

## AI Academic Self-Efficacy and Digital Leisure Satisfaction: Towards an Integrated Conceptual Model

P. Kaushik<sup>1\*</sup>, P. Pallai<sup>2</sup>

<sup>\*1</sup>Department of Education, Tezpur University, Tezpur, Assam, India, panchalikaushik05@gmail.com

<sup>2</sup>Department of Education, Tezpur University, Tezpur, Assam, India, pratima@tezu.ernet.in

Corresponding Author: panchalikaushik05@gmail.com

Available online at: [www.sijmr.org](http://www.sijmr.org)

---

*Abstract— Artificial intelligence (AI) technologies are now integrated into higher education (e.g., writing assistants, Artificial intelligence (AI) technologies – including writing assistants, conversational agents, and content recommendation services – are increasingly entering higher education and shaping students' educational engagement and leisure activities. Yet little is known about the psychological impact of AI technologies on academic self-efficacy and satisfaction with digital leisure time, especially for postgraduate and doctoral students based in Northeast India.*

*The present study proposes an integrative conceptual framework to connect AI knowledge and technology use frequency to academic self-efficacy and leisure satisfaction. This framework integrates four theoretical perspectives: Social Cognitive Theory, and Uses and Gratifications Theory, Technology Acceptance Model and Media Dependency Theory, to represent cognitive and affective relationships with AI.*

*The proposed framework fills a research gap, by including academic self-efficacy and leisure satisfaction into a single model, demonstrating possible ways that AI may improve mastery, motivation, and autonomy in learning, while avoiding overdependence and diminished critical thought*

*The findings suggest that if AI use is balanced, and done with reflective learning and healthy digital leisure habits, it can lead to academic development and well-being. Institutional strategies should include three major components: incorporate AI ethics, establish a culture of healthy digital leisure, and support students with diverse learning needs.*

*The proposed model that is situated, and may be theory driven that provides non prescriptive guidance for stakeholders: educators, policy makers and researchers. In creating an approach that encourages ethical, autonomous, and critically engaged use of AI, a foundation for improving academic student outcomes and digital well-being in higher education has been emphasized in this study*

**Keywords—** Academic Self-efficacy, Digital Leisure Satisfaction, Conceptual model, University students.

---

### I. INTRODUCTION

Artificial Intelligence (AI) is evolving rapidly, higher education is adopting AI at an unprecedented pace and undoubtedly altering how university students interact with their academic studies and leisure activities. AI tools are impacting academic performance, mental health, and leisure satisfaction (Li et al., 2025; Barakazi, 2023), in just a couple of years from writing assistants (Grammarly, ChatGPT, etc.) to entertainment (Netflix, Spotify, etc.). Higher education institutions are integrating AI tools to provide better learning experiences in the classroom and operational efficiencies, but rarely considering the psychological implications of the expectations of students experiencing AI-mediated contexts. This shift offers important considerations about the changing roles of self-directed learning, student agency, and digital wellness of students in the digital intelligence era (Tanveer et al., 2024; Rodríguez-Ruiz et al., 2025).

### Rationale

Despite academic and leisure contexts necessitating AI, limited research has explored cumulative impacts on university students' psychological outcomes, especially academic self-efficacy beliefs, and the digital leisure satisfaction. Previous research has explored AI's role contributing to academic performance (Anierobi et al., 2025; Bouzar et al., 2024) but did not address how awareness and use of AI potentially affect university students' self-efficacy beliefs and leisure satisfaction. The majority of existing studies focus on undergraduates situated within higher economic situations and a significant population and contextual gap exist, especially in areas like Northeast India. Digital reality, academic context, and cultural context in places like Assam continues to be left unacknowledged in larger discussions surrounding AI in education. The few existing conceptual models integrating both cognitive and hedonic contexts of AIs use on the lived

experiences of university scholars continue to be absent from the discussion (Ouyang & Ayinde, 2024; Susilawati et al., 2024).

## Objectives

There are three distinct objectives of this study

1. To examine the relevant theoretical perspectives and literature about the cognitive and affective dimensions of AI engagement in higher education.
2. To develop a synthetic conceptual model that articulates the connections between awareness and use of AI, academic self-efficacy, and digital leisure satisfaction.
3. To provide practical, educational and policy implications as a from the proposed conceptual model.

## Research questions:

1. How can the existing theories in psychology, education and media studies coalesce to articulate cognitive and affective implication of AI participation for higher education student population?
2. What testable relationships between AI awareness and usage, academic self-efficacy and digital leisure satisfaction are evidenced in relation to the integrated conceptual model?
3. What practical, educational and policy implications may arise when utilizing the proposed conceptual model?

