



PERCEPTION OF E-ASSESSMENT AND ACADEMIC SUCCESS OF FRESHMAN UNDERGRADUATE STUDENTS: A COMPREHENSIVE STUDY IN WEST BENGAL

Pratap Bera ¹, Animesh Jana ² & Dr. Asit Kumar Jana ³

RESEARCH ARTICLE



Author Details:

¹ & ² B. Ed. Student,
Babasaheb Ambedkar Education
University, Kolkata, West Bengal,
India;
³ Principal,
West Point School of Education,
Bankura, West Bengal, India

Corresponding Author:

Pratap Bera

DOI:

<https://doi.org/10.70096/tssr.250306050>

Abstract

The integration of information and communication technology has positioned e-assessment as a transformative tool in higher education. This study investigated to know the present status of perception of e-assessment and its relationship with academic success among freshman undergraduate students. The study was 240 students' sample from five institutions in Paschim Medinipur district, West Bengal, using a descriptive survey method and a cross-sectional research design with a self-developed reliable scale. Findings revealed that female students showed better perception than males, though not statistically significant. Urban students demonstrated significantly more favorable perceptions than rural students. Arts stream students exhibited significantly higher perception than science stream students. A positive but statistically non-significant relationship was observed between e-assessment perception and academic success. The study concludes that habitation and academic discipline significantly shape e-assessment perceptions, highlighting the need for bridging the urban-rural digital divide and developing discipline-sensitive assessment platforms in West Bengal's higher education landscape.

Keywords: E-assessment Perception, Academic Success, Freshman Students, Digital Divide

Introduction

In the 21st century, information and communication technology (ICT) has reshaped our world by boosting productivity in positive ways (Patra et al., 2022). Nearly every part of our daily lives is being transformed by ICT. It has become a powerful force that has changed many areas of human activity. Looking at the past twenty to thirty years, fields like healthcare, tourism, finance, business, law, and architecture have all been deeply affected by ICT. These industries operate very differently today than they used to, thanks to the enormous impact of technology.

E-assessment, or assessment based on information technology, has emerged as one approach to solving certain problems found in traditional assessment methods. It has proven effective in several ways: delivering instant results and feedback, saving tutors time and effort, supporting the assessment of problem-solving skills, and boosting student performance, with the last benefit occurring because direct feedback helps students gradually improve their results over time (Ridgway et al., 2004; Crews & Curtis, 2010; Gikandi et al., 2011; Gilbert et al., 2011; Way, 2012; Sorensen, 2013). Similarly, e-assessment is playing an increasingly important role in the transformation of higher education, particularly in how to harness the full potential of digital assessment methods to enhance learning processes for both students and teachers (Whitelock, 2009). And just as with broader ICT applications, the core principles of assessment-validity, flexibility, and fairness-remain unchanged, even in an electronic environment (Benson, 2003).

Rationale of the Study

The significance for this comprehensive study on the perception of e-assessment and academic success among freshman undergraduate students in West Bengal is grounded in several critical considerations. First, the emergency shift to online evaluation during the COVID-19 pandemic exposed significant gaps in institutional preparedness and assessment validity across Indian higher education institutions, with research conducted in West Bengal revealing that the system was not ready for such rapid change, making the evaluation process chaotic (Chattopadhyay et al., 2023); the same study found that summative evaluations maintained traditional question patterns while formative assessments changed arbitrarily, and the absence of teacher supervision led to widespread ethical concerns, including academic misconduct and cheating, with the emergency shift failing to differentiate between high and low achievers, raising serious questions about the validity and effectiveness of online evaluation approaches (Chattopadhyay et al., 2023). Second, despite these challenges, students generally favor electronic assessment

