

Level of Artificial Intelligence Integration in the Learning Activities of Secondary School Students

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Abstract

Artificial Intelligence (AI) has increasingly become an integral component of contemporary education, influencing how students access information, engage with learning materials, and develop academic competencies. The present study aimed to examine the level of Artificial Intelligence integration in the learning activities of secondary school students. A descriptive survey method was employed on a sample of 800 Class IX students drawn from government and private secondary schools of Bilaspur district, Chhattisgarh, India. Data were collected using the Artificial Intelligence Scale (AIS-BSQHS) developed by Samreen Beig and Syed Hasan Qasim. Descriptive statistical techniques such as mean, standard deviation, frequency, and percentage were used for analysis. The findings revealed that the majority of students demonstrated moderate levels of AI integration, with a substantial proportion falling in the Average, Above Average, and High categories, while relatively few students exhibited very low or extremely high levels. The results indicate that AI-based tools are being used in learning but have not yet reached optimal integration. The study highlights the need for structured guidance, digital literacy training, and equitable access to technological resources to enhance effective AI use in secondary education.

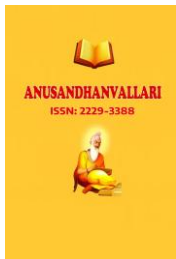
Keywords: Artificial Intelligence integration, secondary school students, digital learning, educational technology, AI in education, technology adoption

1. Introduction

Artificial Intelligence has emerged as one of the most transformative technological developments of the twenty-first century. In education, AI-driven tools such as adaptive learning systems, intelligent tutoring platforms, virtual assistants, automated feedback systems, and personalized learning applications are reshaping traditional teaching-learning processes. These technologies enable students to access information instantly, learn at their own pace, and receive customized support based on individual needs.

Secondary school students represent a critical group in this transformation. At this stage, learners begin to develop independent study habits, conceptual understanding, and digital competencies essential for higher education and future careers. Exposure to AI-based learning resources through smartphones, computers, and online platforms has become increasingly common. However, the extent to which students actually integrate AI tools into their academic activities varies widely depending on access, awareness, guidance, and socio-economic factors.

Understanding the level of AI integration among students is essential for designing effective educational strategies. If integration is low, interventions such as infrastructure development and training may be required. If integration is high but unstructured, guidance on responsible and meaningful use becomes necessary. Therefore, assessing the current level of Artificial Intelligence integration in learning activities provides valuable insights for educators, policymakers, and curriculum planners.



2. Review of Literature

Recent research indicates growing adoption of Artificial Intelligence in education worldwide. Holmes, Bialik, and Fadel (2019) emphasized that AI has the potential to personalize learning and enhance educational outcomes by adapting content to individual student needs. Luckin et al. (2016) highlighted that intelligent tutoring systems can provide real-time feedback and support independent learning.

In the Indian context, studies by Sharma and Gupta (2021) found that secondary school students frequently use digital platforms and AI-enabled applications for academic purposes, though usage patterns differ across urban and rural settings. Kumar and Singh (2022) reported that students with better access to technological devices demonstrate higher engagement with AI-based learning tools.

Research on technology adoption also suggests that mere availability of digital tools does not guarantee effective integration. According to Davis' Technology Acceptance Model (1989), perceived usefulness and ease of use significantly influence adoption behavior. Students may possess devices but may not utilize AI capabilities for meaningful learning due to lack of awareness or guidance.

Furthermore, gender, socio-economic background, and school infrastructure have been identified as important factors affecting technology use in education (UNESCO, 2021). Studies consistently emphasize the need for digital literacy programs to ensure equitable and effective integration of emerging technologies.

Despite increasing attention, empirical studies specifically examining the level of Artificial Intelligence integration among secondary school students in Indian school settings remain limited. The present study attempts to fill this gap.

3. Objective of the Study

Objective 1:

To study the level of Artificial Intelligence integration in the learning activities of secondary school students.

4. Hypothesis

Null Hypothesis (H01):

There is no significant variation in the level of Artificial Intelligence integration among secondary school students.

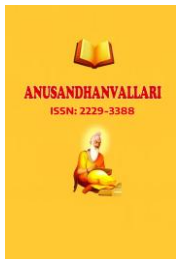
5. Methodology

5.1 Research Design

The study adopted a quantitative descriptive survey design, appropriate for assessing the existing status of a phenomenon without manipulating variables.

5.2 Population

The population comprised all Class IX students studying in secondary schools of Bilaspur district, Chhattisgarh.



5.3 Sample

A sample of 800 secondary school students was selected using multistage sampling. Students were drawn from both government and private schools located in urban and rural areas.

5.4 Tool Used

Artificial Intelligence Scale (AIS–BSQHS) developed by Samreen Beig and Syed Hasan Qasim (NPC, Agra) was used to measure the level of Artificial Intelligence integration among secondary school students. The scale consists of 29 items based on a five-point Likert response format. It measures four dimensions, namely AI as a way of life, AI as a system, pessimism in AI, and AI as a controller. The tool possesses satisfactory reliability with a Cronbach's Alpha coefficient of 0.74, and its validity has been established through factor analysis, indicating its suitability for educational research.

