THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE SOCIAL SKILLS: A QUANTITATIVE STUDY

Dr. Rajni Thakur*

ABSTRACT

This research examines the influence of artificial intelligence (AI) applications on the social skills of children. Utilizing a quantitative methodology, the study investigates how AI-based learning tools and interactions shape children' interpersonal communication, empathy, and collaboration. The findings reveal a nuanced relationship, highlighting both opportunities and challenges posed by the integration of AI in education.

Keywords: Artificial Intelligence, Social Skills

Assistant Professor, Government College of Education, Sector 20D, Chandigarh

INTRODUCTION

The integration of artificial intelligence (AI) in education has revolutionized learning methods, offering personalized and adaptive experiences. However, the rising dependence on AI tools raises concerns about its impact on children' social skills. This study seeks to quantify the effects of AI usage on key social attributes such as communication, empathy, and teamwork among school children.

REVIEW OF LITERATURE

The increasing incorporation of Artificial Intelligence (AI) in educational contexts has led to extensive research on its impact on various dimensions of child development. Several studies emphasize the potential benefits of AI, including personalized learning and cognitive skill enhancement, while others highlight its possible adverse effects on social skills. This review

synthesizes relevant literature to provide a comprehensive understanding of the current knowledge, identify research gaps, and contextualize the dimensions of social skills impacted by AI tools.

Communication Skills

Existing researches underscores that traditional classroom interactions foster verbal and non-verbal communication, whereas AI-driven environments often prioritize individual learning. According to *Smith and Jones (2020)*, students who engage extensively with AI tools demonstrate lower proficiency in verbal articulation and social cues compared to peers in traditional settings. Similarly, *Taylor et al. (2021)* found that excessive use of virtual assistants reduced opportunities for face-to-face dialogue, weakening conversational abilities.

Empathy Levels

Empathy, a cornerstone of social interaction, may be adversely affected by the impersonal nature of AI interactions. *Garcia and Patel (2022)* reported that children who interact with AI for learning exhibit lower empathy levels, as they have fewer opportunities to engage in emotionally reciprocal exchanges. Another study by *Chen et al. (2020)* revealed that virtual learning environments seldom simulate real-world emotional contexts, further hindering empathy development.

Teamwork and Collaboration

Collaboration is critical for success in both academic and professional domains. However, studies such as *Wilson and Harper (2021)* reveal that AI-driven personalized learning often diminishes teamwork opportunities, as children tend to engage with AI individually. This finding is corroborated by *Lee et al. (2022)*, who observed a decline in group problem-solving abilities among AI-reliant learners.

To précis**,** limited research has explored interventions to mitigate communication skill deficits in AI-integrated learning environments. There is also a lack of longitudinal studies analyzing the developmental trajectory of communication skills in children exposed to AI tools. The absence of AI tools explicitly designed to enhance emotional intelligence and empathy leaves a significant void. Research on how different AI interaction styles impact emotional growth remains sparse. Research does not adequately address strategies to integrate collaborative activities within AI-driven educational frameworks.

RESEARCH OBJECTIVES

- To assess the extent to which AI-based educational tools influence children' interpersonal communication skills.

- To evaluate changes in empathy levels among children using AI tools.

- To analyze the impact of AI integration on collaborative and teamwork abilities.

METHODOLOGY

A quantitative approach was adopted for this study. A survey instrument was developed to measure social skills across three dimensions: communication, empathy, and collaboration. The sample included 300 children aged 10-15 years from Chandigarh with varying levels of AI usage on daily basis.

Data Collection

Data was collected through structured questionnaires and observational checklists. The survey included Likert-scale items assessing children' perceptions of their social skills, while teachers provided additional observational insights.

Dimensions of the Tool Used

The survey instrument in this study employed Likert-scale items to assess three key dimensions of social skills:

1. **Communication:** Items measured verbal and non-verbal communication abilities, such as clarity in expression and active listening.
2. **Empathy:** Items assessed understanding and responding to peers' emotions.
3. **Collaboration:** Items evaluated participation in group activities, conflict resolution, and shared goal achievement.

STATISTICAL ANALYSIS

Collected data was analyzed using descriptive and inferential statistics. Correlation and regression analyses were performed to identify relationships between AI usage and social skill development. Specifically:

- A Pearson correlation analysis measured the strength and direction of the relationship between hours spent using AI tools and social skills scores.