## Structure of the paper

This paper is organized as follows: Section 2 provides a literature review grounded in previous texts addressing: AI in education; academic self-efficacy; digital leisure satisfaction. Section 3 presents the theory, detailing how each theory influences the conceptual model. Section 4 outlines the methodology for developing the model. Section 5 includes the key findings with their practical and research implications. Section 6 provides a conclusion to the research work by outlining limitations and proposing future research suggestions.

## II. RELATED WORKS

### Artificial Intelligence in Higher Education: academic & leisure integration

Tanveer et al. (2024) explored *the impact of AI-based chatbots on academic self-efficacy and self-regulation* among university students as it relates to academic self-efficacy and self-regulation for university students. The study addressed the issue of low levels of student engagement within digital learning environments and the authors sought to assess whether an AI-driven chat-bot could provide the potential benefits of increased self-efficacy and engagement in learning.

Most recently, Parsakia (2023) examined *the role of AI chatbots in improving self-efficacy, self-esteem, and*

*problem-solving skills*. The study asked whether interactive AI systems (chatbots) impact students' critical thinking skills and how such interactive AI learning tools may contribute to self-efficacy and self-esteem.

Li et al. (2025) examined *how generative AI relates to leisure satisfaction and awareness*. The research problem rested on the minimal understanding of how AI shapes leisure experiences, and their objective was to examine the role of AI awareness for possible leisure advantages.

### Academic Self-Efficacy and AI

Ouyang and Ayinde (2024) researched *the impact of generative AI applications on self-efficacy development* and noted concerns about whether AI might offer people mastery experiences to increase students' confidence. Bouzar et al. (2024) investigated *ChatGPT and academic writing self-efficacy among postgraduate students*, aims to find correlations and risks with dependence upon technology. Wang et al. (2023) examined *AI capability within higher education institutions*, with the aim of determining its effect on self-efficacy, creativity and academic performance.

### Digital Leisure Satisfaction in AI driven Contexts

Barakazı (2023) explored *technological innovations in diversifying recreational activities* as a means to diversify recreational activities and found limited literature on the ways AI can diversify and enhance leisure. Susilawati et al. (2024) examined *consumer acceptance of AI in the leisure economy*, aiming to model factors related to user satisfaction and adoption behavior. Li et al. (2025) identified key predictors of digital leisure satisfaction, including informativeness and social gratification, highlighting the need for AI systems to address both utilitarian and hedonic needs.

### Linkages between Self-Efficacy and Leisure

Cho and Lee (2023) examined *how leisure experience, nostalgia, and positive emotions influence academic self-efficacy* addressing the gap in knowledge regarding the affective pathways between leisure and learning outcomes.

Back (2022) examined *the effects of different types of leisure activities on adolescents' psychological well-being and academic self-efficacy* aimed to identify the leisure formats that lead to the greatest academic confidence.

Wu et al. (2025) described the 'hourglass effect' regarding digital leisure, addressing excessive use of leisure, which causes academic fatigue, and aimed to clarify the conditions under which digital leisure supports or detracts from learning.

## III. METHODOLOGY

### Experimentation year and Context

The current study was imagined and completed as part of an educational project in 2025, which aimed to combine

different disciplines to examine the role of Artificial Intelligence (AI) in higher education. The setting for this work is the Indian higher education system, specifically for postgraduate (master's degree) and doctoral (PhD) students, in the underrepresented regions of Northeast India.

#### IV. RESEARCH DESIGN

The study utilizes an integrative review design based on the model by Whitemore and Knafl (2005), this format lends itself well to synthesizing both theoretical and empirical literature and informing new conceptual models. The integrative format accommodates a range of findings and provides flexibility in descriptions of similar findings, while also remaining systematic and transparent, so it is not merely a systematic review.

The integrative review process comprises five distinct phases, as identified by Whitemore and Knafl (2005).

1. **Problem Identification:** The initial phase included defining the extent of the review, the aims of the research, and the research questions.
2. **Literature Search:** In this phase, a broad and purposive search was to be undertaken in appropriate databases, such as Scopus, Google Scholar, and ERIC, that considered the types of literature from 2020-2025.
3. **Data Evaluation:** Would have seven high-quality and relevant studies been selected based on their alignment to the theory and context?
4. **Data Analysis:** Included the thematic organization of the articles to enable synthesis – to locate previous constructs and theoretical connections.
5. **Presentation:** Organization of the conceptual framework with illustrative diagrams that made a conceptual map.