5.5 Procedure of Data Collection

Prior to data collection, formal permission was obtained from the heads of the selected schools to conduct the study. The purpose and significance of the research were explained to the participants, and they were assured that their responses would be kept strictly confidential and used solely for academic purposes. The selected research instrument was administered to the students in a classroom setting during regular school hours under the direct supervision of the investigator. Clear instructions regarding the completion of the tool were provided to ensure uniformity in responses. Adequate time was given to the participants to complete the instrument without haste. After administration, all response sheets were carefully scrutinized for completeness and accuracy. The collected data were then coded, classified, and systematically tabulated in preparation for statistical analysis in accordance with the objectives of the study.

5.6 Statistical Techniques Used

- Mean
- Standard Deviation
- Frequency
- Percentage

6. Analysis and Interpretation

Distribution of Students Across Levels of AI Integration (N = 800)

Level of AI Integration	Frequency	Percentage
Extremely High	92	11.50%
High	148	18.50%
Above Average	176	22.00%
Average	210	26.30%
Below Average	96	12.00%
Low	54	6.80%
Extremely Low	24	3.00%
Total	800	100%

Interpretation

The analysis indicates that the largest proportion of students falls in the **Average category (26.3%)**, followed by Above Average (22.0%) and High (18.5%). Only a small percentage of students belong to Low (6.8%) and Extremely Low (3.0%) categories.

This pattern suggests that Artificial Intelligence tools are moderately integrated into students' learning activities. Most students appear to be aware of and use AI-enabled technologies to some extent, but full integration has not yet been achieved.

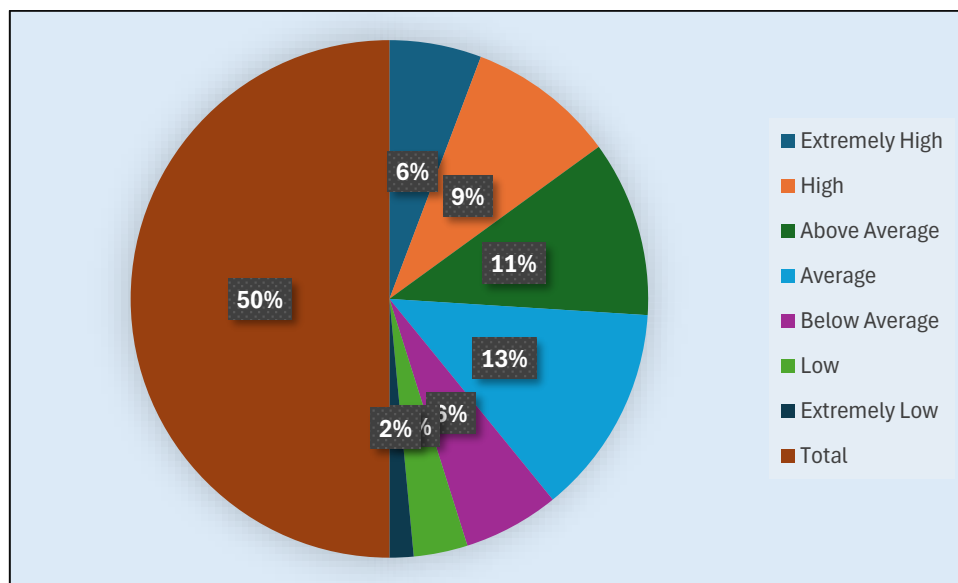


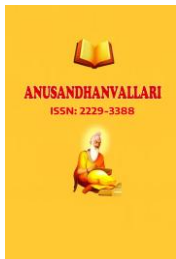
Figure 1- Levels of AI Integration (N = 800)

7. Conclusion

The study concludes that secondary school students demonstrate a moderate level of Artificial Intelligence integration in their learning activities. AI-based educational tools are being utilized by students; however, their use is not yet optimal or systematic. The findings reflect a growing adoption of digital and AI-supported learning technologies among students, indicating an increasing dependence on technology for academic purposes. At the same time, the results highlight the need for structured implementation, proper guidance, and pedagogical support to ensure that Artificial Intelligence tools are used effectively and responsibly to enhance learning outcomes.

8. Educational Implications

The findings of the study have significant implications for educational practice. Schools should provide adequate technological infrastructure, including reliable internet connectivity, digital devices, and AI-enabled learning platforms, to facilitate effective use of Artificial Intelligence in education. Teachers should be encouraged and trained to integrate AI-based tools into their pedagogy in order to enhance instructional effectiveness, personalize learning, and promote student engagement. Students should also receive proper guidance and training on the



responsible, ethical, and purposeful use of AI technologies for academic purposes. The introduction of structured digital literacy programs is essential to equip learners with the skills required to evaluate information critically and use technology productively. Furthermore, educational institutions and policymakers must ensure equitable access to technological resources so that all learners, regardless of socio-economic background, can benefit from AI-supported learning opportunities.

9. Suggestions for Future Research

Future research may examine Artificial Intelligence integration across different educational levels such as primary, higher secondary, and higher education to determine variations in its use and effectiveness. Comparative studies across different regions, school types, and socio-economic contexts may also be undertaken to obtain a broader understanding of AI integration in diverse educational settings. Further investigations may focus on the impact of AI integration on specific learning outcomes, including critical thinking, problem-solving ability, and academic performance. Researchers may also explore qualitative aspects such as students' perceptions, attitudes, experiences, and challenges related to the use of Artificial Intelligence in learning. In addition, longitudinal studies may be conducted to examine the long-term effects of sustained AI use on students' educational development, study habits, and overall academic progress.

10. References

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