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AN ANALYSIS ON "PROMOTING INCLUSIVITY: PSYCHOLOGICAL BENEFITS OF AI FOR STUDENTS WITH LEARNING DISABILITIES"

** Nandini Manjrekar, **Mrunmayee Sawant & *** Purva More*

Keraleeya Samajam's Dombivli's Model College

Abstract:

Artificial Intelligence (AI) is reshaping inclusive education by offering innovative tools that address the unique needs of students with learning disabilities. These learners—often facing challenges such as dyslexia, ADHD and processing disorders—frequently encounter emotional and psychological barriers in traditional learning environments, including academic anxiety, low self-esteem, and feelings of social exclusion. This research examines the psychological benefits of AI-driven educational tools in promoting inclusivity, emotional well-being, and academic confidence among students with learning disabilities.

AI-based technologies such as adaptive learning systems, intelligent tutoring programs, speech-to-text and text-to-speech tools, predictive writing assistants, and emotion-sensitive interfaces provide personalized, responsive, and accessible learning experiences. These tools adjust the pace, difficulty level, and mode of instruction to match each learner's abilities, reducing frustration and fostering a sense of progress and accomplishment. By delivering real-time feedback and continuous support without judgement, AI significantly reduces learning-related stress and enhances student's self-efficacy and motivation. The study highlights that AI promotes inclusivity by bridging gaps in comprehension, communication, and classroom participation. Students who previously struggled with reading, writing, or focusing can now engage more independently and confidently with academic content. This increased autonomy contributes to improved emotional resilience and cultivates a more positive self-image. Furthermore, AI helps diminish feelings of isolation by enabling students to keep pace with peers and participate more meaningfully in group activities. Overall, the findings suggest that AI serves as a powerful equalizer in education, not only improving academic outcomes but also creating a nurturing, psychologically supportive learning environment for students with diverse cognitive needs. By enhancing emotional well-being, confidence, and engagement, AI has the potential to transform inclusive education and empower students with learning disabilities to thrive both academically and personally.

Keywords: *Learning Disabilities; Inclusive Education; Psychological Well-being ;Self-Efficacy; Adaptive Learning; Educational Equity; Accessibility Tools; Student Engagement; Cognitive Support.*

Introduction:

The rapid advancement of Artificial Intelligence (AI) has introduced innovative methods to modern education, enabling more inclusive and adaptive learning environments. Students with learning disabilities such as dyslexia and ADHD often encounter difficulties within traditional teaching frameworks, leading to academic struggles and psychological challenges including anxiety, low motivation, and reduced self-esteem. These challenges may result in disengagement and feelings of exclusion. AI-based educational tools provide personalized learning experiences by adapting instructional content, learning pace, and feedback according to individual needs. Such personalized support helps reduce academic stress and promotes psychological well-being by fostering confidence and independence. This research paper explores how AI contributes to inclusivity by examining its psychological benefits for students with learning

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disabilities through a survey-based study.

Literature Review :

Existing literature highlights the increasing role of AI in inclusive and special education. Technologies such as intelligent tutoring systems, adaptive learning platforms, speech-to-text applications, and AIdriven feedback tools have shown positive effects on both academic performance and emotional wellbeing. Studies suggest that personalized learning environments help reduce anxiety and improve self-efficacy among students with learning difficulties. Furthermore, researchers emphasize that AI-based assistance minimizes stigma by providing discreet support, allowing students to learn without feeling singled out. Despite growing interest in this field, limited research focuses on students' psychological perceptions of AI tools, particularly in relation to inclusivity. The purpose of this study is to close this gap.

Artificial Intelligence (AI) has been widely studied for its potential to enhance inclusive education through personalized learning support. Holmes et al. [1] state that AI-driven educational technologies adapt learning content to individual learner needs, making them particularly effective for students with learning disabilities. Such personalization helps reduce cognitive overload and improves learner engagement.

Luckin et al. [2] highlight that intelligent tutoring systems adjust instructional pace and difficulty, thereby reducing anxiety and improving self-efficacy among learners. These adaptive systems allow students with learning difficulties to learn at their own pace, leading to improved psychological well-being.

Assistive technologies have also shown positive psychological outcomes. Alnahdi [3] found that the use of assistive and AI-based learning tools significantly improves emotional well being and academic confidence among students with learning disabilities.

Heffernan and Heffernan [4] demonstrated that AI-powered tutoring systems increase learner motivation and sustained engagement, especially for students who struggle in traditional classroom environments. Their findings emphasize the role of AI in supporting both academic and psychological needs.

