedkar College, Fatikroy

Pramita Deb, Hasi Sinha
Dept. of Mathematics, Ambedkar College, Fatikroy

ABSTRACT

This paper investigates Generative Al as a collaborative intelligence in literary studies, rather than a substitute for human creativity. It examines three domains: in Creative Writing, GenAl acts as a co-pilot for ideation, world-building and overcoming writer's block through a 70% human, 30% Al model: in Literary Analysis, it enables deep reading at scale via thematic extraction, character-network mapping and stylometric analysis across large corpora, and in Translation, it shifts practice from literal translation to context-aware transcreation, preserving tone and cultural nuance, especially for low-resource languages like Bengali and Kokborok.

Advocating an ethical framework of transparency and human oversight, the study concludes that GenAl is a calculator for the mind a tool to think better, not to think less.

Keywords: Generative Al, Digital Humanities, Transcreation, Prompt Engineering

BRIDGING FUNDAMENTAL PHYSICS AND FRONTIER ARTIFICIAL INTELLIGENCE: A REVIEW OF THEORETICAL FOUNDATIONS, EMERGING APPLICATIONS, AND FUTURE DIRECTIONS

Dr. Raghunandan Das[1], Dr.Dipak Nath[2], Dr. A. Robert Xavier[3]

[1] Principal, Ambedkar College, Fatikroy, Tripura, India
[2] Associate Professor, Department of Physics, Kohima Science College, Jotsoma, Kohima, Nagaland, India
[3] Professor, Department of Physics, St Joseph University, Chumoukedima, Nagaland. India
Corresponding author: dipaknath03081976@gmail.com

ABSTRACT

The convergence of fundamental physics and frontier artificial intelligence (AI) is changing how complex scientific systems are modelled, simulated, and interpreted. Physics provides mathematical structure and empirical constraints; AI offers flexible tools for learning high-dimensional relationships, approximating expensive computations, and analysing incomplete or noisy observations. This narrative review examines the interface between these fields through physics-informed machine learning, neural operators, symmetry-aware architectures, generative modelling, symbolic equation discovery, and scientific foundation models. Applications in quantum many-body physics, particle physics, condensed matter physics, materials science, cosmology, and nonlinear dynamics are considered alongside their limitations. Particular attention is given to the difference between predictive accuracy and physical explanation, and to the roles of conservation laws, symmetry, dimensional consistency, uncertainty quantification, and independent validation. The review argues that the most defensible research strategy is not to replace physical theory with data-driven prediction, but to build hybrid systems in which theoretical knowledge, numerical methods, experimental evidence, and machine learning are used together. It proposes a practical framework linking physical structure, AI modelling, uncertainty assessment, and independent verification. The central challenge for the field is to demonstrate not merely computational speed or pattern recognition, but reproducible improvements in physical prediction and scientific understanding.

Keywords: Fundamental physics; Artificial intelligence; Physics-informed machine learning; Scientific discovery; Quantum many-body physics; Neural operators; Foundation models; Equation discovery; Uncertainty quantification; Computational physics.

MOLECULES, MINDS AND MACHINES: THE CHEMISTRY AND PHYSIOLOGY OF LEARNING IN AI-DRIVEN CLASSROOMS

Manabendra Debnath and **Niranjan Das***

Kabi Nazrul Mahavidyalaya, Sonamura, Sepahijala, Tripura, India – 799131

*Corresponding author: Niranjan Das | Email: ndnsmu@gmail.com

ABSTRACT

Walk into almost any Indian college today and you will find students using ChatGPT-style tools to draft essays, work through problems and revise for examinations. NEP 2020 asks higher education to become more learner-centred, multidisciplinary and attentive to the whole person, yet most writing on AI in education deals with pedagogy, policy and ethics and says little about the body that does the learning. This conceptual paper looks at AI-assisted teaching through the lens of chemistry and human physiology. Drawing on peer-reviewed work in neuroscience, sleep research and educational psychology, we trace how dopamine, cortisol, melatonin and adenosine, together with brain energy metabolism and exercise-linked growth factors, influence attention, memory and wellbeing. We then ask how everyday AI practices (instant feedback, long hours at a screen, late-night use, handing mental effort over to a chatbot) might support or disturb those processes. From this we derive six design principles: calibrated challenge, stress-aware assessment, circadian-aligned scheduling, embodied breaks, protected retrieval effort, and human oversight informed by basic biochemistry. The analysis is integrative rather than empirical, and its claims are offered as propositions that classroom studies can test. Evidence linking AI tutors directly to student physiology is still thin, so we flag where findings come from laboratory work, adult samples or non-AI screen media. We argue that bringing AI into line with NEP's holistic vision means treating students as living organisms and not only as streams of performance data, and we close with implications for faculty development, an interdisciplinary chemistry–physiology literacy course and institutional AI policy.

Keywords: artificial intelligence; NEP 2020; neurochemistry; dopamine; cortisol; circadian rhythm; cognitive load; student well-being

Abstract (Keynote Speech)

NEP 2020: HIGHER EDUCATION

Prof. Reshmi Maity
Dean, School of Engineering and Technology,
Professor, Dept. of Electronics and Communication Engineering
Mizoram University (A Central University, Govt. of India)

ABSTRACT

The National Education Policy (NEP) 2020 aims to replace a rigid academic system with a highly flexible and multidisciplinary structure with AI as a primary catalyst. AI shall influence academic discipline and regulate administrative procedures. It will act as a tool to improve governance across Universities. Offering flexibility with multiple entry and exit option, it aims to increase the Gross Enrolment Ratio (GER) in higher education to 50% by 2035. Use of technology in teaching and removing language barriers are major areas where AI and Machine learning plays its part. The policy also proposes a credit-transfer system. A credit bank of academic progress will also be formed to keep track of the credits earned during the entire educational journey of students. Institutions will be able to empower their faculty as well as students by streamlining classroom processes through ICT-enablement.