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ATTITUDE OF COLLEGE STUDENTS TOWARD ICT INTEGRATION IN EDUCATION IN WEST BENGAL

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ABSTRACT
The present study aims to explore the attitudes of college students in West Bengal toward ICT integration in education. Students' attitudes were assessed to variables such as gender, locality, and the type of streams. The study involved a sample of 298 students from 3 colleges across one district. A descriptive survey method with a quantitative approach was employed. An attitude scale specifically designed for college students was employed to gather data, and the analysis utilized methods such as mean scores, standard deviation, and t-tests. The findings indicate that college students generally have a favourable attitude toward ICT integration in education. Additionally, significant differences were observed in attitudes based on gender and locality. A significant difference in attitudes was observed between male and female students, apart from this, the difference between science and arts is found. The study highlights the importance of raising awareness about the benefits of ICT in education by implementing innovative programs and initiatives in colleges. Such efforts could encourage students to adopt ICT tools more effectively, enhancing their overall learning experience.

KEYWORDS: *Attitudes, ICT Integration, College Students.*

INTRODUCTION
In the 21st century, ICT skills are crucial for information literacy and lifelong learning. The emergence of a new generation of students with a natural affinity for ICT makes it a vital tool in modern education. ICT integration enhances learning and teaching quality, prepares students for responsible citizenship, and fosters creativity and innovation. ICT provides flexibility in learning, allowing students to study at home or other locations. It encourages autonomy and promotes self-directed learning behaviors. Positive attitudes towards ICT are crucial for successful integration into education. School environments significantly influence students' attitudes, and attitudes shape how they utilize computers in education. This study aims to explore college students' attitudes towards ICT integration in West Bengal, examining how these attitudes impact their engagement with ICT as a learning tool.

The rapid integration of Information and Communication Technology (ICT) into education has transformed teaching and learning processes, offering new opportunities for enhancing educational outcomes. ICT integration in education enables access to a wealth of information, fosters collaborative learning, and equips students with critical digital skills for the 21st century. College students, as primary stakeholders in higher education, hold unique perspectives on ICT adoption, which directly impacts their academic performance and preparedness for the digital economy.

Globally, studies have indicated that attitudes toward ICT significantly influence its adoption in educational settings. The Technology Acceptance Model (TAM) highlights that perceived usefulness and ease of use are pivotal in shaping attitudes and behaviors toward technology usage (Davis, 1989). Recent developments in TAM, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), incorporate additional dimensions like social influence and facilitating conditions, further refining our understanding of technology adoption in education (Venkatesh et al., 2003). In the context of higher education, these models underscore the role of students' attitudes in determining the success of ICT integration, particularly when linked to collaborative learning and self-directed education (Keskin et al., 2016; Burhan-Horasanlı, 2022). In India, and specifically in West Bengal, ICT integration in education has been a focal point of policy initiatives. Despite significant advancements, challenges such as unequal access to digital resources and varying levels of digital literacy among students persist. Research highlights that college students' attitudes toward ICT are influenced by factors such as their prior exposure to technology, the quality of ICT infrastructure in educational institutions, and the perceived relevance of digital tools to their academic goals (Wang et al., 2022).

Recent empirical studies reveal that positive attitudes toward ICT integration are linked to enhanced academic outcomes, such as improved problem-solving skills, increased engagement, and greater adaptability to technological advancements (Rahimi & Tafazoli, 2022). Furthermore, ICT promotes flexible learning environments, enabling students to learn at their own pace and collaborate across geographical boundaries (Shodin, 2013). However, challenges such as resistance to change, lack of adequate training, and disparities

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in digital access need to be addressed to maximize the potential of ICT in education (Granic & Marangunic, 2019). This research aligns with global efforts to bridge the digital divide and enhance the effectiveness of ICT in educational contexts.

THE RATIONALE FOR THE STUDY

The integration of Information and Communication Technology (ICT) in education is crucial for enhancing accessibility, quality, and developing digital skills. However, students' attitudes play a significant role in their adoption and utilization of these technologies. In West Bengal, challenges like the digital divide, inadequate infrastructure, and digital literacy disparities persist. Understanding students' attitudes is essential for tailoring educational strategies and creating equitable, technology-enabled learning environments.

