

REVIEWER'S REPORT

Manuscript No.: IJAR-52375

Date: 20.06.2025

Title: Exploring the Impact of Using Intelligent Tutoring Systems (ITS) for Biology Learning on Higher Secondary Students' Learning Motivation and Academic Achievement in Biology.,

Recommendation:

Accept as it is

Accept after minor revision

Accept after major revision

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		√		
Techn. Quality		√		
Clarity	√			
Significance		√		

Reviewer Name: Dr P Karthikeyan

Date: 20.06.2025

Reviewer's Comment for Publication.

The manuscript makes a significant contribution by empirically examining the impact of Intelligent Tutoring Systems (ITS) on higher secondary students' motivation and achievement in Biology within the Indian context. Its strengths lie in the robust quantitative design, use of validated tools, and nuanced analysis across gender and board affiliations. The study's key insight is that while ITS usage strongly enhances learning motivation, its direct effect on academic achievement is less pronounced, highlighting the importance of integrating digital tools with broader pedagogical strategies for optimal educational outcomes

REVIEWER’S REPORT

Detailed Reviewer’s Report

Criteria	Rating	Comments
Originality	Good	The study addresses a timely and under-explored area in Indian education: the impact of Intelligent Tutoring Systems (ITS) on Biology learning motivation and achievement at the higher secondary level. While ITS research is well-established globally, its application within Indian school systems, especially with board and gender comparisons, is relatively novel. The study’s originality lies in its context and demographic focus, though the research questions and methodology are standard for educational technology studies.
Technical Quality	Good	The research demonstrates solid technical quality. The methodology is sound, using stratified random sampling, validated instruments, and appropriate statistical analyses (t-tests, ANOVA, correlations). Reliability of the tools is high (Cronbach’s alpha >0.93), and the sample size (n=257) is adequate for the study’s scope. Data analysis is thorough and clearly presented. However, the study relies on self-reported ITS usage and does not differentiate between types or quality of ITS platforms, which limits technical depth.
Clarity	Excellent	The article is well-structured, following academic conventions with clear sections: abstract, introduction, literature review, methodology, results, discussion, and conclusion. Tables and figures are used effectively to present data. Definitions of key terms and operational variables are precise. The language is accessible, and findings are logically explained, making the paper easy to follow for both specialists and general readers.
Significance	Good	The study provides valuable insights for educators, curriculum planners, and policymakers, especially in the context of increasing digitalization in Indian education. Its findings on the relationship between ITS usage, motivation, and achievement can inform future curriculum design and digital integration strategies. The research also highlights board-wise and gender disparities, which are significant for policy interventions. However, the limited geographic and board scope restricts broader significance.

Detailed Comments

Originality

The study’s focus on ITS in Indian higher secondary Biology classrooms is original, especially with its emphasis on gender and board differences. While ITS is not a new concept globally, its empirical evaluation in this specific context is innovative. However, the research design and hypotheses are typical for educational intervention studies, so the conceptual originality is moderate.

Technical Quality

The technical execution is strong: the study uses validated tools, a robust sampling strategy, and appropriate statistical methods. The reliability scores for the instruments are high, and the statistical analyses are comprehensive. The main limitation is the reliance on self-reported data for ITS usage and lack of granularity regarding the types of ITS platforms used. These factors somewhat constrain the technical rigor.

Clarity

The manuscript is exceptionally clear. Each section is well-organized, and the writing is concise and precise. Definitions and methodological details are explicit, making the research transparent and

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

REVIEWER'S REPORT

reproducible. Tables and figures enhance comprehension. The discussion and conclusion sections effectively synthesize findings and contextualize them within the broader literature.

Significance

The study's findings are significant for stakeholders in Indian education, particularly as digital learning becomes more central post-pandemic. The identification of motivational benefits from ITS, as well as board and gender differences, provides actionable insights. However, the study's impact is limited by its regional focus and exclusion of other educational boards. Broader studies would be needed to generalize the findings nationally or internationally.

Overall Assessment:

This article is a well-executed and clearly presented contribution to the field of educational technology in India. It is particularly relevant for those interested in the intersection of digital pedagogy, motivation, and achievement in science education. The study is recommended for publication with minor suggestions for future research to address its limitations.