Furthermore, UNESCO [5] reports that AI promotes inclusive education by providing discreet and equitable learning support, thereby reducing stigma associated with learning disabilities. A systematic review by Zawacki Richter et al. [6] also confirms that AI applications in education contribute to inclusivity by enabling personalized instruction and early identification of learning challenges.

Research Methodology :

A. Research Design

The study adopts a quantitative survey-based research design to analyze students' perceptions of AI in education.

B. Sample Size

The survey was conducted with 100 respondents, primarily students from the 15–25 age group.

C. Using a structured Google Forms survey, a questionnaire was designed, which included multiple choice and scaled questions relating to:

- Awareness of Learning Disabilities
- Awareness of AI tool usage & frequency of usage
- Psychological impact of AI-based learning tools

D. Data Analysis

Collected responses were analyzed using percentage-based statistical analysis to identify trends and interpret findings.

Results and Discussion :

This study examined perceptions of AI-based learning tools in inclusive education using responses from 102 participants, with a focus on students with learning disabilities. The findings reveal overwhelmingly positive attitudes toward AI integration, supported by strong numerical evidence.

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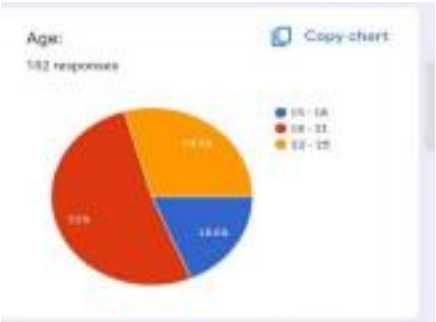
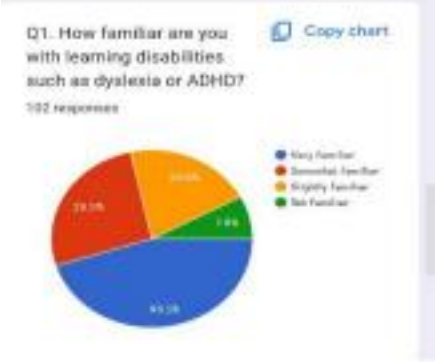
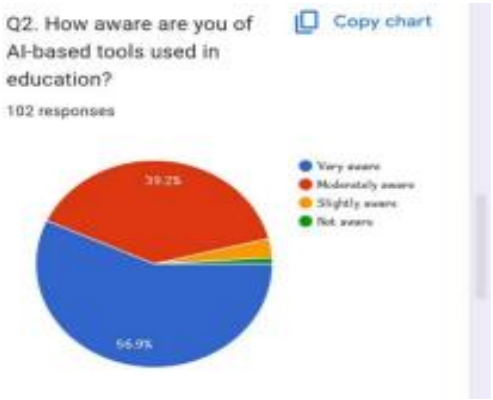
The majority of respondents were aged 18–21 years (52%, n=53), followed by 22–25 years (29.4%, n=30) and 15–18 years (18.6%, n=19), indicating a sample dominated by higher education learners. Awareness levels were high, with 71.6% (n=73) reporting moderate to high familiarity with learning disabilities and 96.1% (n=98) demonstrating at least moderate awareness of AI-based educational tools. AI usage was frequent and widespread: 70.6% (n=72) used AI tools daily and 23.5% (n=24) used them weekly, meaning 94.1% (n=96) engaged with AI tools regularly. The perceived academic benefits were substantial. 94.2% (n=96) agreed that AI-based tools reduce academic stress, while 89.2% (n=91) believed these tools improve self-confidence among students facing learning difficulties.

Inclusivity and effectiveness emerged as key strengths of AI integration. 86.3% (n=88) agreed that AI tools contribute to inclusive learning environments, and 79.4% (n=81) rated AI-based tools as more effective than traditional teaching methods. Furthermore, 91.1% (n=93) agreed that AI enhances student engagement and understanding. Despite the positive outlook, respondents identified notable concerns, including over-dependence on AI (46.1%, n=47), privacy issues (35.3%, n=36), and reduced human interaction (27.5%, n=28). However, 23.5% (n=24) reported no major concerns, suggesting that apprehensions do not outweigh perceived benefits.

Support for broader AI integration in inclusive education was nearly unanimous. 98.1% (n=100) expressed support, with 51% (n=52) strongly endorsing integration and 47.1% (n=48) supporting it to some extent. Overall, the findings provide strong empirical evidence that AI-based learning tools are widely accepted, frequently used, and perceived as effective in enhancing inclusivity, engagement, and learner well-being. While ethical and dependency-related concerns remain, the data clearly support the strategic integration of AI as a complementary tool in inclusive education.