This design includes aspects of a narrative review in the interpretation and evaluation of a context and an integrative review, which allows for synthesis from multiple theories (Grant & Booth, 2009; Snyder, 2019).

#### Model Building Procedures

##### 1. Literature mapping and problem framing

- Reviewed literature related to AI awareness and use, academic self-efficacy, and digital leisure satisfaction.
- Identified gaps in the cognitive and affective dispositions, which were not captured in the literature.

##### 2. Theoretical scanning and selection

- Chose four relevant theories: Social Cognitive Theory, Uses and Gratifications Theory, Technology Acceptance Model, and Media Dependency Theory.

- Ascertained each provided some explanatory opportunity in respect of cognitive, affective, and behavioural behavioural dispositions towards AI engagement.

##### 3. Identifying constructs and mapping variables

- Defined AI awareness and use as an independent variable, and academic self-efficacy and digital leisure satisfaction as dependent variables;
- Identified theoretical and empirical relationships to link constructs together.

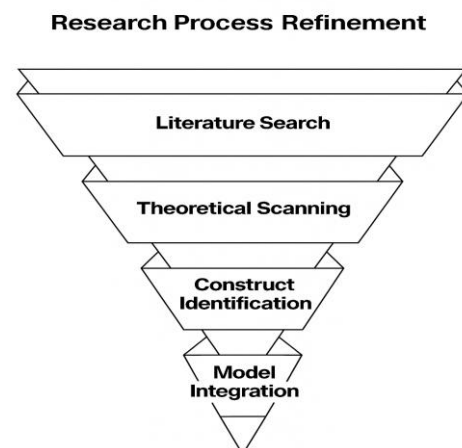
##### 4. Integrating into a model and establishing a diagram

- Developed a conceptual framework that integrates the four theories explaining AI awareness and use in higher education and mapped significant pathways between variables;

##### 5. Analytical justification

- Provided empirical, theoretical, and contextual justifications for each relationship in the conceptual model of AI awareness and use. In other words, there is an empirical and theoretical rationale for each of the other variables (academic self-efficacy, digital leisure satisfaction) uniquely in isolation (dispositional) in Indian higher education contexts.

#### Flowchart of Model development



**Figure 1. Steps in Developing the Integrated Conceptual Mode**

#### V. RESULTS AND DISCUSSION

##### Summary of Key Findings

This study's conceptual model synthesized the four theoretical lenses of the Social Cognitive Theory, Uses and Gratifications Theory, the Technology Acceptance Model, and Media Dependency Theory to describe the dual impact of AI awareness and the ongoing use of AI on postgraduate

and doctoral students' academic self-efficacy and digital leisure satisfaction. This model shows that AI tools are both academic enablers which enhance mastery experiences, self-regulation, and efficiency, and leisure preferences, which allow for personalized, immersive, and socially gratifying experiences. However, the same characteristics of AI that promote engagement, can also lead to overdependence, reduced self-regulation, and time displacement.

### Theoretical Integration in Context

The model confirms and builds upon existing literature by elaborating AI involvement through multiple perspectives. Social Cognitive Theory will be used as a perspective for explaining the academic self-belief enhancements arising through an AI-supported mastery experience (e.g., Ouyang & Ayinde, 2024; Bouzar et al., 2024). Uses and Gratifications Theory is relevant to leisure-based motivations including for things like entertainment, heuristic involvement, and social interactions (Li et al., 2025). Technology Acceptance Model is a theoretical perspective that considers how variations in usability and perceived usefulness shape patterns of academic and leisure adoption (Susilawati et al., 2024). Media Dependency Theory contextualizes the risks associated with habitual dependence and reliance on AI assisted activities in our everyday lives (Estrada-Araoz et al., 2025). When combined, these perspectives provide an integrative affordance that links cognitive outcomes in formal learning with affective and emotional outcomes in leisure circumstances; a framework not present in the field of AI and education literature to date.