methods due to their flexibility, convenience, and quick results (Mohamed et al., 2024), with research showing that students report positive perceptions of digital learning environments, finding them helpful, engaging, and enjoyable (Gupta et al., 2025); however, significant challenges persist, including network connectivity issues, invigilation difficulties, management of response scripts, and technological equity concerns (Yasmin et al., 2024), and approximately 50% of students in Indian higher education prefer a balanced approach between online and offline teaching, learning, and evaluation (Kareem et al., 2025). Third, West Bengal presents a unique and compelling context for this investigation, as the state has witnessed significant digital education initiatives, including the implementation of integrated AI-enabled assessment systems at major universities-for instance, Maulana Abdul Kalam Azad University of Technology (MAKAUT), a large public university in West Bengal with over 150,000 enrolled students, adopted the UCanAssess system, resulting in a 50% reduction in assessment costs, 75% reduction in time, and a remarkable 90% decrease in student grievances and re-evaluation requests (e-Assessment Association, 2022)-while concurrently, the West Bengal government has partnered with Oracle to train 15,000 students and professionals in AI, cloud computing, and cybersecurity by 2029 (Oracle, 2026), and the West Bengal Council of Higher Secondary Education is introducing contemporary, project-based subjects delivered online (Hindustan Times, 2026); these initiatives signal a strong policy commitment to digital transformation, yet empirical evidence on how freshman students perceive and succeed in e-assessment environments remains limited. Fourth, the freshman year represents a critical transition period in higher education, as first-year students are particularly vulnerable to assessment-related stress and may lack the self-regulation skills necessary for successful engagement with digital assessment formats (Singh & Thakur, 2025), and research comparing learner perceptions toward traditional versus online assessments found that while students generally rate online testing more positively, particularly regarding accessibility and technological integration, perceived stress levels do not differ significantly between modalities (Singh & Thakur, 2025); thus, understanding how freshmen-who are navigating the transition from school to university-level expectations-perceive e-assessment is essential for designing supportive interventions. Finally, while existing research has explored e-assessment implementation and challenges in West Bengal during the COVID-19 emergency (Chattopadhyay et al., 2023; Yasmin et al., 2024), no comprehensive study has systematically examined the relationship between freshman students' perceptions of e-assessment and their actual academic success in the post-pandemic normalcy; as higher education institutions across West Bengal continue to integrate technology into assessment practices, there is an urgent need for evidence-based insights that can inform policy, improve institutional preparedness, and enhance student learning outcomes, and this study addresses this gap by providing a comprehensive analysis of how freshman undergraduate students in West Bengal perceive e-assessment and how these perceptions relate to their academic achievement.

Delimitations of the Study

- i. The study was delimited to only one district i.e., Paschim Medinipur, West Bengal.
- ii. The study was delimited to only arts and science stream category students selected.
- iii. The study was delimited to 240 undergraduate students selected.
- iv. The study was delimited to only five institutions of Paschim Medinipur districts college students.
- v. The study was delimited to only three independent variables i.e., gender, habitation, and academic stream selected.
- vi. The study was delimited to only one dependent variable such as E-assessment.

Objectives of the Study

- i. To know the present status of E-assessment among students in West Bengal.
- ii. To examine the perception of E-assessment among students by their gender.
- iii. To find out the perception of E-assessment among students in respect to their habitation.
- iv. To observe whether the perception of E-assessment among students in terms of their academic streams.
- v. To determine the relationship between perception of E-assessment and academic success of students.

Hypotheses of the Study

H₀1: There is no significant difference in perception of E-assessment among students in respect to their gender.

H₀2: There is no significant difference in perception of E-assessment among students by their habitation.

H₀3: There is no significant difference in perception of E-assessment among students by their academic streams.

H₀4: There is no significant relationship between perception of E-assessment and academic success of students.

Methodology

The present study adopted a descriptive survey research method with a cross-sectional design to investigate the perception of e-assessment and its relationship with academic success among undergraduate freshman students in West Bengal. The population of the study comprised all first-year undergraduate students enrolled in higher education institutions across West Bengal. From this population, a sample of 240 students was selected using a simple random sampling technique, ensuring that each individual had an equal chance of being included in the study.

In this study, perception of e-assessment was treated as the dependent variable. The study also considered several independent or demographic variables, including gender, habitation, and academic stream. Additionally, academic success was incorporated as a key variable to examine its association with students' perceptions of e-assessment.

Tools used for data collection

For data collection in the present study, the researcher used a self-developed questionnaire known as the **E-assessment Scale**. This instrument consisted of 15 items based on a five-point Likert format, ranging from strongly agree to strongly disagree, with total possible scores ranging from 15 to 75. In the preliminary phase, the scale was administered to a small sample of 120 participants to examine its reliability and validity. The reliability coefficient, measured using Cronbach's alpha, was found to be 0.862, indicating an acceptable level of internal consistency. Following this pilot testing, the scale was considered suitable for final data collection. When subsequently administered to the full sample of 240 students, the Cronbach's alpha value increased to 0.892, reflecting strong reliability. Additionally, the researcher assessed both content validity and face validity of the tool to ensure its appropriateness for measuring the intended constructs.