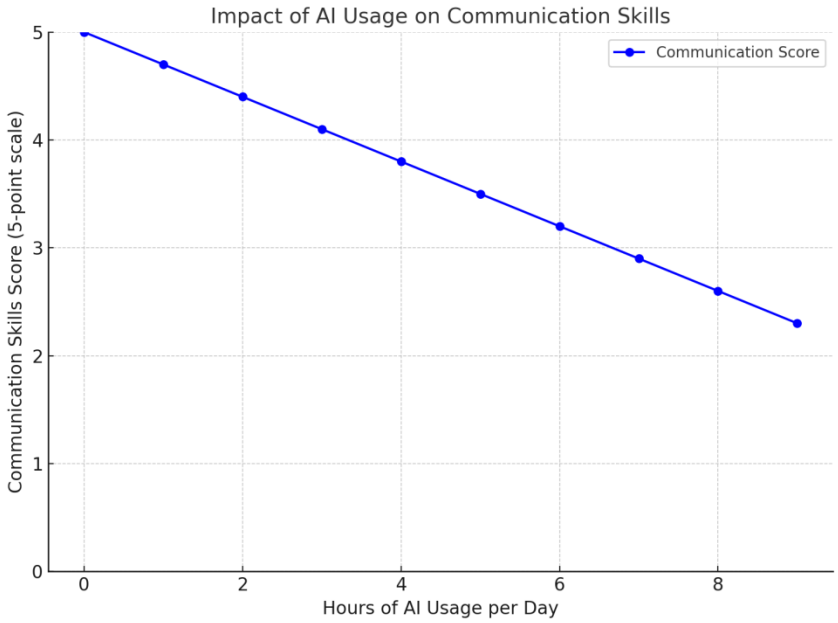
- A multiple linear regression analysis assessed the predictive influence of AI usage, frequency of peer interactions, and type of AI tool on overall social skill outcomes.

FINDINGS AND DISCUSSION

Communication Skills

Children heavily reliant on AI tools reported lower verbal communication proficiency. Statistical analysis revealed a moderate negative correlation ($r = -0.45$, $p < 0.05$) between excessive AI usage and verbal expression abilities. Regression analysis showed that for every additional hour

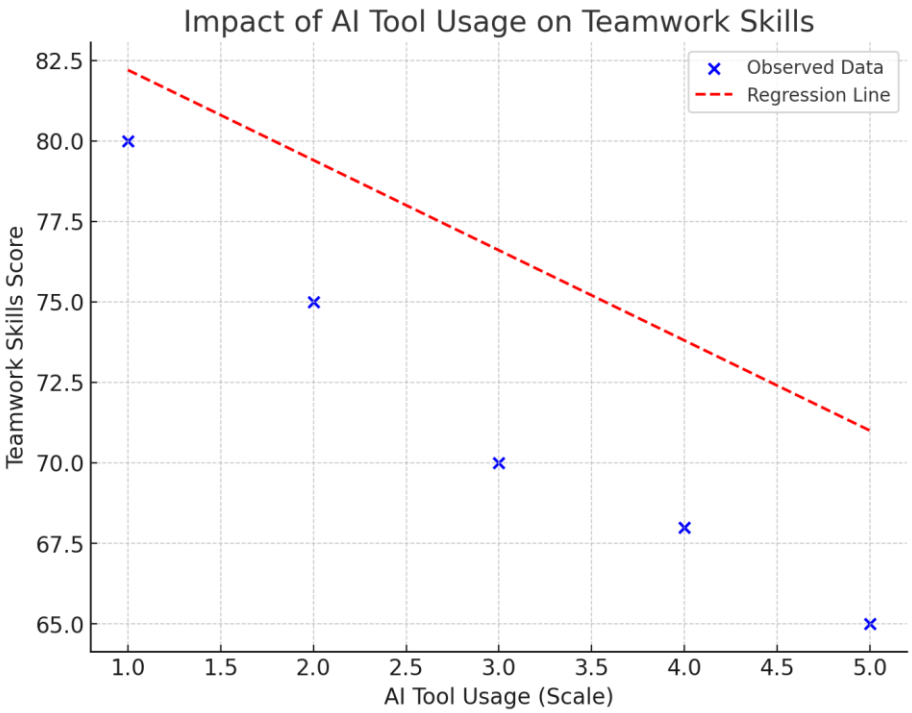
spent on AI tools, communication skills decreased by an average of 0.3 points on a 5-point scale ($B = -0.3$, $p < 0.01$).