#### Differentiating the Academic and Leisure Dimensions

- **Academic Dimension:** The effect of AI tools on self-efficacy is established as academic self-efficacy is affected positively through the immediacy of feedback, perform authentically complex tasks accurately, and ultimately self-paced. Specifically, AI can support enhanced confidence for performance, using AI, when it is used to supplement and scaffold learning rather than simply replace or substitute learning. However, as noted in previous research on reliance on AI systems, reliance can stunt critical thinking or deeper learning (Zhang & Xu, 2025).
- **Leisure Dimension:** The ability of AI-driven Recommendation Systems or Conversational agents to enhance the experiences of digital leisure in terms of personalized, new, and interactive attributes captures the indisputable. While increased satisfaction is a clear intention of AI features in digital leisure, the dimensions of passive consumption and decreased opportunities for genuine social contexts beckon some concerns (Lin & Ng, 2024).

#### Theoretical framework of understanding the model:

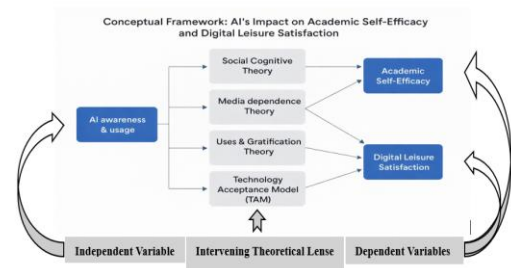


Figure 2: Conceptual model of AI's impact on academic self-efficacy and digital leisure satisfaction

### Recommendations for Practice

In regards to recommendations for practice, this model emphasizes the use of AI tools appropriately, that ultimately engages active cognition not replaces it. AI literacy programs should have students critically think about the use of AI of any kind, whether it be academic, employment, or leisure lies at the heart of the application and subsequent engagement with this model. Educators may assign activities, with purposeful use of AI and related reflection to limit overreliance, and that develops self-regulated learning.

Since leisure could also be managed in an educational context, interventions could be created related to facilitating leisure that is engaged in with purpose (i.e., creative or skill development) versus passive consumption, distractions; leisure that supports cognitive and emotional renewal, is the focus.

### Recommendations for Policy

Policy level interventions could address the needed policy guidelines for the use of AI in educational contexts, which would require a balance of opening access/location and ensuring students engage with AI ethically and engage in critical thinking while using AI. Post Graduate and Doctoral levels of educational programs too need specific modules related to digital wellness and AI ethics. Institutions that are located in digitally disadvantaged spaces (i.e., north east India) and are developing access strategies related to AI will need to consider existing physical and theoretical infrastructures that are also present in those geographic spaces, in order to make equitable engagement opportunities..

### How This Study Intersects with Prior Literature

While prior literature (Wang et al., 2023) has examined AI based upon either its value (to academia) or leisure satisfaction (Barakazi, 2023), this literature review has taken a more holistic approach of AI interacting in both contexts, and presented a model that has contributed to the discussion of AI in higher education but more importantly does not recognize its impact only based in educational context. Therefore, this is relevant to the discussions of educational technology, but also digital well-being.

## VI. CONCLUSION

The present study proposes an integrated conceptual model that outlines a relationship between AI awareness and usage and academic self-efficacy and digital leisure satisfaction in higher education. The framework draws upon Social Cognitive Theory, Uses and Gratifications Theory, Technology Acceptance Model, and Media Dependency Theory and includes cognitive and affective components of AI use for students in the postgraduate and doctoral stages' degree programs. The model elaborates on the two-sided nature of AI as either a facilitative tool for graduates to achieve academic success, or a vehicle for personalized engagement to deepen and enrich their leisure time. The proposal should also consider the potential drawbacks of use, such as the risk of overdependence or worsening a decline in critical thought, within the model so that AI can be purposefully implemented. The integrated model is intended to be beneficial to educators, policy-makers and researchers who want to improve and facilitate AI as a practice or strategy.

Since the present study is conceptual in scope, the model's utility is bounded in that it cannot confirm the legitimacy in practice through research. Additionally, the study provided an explanation of the model by situating it with the Indian higher education context, and even more specifically to the Northeast region of India, may lend to dampen the confidence that others may have that it is absolutely universal. Future research should test the model in practice (i.e., either using a mixed-method or longitudinal approach) and perhaps consider adding a moderating variable such as self-regulation and digital literacy. The model could also be explored, or established, through use of contrast in terms of comparison with other cultures and environments and the effectiveness of new AI modalities, for example, multimodal generative systems or virtual assistants.

The integrated conceptual model as outlined in this paper has objectively underscored the theoretically grounded status of conceptualizing AI affordances as quality experiences in higher education, and although exposure to the context of Northeast Indian higher education as a domain for integrating AI for both human academic quality outcomes and quality leisure time was a launching point for creating both research and adopting practices that have potential to re-integrate human behavior where AI achieves.