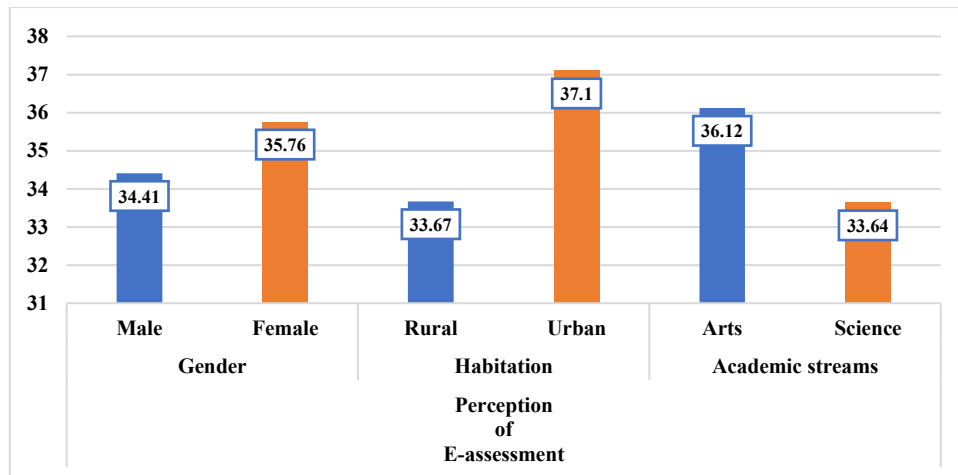
Results

Table 1: Descriptive statistics regarding different independent variables

DV	IV	Category	N	Mean	Sd
Perception of E-assessment	Gender	Male	150	34.41	6.134
		Female	90	35.76	6.160
	Habitation	Rural	153	33.67	5.411
		Urban	87	37.10	6.803
	Academic streams	Arts	123	36.12	5.960
		Science	117	33.64	6.147

Note: DV= Dependent Variable, IV= Independent Variable, N= Number of students, Sd= Standard Deviation

Fig. 1: Showing perception of e-assessment by different independent variables



Interpretations

Table 1 and fig. 1 presents the descriptive statistics of students’ perception of e-assessment across selected independent variables, namely gender, habitation, and academic stream. With respect to gender, female students (M = 35.76, SD = 6.160) demonstrated higher level of perception towards e-assessment than male students (M = 34.41, SD = 6.134). In terms of habitation, students from urban areas (M = 37.10, SD = 6.803) reported more favorable perceptions than those from rural areas (M = 33.67, SD = 5.411). Regarding academic streams, students belonging to the arts stream (M = 36.12, SD = 5.960) exhibited a more positive perception of e-assessment compared to students from the science stream (M = 33.64, SD = 6.147).

Hypothesis testing

Table 2: Inferential statistics based on H01 to H03

DV	IV	t-value	df	Sig. (2-tailed)	MD	Remarks at 0.05 level
Perception of E-assessment	Gender	-1.647	238	0.101	-1.349	Failed to reject p> 0.05
	Habitation	-4.301	238	0.000*	-3.437	Rejected P<0.05
	Academic stream	3.175	238	0.002*	2.481	Rejected P<0.05

Note: DV= Dependent Variable, IV= Independent Variable, df- Degree of Freedom, MD- Mean Difference

Results of H01: It can be observed from Table 2 that the computed t-value of perception of e-assessment based on gender is t (240) = -1.647; p-value= 0.101. The difference in the mean is statistically not significant at 0.05 level (p>0.05). Therefore, the H01 mentioned above is failed to reject and found differences can be attributed to any chance factor.

Results of H₀₂: It can be observed from Table 2 that the computed t-value of perception of e-assessment based on habitation is $t(240) = -4.301$; $p\text{-value} = 0.000^*$. The difference in the mean is statistically significant at 0.05 level ($p < 0.05$). Therefore, the H₀₂ mentioned above is rejected and found differences can be attributed to any chance factor.

Results of H₀₃: It can be observed from Table 2 that the computed t-value of perception of e-assessment based on academic stream is $t(240) = 3.175$; $p\text{-value} = 0.002^*$. The difference in the mean is statistically significant at 0.05 level ($p < 0.05$). Therefore, the H₀₃ mentioned above is rejected and found differences can be attributed to any chance factor.

Table 3: Pearson correlations between academic success and e-assessment

Correlations between academic success and e-assessment		E-assessment
Academic success	Pearson Correlation	0.074
	Sig. (2-tailed)	0.250
	N	240

It is found that the academic success and e-assessment strongly positive relationship between them but it was found to be statistically not significant ($p > 0.05$).