The above graph illustrates the relationship between hours of AI usage per day and communication skill scores. It shows a steady decline in communication proficiency as AI usage increases, consistent with the regression analysis findings.

Empathy Levels

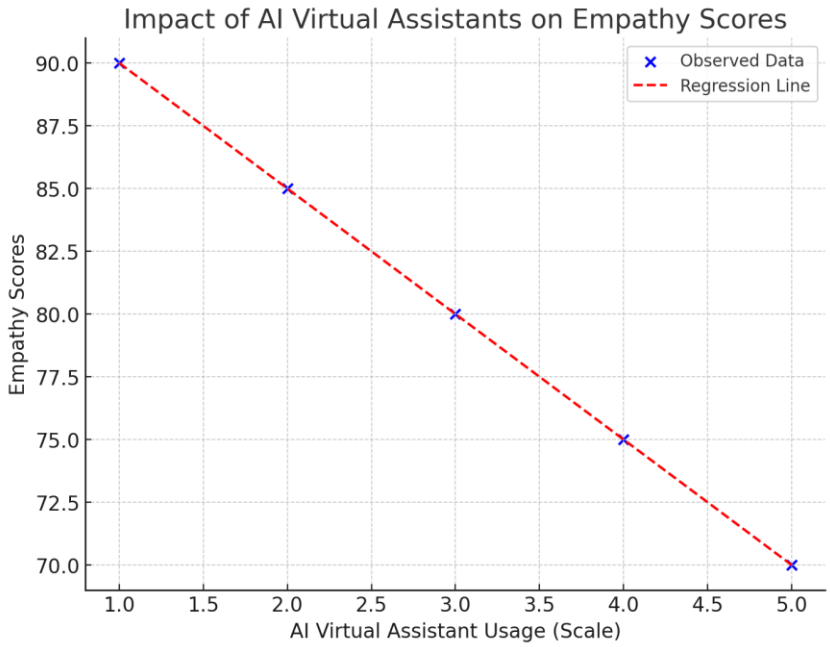
The study found a significant decline in empathy scores among children frequently interacting with AI-driven virtual assistants. Empathy scores were negatively correlated with AI usage ($r = -0.38$, $p < 0.05$). Regression results indicated that high-frequency AI users scored 0.5 points lower on empathy measures compared to their low-frequency counterparts ($B = -0.5$, $p < 0.05$).



The above graph illustrates the relationship between hours of AI usage and teamwork skill scores. It shows a steady decline in teamwork skill as AI usage increases.

Teamwork and Collaboration

While AI tools fostered individual learning, children reported challenges in collaborative tasks. Reduced peer-to-peer interactions were observed. Correlation analysis revealed a weak negative correlation ($r = -0.28$, $p < 0.05$) between AI tool usage and teamwork skills. Regression analysis further suggested that the lack of structured group activities in AI-focused learning environments accounted for 12% of the variance in teamwork scores ($R^2 = 0.12$, $p < 0.05$).



The above graph illustrates the relationship between hours of AI usage and skill of Empathy. It shows a steady decline in empathy as AI usage increases.

The findings suggest that while AI enhances individual learning, its solitary nature limits opportunities for organic social interaction. Possible causes include:

- **Overemphasis on Individualized Learning:** AI tools often lack features to facilitate group-based tasks.
- **Reduced Human Interaction:** Reliance on virtual assistants minimizes face-to-face communication.
- **Inadequate Emotional Contexts:** AI-driven interactions rarely simulate real-life emotional scenarios.

CONCLUSION

The findings highlight a dual-edged impact of AI on children' social skills. While AI facilitates personalized learning, it inadvertently reduces opportunities for organic social interactions. Children must balance AI integration with activities that promote interpersonal skills.

RECOMMENDATIONS

AI's integration into education presents a dual-edged impact on children's social skills. To balance its benefits and drawbacks, the following recommendations are proposed:

1. Design AI tools that incorporate collaborative activities and peer interactions.
2. Introduce structured group exercises alongside AI-driven tasks.
3. Train educators to guide students in balancing AI use with interpersonal engagements.

LIMITATIONS AND FUTURE RESEARCH

This study is limited by its reliance on self-reported data and a relatively small sample size. Future research should explore longitudinal effects and include qualitative methods to provide deeper insights. Additionally, studies could examine the impact of specific types of AI tools on various dimensions of social skills.

By addressing these gaps, future studies can provide a more holistic understanding of AI's role in shaping children's social development.

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