## REFERENCES

- [1] A. Bandura, "Self-efficacy: Toward a unifying theory of behavioral change," *Psychological Review*, Vol. 84, No. 2, pp. 191–215, 1977.
- [2] A. Bandura, "Social foundations of thought and action: A social cognitive theory," Prentice-Hall, USA, pp. 1–617, 1986.
- [3] A. Bouzar, K. El Idrissi, T. Ghourdou, "ChatGPT and academic writing self-efficacy: Unveiling correlations and technological dependency among postgraduate students," *Arab World English Journal*, Vol. 1, No. 1, pp. 225–236, 2024.
- [4] C. Zhai, S. Wibowo, L.D. Li, "Effects of over-reliance on AI dialogue systems on students' cognitive abilities: A systematic review," *Smart Learning Environments*, Vol. 11, No. 28, pp. 1–18, 2024.
- [5] D. Back, "Impacts of adolescents' leisure activity types on psychological well-being, academic self-efficacy, self-esteem, and stress," *International Journal of Adolescence and Youth*, Vol. 27, No. 1, pp. 78–91, 2022.
- [6] D.H. Schunk, F. Pajares, "The development of academic self-efficacy," in *Development of Achievement Motivation*, A. Wigfield, J.S. Eccles, Eds., Academic Press, USA, pp. 15–31, 2002.
- [7] E. Barakazi, "Role of technological innovations in diversification of recreational activities: Interview with ChatGPT," *Journal of Gastronomy Hospitality and Travel*, Vol. 6, No. 1, pp. 50–59, 2023.
- [8] E. Katz, J.G. Blumler, M. Gurevitch, "Uses and gratifications research," *Public Opinion Quarterly*, Vol. 37, No. 4, pp. 509–523, 1973.
- [9] E.I. Anierobi, A.I. Amjad, S. Aslam, A. Fakhrou, "Artificial intelligence utilization: A determinant of academic self-efficacy, engagement, and satisfaction of university students," *Environment and Social Psychology*, Vol. 10, Issue. 3, pp. 1–12, 2025.
- [10] G.D. Cubero, R.E. Villocino, "Student engagement, academic motivation, school climate: A structural equation model on academic self-efficacy in state colleges and universities," *United International Journal for Research & Technology*, Vol. 4, No. 7, pp. 164–180, 2023.
- [11] H. Cho, Y.H. Lee, "Enhancing university students' academic self-efficacy: Roles of leisure experience, nostalgia, and positive emotions," *Asia Pacific Journal of Education*, Vol. 43, No. 2, pp. 1–15, 2023.
- [12] H. Snyder, "Literature review as a research methodology: An overview and guidelines," *Journal of Business Research*, Vol. 104, pp. 333–339, 2019.
- [13] H. Wu, Z. Jing, H. Li, H. Zhang, "Impact of digital leisure activities on academic performance in elementary education: A learning technology perspective," *Education and Information Technologies*, Vol. 30, No. 4, pp. 1–23, 2025.
- [14] I. Tanveer, S. Iqbal, A. Hussain, "Impact of AI-based chatbots on academic self-efficacy and self-regulation among university students," *Journal of Development and Social Sciences*, Vol. 5, No. 2, pp. 468–477, 2024.
- [15] I.M. Orgeta, "Influence of leisure activity participation on the self-efficacy of selected public tertiary school students," *International Journal of Research Publication and Reviews*, Vol. 5, No. 11, pp. 472–479, 2024.
- [16] J. Liang, L. Wang, J. Luo, Y. Yan, C. Fan, "Relationship between student interaction with