Major findings

- i. Female students have showed better perception of e-assessment than male students but the difference was found to be statistically not significant.
- ii. Urban habitation students have showed better perception of e-assessment than rural habitation students and the difference was found to be statistically significant.
- iii. Arts stream students have showed better perception of e-assessment than science stream student and the difference was found to be statistically significant.
- iv. Academic success and e-assessment was a strongly positive relationship between them but it was found to be statistically not significant.

Discussion

The findings of the present study indicate that female students demonstrated a comparatively better perception of e-assessment than male students, although the difference was not statistically significant, suggesting that gender is no longer a strong determinant of technology acceptance; this aligns with the technology acceptance perspective proposed by Venkatesh et al. (2003), who argued that gender differences diminish with increased exposure to digital tools, and is further supported by Yau and Cheng (2012), though it contrasts with Ong and Lai (2006) who reported higher male confidence in technology use; in the context of West Bengal, increasing access to smartphones and digital education initiatives has contributed to narrowing gender gaps. In contrast, urban students showed a significantly better perception of e-assessment than rural students, which is consistent with the digital divide theory highlighted by Selwyn (2010) and reports from UNESCO, reflecting disparities in infrastructure, connectivity, and digital literacy; this is particularly relevant in regions like Kolkata compared to rural areas of the state, thereby strengthening the reliability of this finding. Furthermore, Arts students exhibited significantly more positive perceptions than Science students, which may be attributed to the theoretical nature of Arts subjects being more adaptable to e-assessment formats, supporting the views of Bennett (2002), although it contradicts findings by Kay (2011) who suggested that students with greater technological exposure (often in science streams) show more favorable attitudes; in West Bengal, the practical and laboratory-based orientation of science education may limit the effectiveness of e-assessment, thus justifying this result. Finally, although a strong positive relationship was found between academic success and e-assessment, it was not statistically significant, indicating that positive perception alone may not directly influence academic success; similar result supported these findings (Means et al. 2010) while differing from Sung et al. (2016) who reported significant effects, and in the West Bengal context, external factors such as inconsistent internet access, socio-economic constraints, and varying levels of digital competence may mediate this relationship, thereby making the overall findings both contextually grounded and reliable.

Conclusion

In conclusion, the study strongly establishes that while e-assessment is gaining acceptance among students, its effectiveness and perception are significantly shaped by contextual realities rather than individual factors like gender; the persistent rural–urban divide and discipline-specific challenges highlight the need for infrastructural development, inclusive digital policies, and subject-sensitive assessment strategies. Therefore, for e-assessment to become truly effective and equitable in West Bengal, policymakers and educators must address these systemic barriers, ensuring not only access but also quality and relevance of digital assessment practices.

Acknowledgment: No

Author's Contribution: Pratap Bera: Data Collection, Literature Review, Methodology, Referencing; Animesh Jana: Analysis; Dr. Asit Kumar Jana: Referencing

Funding: No

Declaration: All the authors have given consent for the publication.