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Q4. AI-based learning tools can reduce academic stress for students with learning disabilities.

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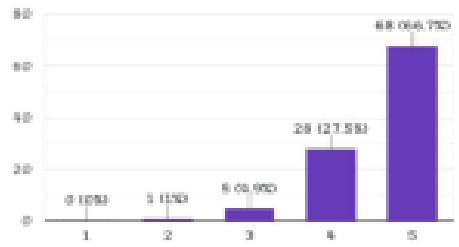
102 responses



Q7. Compared to traditional teaching methods, how effective are AI-based tools in helping students with learning disabilities keep pace with their peers?

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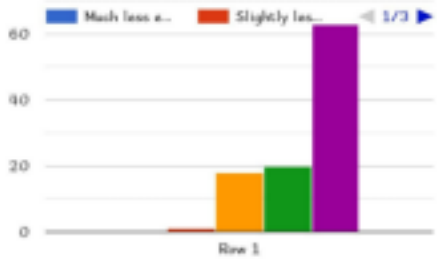

Q5. AI tools can improve self-confidence among students who struggle academically.

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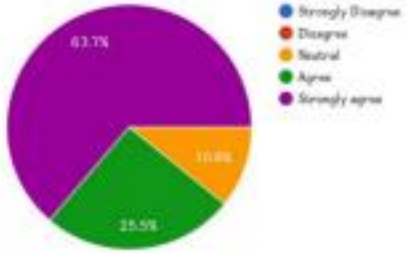
102 responses



Q8. How much do you agree that AI-based learning tools improve student engagement and understanding?

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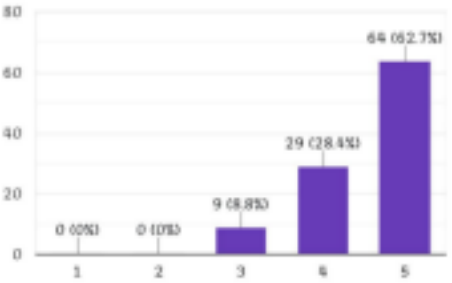
102 responses



Q6. To what extent do you think AI-based tools contribute to creating an inclusive learning environment for students with learning disabilities?

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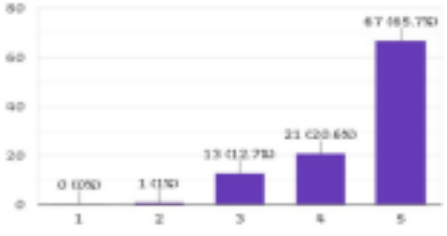
102 responses



Q9. What is the main concern regarding AI use in education?

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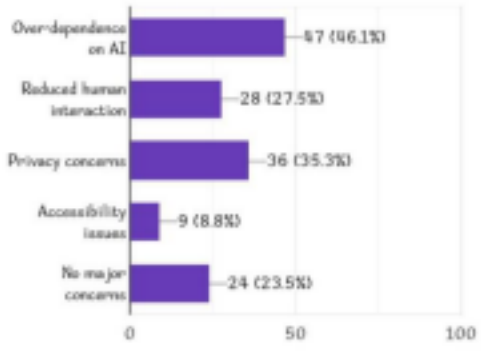
102 responses



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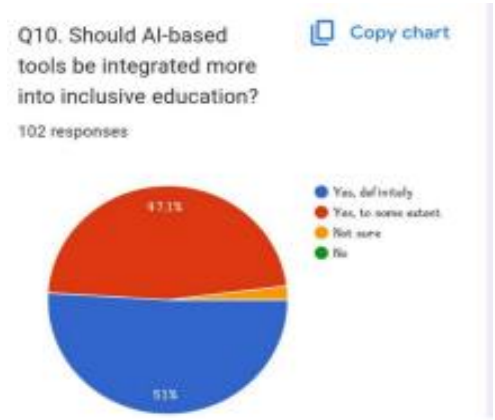

Figure: Survey responses

Conclusion:

This study highlights the significant role of Artificial Intelligence in promoting inclusivity and enhancing the psychological well-being of students with learning disabilities. Based on survey responses from 100 participants, the findings demonstrate that AI-based educational tools reduce academic stress, improve self-confidence, and increase student engagement. By offering personalized and stigma-free support, AI contributes to the development of inclusive and supportive learning environments. Future research may explore long-term psychological effects and the impact of specific AI technologies on diverse learner groups.

Acknowledgment :

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