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# Advancing Research in CS Ethics Education, EdTech Implementation Frameworks, and Neurodivergent Learning

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**Abstract:** My research focuses on three interconnected areas of educational technology investigation: ethics education in computer science curricula, frameworks for EdTech implementation, and inclusive technology design for neurodivergent children. The first strand examines the integration of ethical considerations in CS education in India, addressing a critical gap in preparing future technologists for responsible innovation. The second develops comprehensive frameworks and metrics for EdTech implementation emphasizing evidence-based approaches to technology adoption in a genAI-driven educational landscape. The third strand extends these principles to create inclusive EdTech specifically designed for neurodivergent learners. Together, these research areas contribute to more responsible, impactful, and equitable technology development and application in educational contexts.

**Keywords:** ethics education, ethics curriculum, edTech implementation, inclusive learning design, evidence-based implementation, genAI-driven learning

## 1. Investigating and Integrating Ethics Education in CS Curricula in India

The rapid advancement of technology has brought ethical considerations to the forefront of computer science. However, the integration of ethics into CS curricula remains inconsistent, particularly in emerging tech hubs like India. This research aims to - a) conduct a comprehensive survey of ethics content in CS programs across Indian universities and K-12 curriculum, b) analyze the depth and breadth of ethical training in comparison to international standards, c) identify best practices and areas for improvement in ethics education and d) design, develop and implement ethics curriculum in the higher education and K12 context.

Previous studies have highlighted the importance of ethics in CS education (Fiesler et al., 2020), but few have focused specifically on the Indian context. Investigating how such subjects are embraced and incorporated into computer science education in India remains relatively unexplored. With over 2 million students enrolled in CS programs in India, computing educators are crucial in equipping them to navigate and address ethical considerations effectively. We have submitted our initial work in this regard as an ICER 2024 poster (Parthasarathy et al., 2024). We have also submitted a full paper at ICCE 2025 on ethics education.

## 2. Frameworks and Metrics for EdTech Implementation

This research strand specifically addresses the accelerating pace of technological disruption, where traditional K-12 competency frameworks struggle to keep pace with innovations emerging faster than ever. Rather than digitizing outdated content and practices, this work focuses on the critical implementation phase that fosters deep engagement and transferable skills. The goal is to create frameworks that ensure EdTech innovations land at their intended destination rather than on "a nearby hill"(Lakshmi & Patel, 2025) – supporting meaningful learning transformation rather than superficial technology adoption.

This research strand builds on principles to address: a) developing comprehensive frameworks for EdTech implementation that go beyond content delivery to transform

pedagogical approaches, b) creating metrics that measure not just access and engagement, but authentic learning outcomes in an AI-dominated landscape, c) integrating implementation science principles with considerations of how generative AI redefines mastery, expertise, and transdisciplinary skills, and d) establishing guidelines for evidence generation that prioritize adaptive expertise over static knowledge acquisition.

## 3. Inclusive by Design - EdTech for Neurodivergent Children

The promise of educational technology must extend to all learners, including the significant population of neurodivergent children (e.g., those in the autism spectrum, ADHD, and dyslexia). Standard EdTech products and implementation frameworks often fall short of meeting their unique cognitive and learning needs. This third research strand bridges this gap by focusing on:

- Designing technology-based interventions and pedagogical models that support executive functioning, personalized learning, and social-emotional development tailored to neurodivergent learning profiles.
- Investigating the ethical implications of using AI and learning analytics for this population, ensuring that technology promotes learner agency and data privacy rather than merely tracking deficits.
- Developing evidence-based practices for creating inclusive digital learning environments that accommodate diverse neurological profiles while maintaining educational rigor.

This work seeks to establish comprehensive guidelines for creating and implementing truly inclusive EdTech that empowers neurodivergent learners to thrive and flourish, while contributing to the broader understanding of universal design principles in educational technology.

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