Competing Interest: No

References

1. Bennett, R. E. (2002). Inexorable and inevitable: The continuing story of technology and assessment. *The Journal of Technology, Learning and Assessment*, 1(1), 1-24.
2. Benson, A. D. (2003). Assessing participant learning in online environments. *New Directions for Adult and Continuing Education*, 2003(100), 69-78.
3. Benson, A. D. (2003). Assessing participant learning in online environments. *New Directions for Adult and Continuing Education*, 2003(100), 69-78.
4. Chatopadhyay, R., Sen, P., Gurung, P., Maity, B., & Bhowmik, S. (2023). Approaches to online evaluation in higher education in the emergency shift of COVID- 19: An empirical study of West Bengal. *International Journal of Social Sciences and Management*, 10(4), 66-74.
5. Crews, T. B., & Curtis, D. F. (2010). Online course evaluation: Student and instructor perspectives. *International Journal of Information and Communication Technology Education*, 6(4), 29-39.
6. Crews, T. B., & Curtis, D. F. (2010). Online course evaluation: Student and instructor perspectives. *International Journal of Information and Communication Technology Education*, 6(4), 29-39.
7. E-Assessment Association. (2022). *Best summative assessment project 2022: MAKAUT*.
8. Gikandi, J. W., Morrow, D., & Davis, N. E. (2011). Online formative assessment in higher education: A review of the literature. *Computers & Education*, 57(4), 2333-2351.
9. Gikandi, J. W., Morrow, D., & Davis, N. E. (2011). Online formative assessment in higher education: A review of the literature. *Computers & Education*, 57(4), 2333-2351.
10. Gilbert, L., Whitelock, D., & Gale, V. (2011). Synthesis report on assessment and feedback with technology. *JISC*.
11. Gilbert, L., Whitelock, D., & Gale, V. (2011). *Synthesis report on assessment and feedback with technology*. *JISC*.
12. Gupta, A., Raj, M., & Gupta, A. (2025). E-Learn INVITE: Assessing the perceptions of students' and teachers' towards blended learning and its effectiveness on the learning performance of students-A case study in an Indian higher education institution. *International Journal on E-Learning*, 24(1), 33-62.
13. Hindustan Times. (2026, February 26). *Bengal HS Council to introduce contemporary, project-based subjects from next academic session*.
14. Kareem, J., Venkatesh, A., & Abhaya, N. B. (2025). From classrooms to clicks: Exploring student attitudes and challenges in the shift to digital learning in higher education. *Informing Science Institute*.
15. Kay, R. H. (2011). Exploring the use of technology in education: A review of research. *Educational Technology Research and Development*, 59(4), 587-603.
16. Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies*. U.S. Department of Education.
17. Mohamed, E. F., Hassan, N., Wasfy, N. F., & Fouad, S. (2024). Developing, validating, and implementing a tool for evaluating electronic assessment at the Faculty of Medicine, Suez Canal University from the students' point of view. *Journal of Health Professions Education and Innovation*, 1(4), 1-16.
18. Ong, C. S., & Lai, J. Y. (2006). Gender differences in perceptions and relationships among dominants of e-learning acceptance. *Computers in Human Behavior*, 22(5), 816-829.
19. Oracle. (2026, February 4). *Oracle partners with West Bengal government to train 15,000 in AI and cloud*. DQ India.
20. Patra, I., Al-Rubai, F. R. H., Al-Hchaimi, A. A. J., & Mubarak, A. A. H. (2022). The role of information and communication technology (ICT) in modern world. *Journal of Positive School Psychology*, 6(3), 7653-7661.
21. Patra, S., Mandal, C., & Mura, GC (2022). Educational Technology to ICT: How India Is Advancing in Education. *International Journal of Multidisciplinary Educational Research*, 11, 10(6), 32-37.
22. Ridgway, J., McCusker, S., & Pead, D. (2004). Literature review of e-assessment. *Futurelab*.
23. Ridgway, J., McCusker, S., & Pead, D. (2004). *Literature review of e-assessment*. Futurelab.
24. Selwyn, N. (2010). Degrees of digital division: Reconsidering digital inequalities and contemporary higher education. *Rethinking Learning for a Digital Age*, 274-280.
25. Singh, P., & Thakur, G. R. (2025). Comparative study of learner perceptions towards assessments in traditional vs. online higher education. *International Journal of Indian Psychology*, 13(3).
26. Sorensen, E. (2013). Implementation of e-assessment in higher education. *Journal of Educational Technology Systems*, 42(1), 73-88.
27. Sorensen, E. (2013). Implementation of e-assessment in higher education. *Journal of Educational Technology Systems*, 42(1), 73-88.
28. Sung, Y. T., Chang, K. E., & Liu, T. C. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis. *Computers & Education*, 94, 252-275.
29. UNESCO. (2020). *Education in a post-COVID world: Nine ideas for public action*. UNESCO Publishing.
30. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
31. Way, D. (2012). E-assessment: The past, present and future. *New Directions in Assessment*, 7(1), 15-24.
32. Way, D. (2012). E-assessment: The past, present and future. *New Directions in Assessment*, 7(1), 15-24.

33. Whitelock, D. (2009). E-assessment: Developing new dialogues for the digital age. *British Journal of Educational Technology*, 40(2), 287-304.
34. Whitelock, D. (2009). E-assessment: Developing new dialogues for the digital age. *British Journal of Educational Technology*, 40(2), 287-304.
35. Yasmin, C., Sinha, D., & Lahiri, S. (2024). Challenges in implementing online examination amidst COVID-19 pandemic. *Journal of Humanities and Social Sciences*.
36. Yau, H. K., & Cheng, A. L. F. (2012). Gender difference of confidence in using technology for learning. *Journal of Technology Studies*, 38(2), 74-79.

Publisher's Note

The Social Science Review A Multidisciplinary Journal remains neutral with regard to jurisdictional claims in published data, map and institutional affiliations.

©The Author(s) 2025. Open Access.

This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>