- generative artificial intelligence and learning achievement: Serial mediating roles of self-efficacy and cognitive engagement," *Frontiers in Psychology*, Vol. 14, pp. 1–12, 2023.
- [17] J. Rodríguez-Ruiz, I. Marín-López, R. Espejo-Siles, "Is artificial intelligence use related to self-control, self-esteem and self-efficacy among university students?," *Education and Information Technologies*, Vol. 30, No. 7, pp. 2507–2524, 2025.
- [18] K. Parsakia, "Effect of chatbots and AI on the self-efficacy, self-esteem, problem-solving and critical thinking of students," *Health Nexus*, Vol. 1, No. 1, pp. 71–76, 2023.
- [19] L. Zhang, J. Xu, "Paradox of self-efficacy and technological dependence: Unravelling generative AI's impact on university students' task completion," *Internet and Higher Education*, Vol. 65, pp. 100978, 2025.
- [20] M.F. Shahzad, S. Xu, H. Zahid, "Impact of generative AI-based technologies on learning performance through self-efficacy, fairness & ethics, creativity, and trust in higher education," *Education and Information Technologies*, Vol. 30, No. 6, pp. 3691–3716, 2024.
- [21] M.J. Grant, A. Booth, "A typology of reviews: An analysis of 14 review types and associated methodologies," *Health Information & Libraries Journal*, Vol. 26, No. 2, pp. 91–108, 2009.
- [22] R. Whittemore, K. Knafl, "The integrative review: Updated methodology," *Journal of Advanced Nursing*, Vol. 52, No. 5, pp. 546–553, 2005.
- [23] R.J. Torraco, "Writing integrative literature reviews: Guidelines and examples," *Human Resource Development Review*, Vol. 4, No. 3, pp. 356–367, 2005.
- [24] S. Lee, G. Park, "Exploring the impact of ChatGPT literacy on user satisfaction: The mediating role of user motivations," *Cyberpsychology, Behavior, and Social Networking*, Vol. 26, No. 12, pp. 913–918, 2023.
- [25] S. Wang, Z. Sun, Y. Chen, "Effects of higher education institutes' artificial intelligence capability on students' self-efficacy, creativity and learning performance," *Education and Information Technologies*, Vol. 28, No. 5, pp. 4919–4939, 2023.
- [26] S.J. Ball-Rokeach, M.L. DeFleur, "A dependency model of mass-media effects," *Communication Research*, Vol. 3, No. 1, pp. 3–21, 1976.
- [27] Susilawati, D. Juliastuti, M. Hardini, "Understanding consumer acceptance of AI in the leisure economy: A structural equation modelling approach," *APTISI Transactions on Management*, Vol. 8, No. 3, pp. 234–243, 2024.
- [28] T.B.L. Pham, K.T.P. Le, T.H.N. Nguyen, T.N. Phan, K.B.P. Tran, "Impact of gratifications on the behavioural intention of voice assistants' users," *The University of Danang - Journal of Science and Technology*, Vol. 22, No. 6B, pp. 55–65, 2024.
- [29] Y. Li, L. Ren, H. Qiu, H. Liu, "How generative AI relates to leisure satisfaction and awareness," *Leisure Sciences*, Vol. 47, No. 1, pp. 1–18, 2025.
- [30] Y. Ouyang, A. Ayinde, "Impact of generative artificial intelligence applications on the development of self-efficacy," *Academic Journal of Computing & Information Science*, Vol. 7, No. 11, pp. 117–126, 2024.
- [31] Z. Lin, Y.L. Ng, "Unravelling gratifications, concerns, and acceptance of generative artificial intelligence," *International Journal of Human-Computer Interaction*, Vol. 40, No. 3, pp. 1–18, 2024.

### AUTHORS PROFILE

**Ms. Panchali Kaushik** pursued her B.A. in Education from Handique Girls' College, Gauhati University (2016–2019), M.A. in Education from Tezpur University (2019–2021), and B.Ed. from Government College of Teacher Education, Kokrajhar under Bodoland University (2021–2023). She is currently pursuing her Ph.D. in Education at Tezpur University since July 2024. She has qualified UGC-NET in Education twice (December 2023, June 2024) and SLET-NE (March 2024). She is a Life Member of the *All India Association for Educational Research (AIAER)* and a Professional Affiliate Member of the *American Psychological Association* (Division 15, Educational Psychology). She has presented research papers in various national and international conferences, and published book chapters in reputed edited volumes. Her research interests include Artificial Intelligence in Education, Academic Self-Efficacy, Digital Leisure, Metacognition, and Teacher Education.

**Dr. Pratima Pallai** holds M.A., B.Ed., and M.Ed. degrees in Education, has qualified UGC-NET, and earned her Ph.D. in Education. She is currently working as Assistant Professor in the Department of Education, Tezpur University. She has previously served as Assistant Professor in Education at the Regional Institute of Education (RIE), NCERT, Bhubaneswar, and worked on multiple national projects at NCERT, New Delhi. Dr. Pallai has over 15 years of teaching and research experience and has authored more than 30 research papers in national and international journals, including UGC-CARE and Scopus-indexed publications, as well as several book chapters. Her areas of specialization include Pedagogy of Social Science, ICT in Education, Teacher Education, and Measurement and Evaluation. She has also co-authored a book and contributed to policy-relevant research on MOOCs, inclusive education, and technology integration in teacher training.