REVIEW OF RELATED LITERATURE

Valencia-Medina et al (2024) Integration of ICT in Attitudes and Knowledge of University Students. To assess the relationship between ICT knowledge and attitudes among university students in business programs. Cross-sectional quantitative research with a sample of 150 students, employing factor analysis and correlation measures. Students demonstrated moderate knowledge of ICT and neutral attitudes toward its integration. There were no significant differences in perceptions between different student groups, highlighting the need for targeted awareness programs. **Graham et al (2020)** Exploring Teachers' Integration of ICT Using UTAUT Framework. To analyze the factors influencing mathematics teachers' attitudes and practices in integrating ICT. Quantitative study utilizing the Unified Theory of Acceptance and Use of Technology (UTAUT). Performance expectancy, effort expectancy, and facilitating conditions were found to significantly influence teachers' attitudes. Teachers with constructivist beliefs demonstrated higher confidence in ICT use. Barriers included a lack of technical support and training. **Nachimuthu (2020)** Attitude of Teacher Educators of B.Ed Colleges Toward ICT. To study the attitudes of teacher educators in self-financed B.Ed colleges in West Bengal. A descriptive survey using a questionnaire with 32 participants from six colleges in the Purulia district. Most teacher educators had favorable attitudes toward ICT, with no significant gender-based differences in attitudes. **Singha (2020)** Attitudes of Student-Teachers Toward Online Learning. To analyze how male and female student-teachers perceive online learning. Descriptive survey among arts and science student-teachers in rural and urban settings. Gender and location did not significantly affect attitudes, indicating similar perceptions of online learning tools.**Ahmed et al (2019)** Barriers to ICT Integration in Higher Education Classrooms. To explore the challenges faculty members face in ICT adoption. Quantitative approach using surveys across various academic ranks and institutions. Perceived barriers, such as lack of training and infrastructure, significantly affected ICT adoption. However, gender and years of experience did not impact attitudes. Providing equitable access to resources was recommended. **Daher et al (2018)** Mathematics Teachers' ICT Integration as an Innovative Practice. To examine the influence of attitudes and self-efficacy on ICT adoption in teaching mathematics. An experimental study analyzing changes before and after a training program. Teachers' attitudes improved significantly, and self-efficacy increased due to hands-on ICT training. This reinforced their commitment to using ICT tools in classrooms. **Ullah (2018)** Attitudes Toward ICT Integration in Teacher Education. To assess the effectiveness of ICT tools in improving teaching-learning processes among teacher educators. Mixed methods combining questionnaires and interviews across multiple institutions in Purulia. Positive attitudes were noted, though there was some hesitance in adopting online tools due to limited face-to-face interaction. **Roy et al. (2017)** ICT Awareness among College Teachers in West Bengal. To evaluate ICT awareness among college faculty members. Survey of 150 teachers across urban and rural colleges using structured questionnaires. High levels of ICT awareness were observed, particularly in urban colleges, though challenges like infrastructure gaps persisted. **Das (2016)** Effectiveness of ICT in Enhancing Education Quality in West Bengal Colleges. To determine how ICT integration affects teaching quality in undergraduate colleges. Cross-sectional study involving faculty and students, with ICT tools as a primary variable. ICT was positively correlated with improved learning outcomes, but implementation issues, such as inadequate training, were reported These studies highlight a general trend of favorable attitudes toward ICT integration in education among both students and educators in West Bengal, though challenges such as infrastructure, training, and access persist. **Kar et al. (2014)** Attitude of University Students towards E-learning in West Bengal. To assess the attitudes of university students toward e-learning.Survey method with a stratified random sample of 308 students from universities like Jadavpur and Visva-Bharati. Students generally exhibited a high attitude toward e-learning, with no significant differences based on gender, study stream, or residence.

STATEMENT OF THE PROBLEM

The researcher conducted the study entitled **"ATTITUDE OF COLLEGE STUDENTS TOWARD ICT INTEGRATION IN EDUCATION IN WEST BENGAL"**

OBJECTIVES OF THE STUDY

- To find out the gender difference regarding the attitudes of college students towards ICT integration in education.
- To find out the locality difference regarding the attitudes of college students towards ICT integration in education.
- To find out the stream differences regarding the attitudes of college students towards ICT integration in education.

THE HYPOTHESIS OF THE STUDY

H_{01}: There is no significant difference between the attitudes of male and female college students toward ICT integration in education.

H_{02}: There is no significant difference between the attitudes of rural and urban college students toward ICT integration in education.

H_{03}: There is no significant difference between the attitudes of arts and science college students toward ICT integration in education.

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H_{04}: There is no significant difference between the attitudes of rural male and rural female college students toward ICT integration in education.

H_{05}: There is no significant difference between the attitudes of urban male and urban female college students toward ICT integration in education.

METHODOLOGY OF THE STUDY

- **Method:** The present study is based on the Descriptive survey method.
- **Population of the study:** All the college students of south 24 parganas districts comprised the population of this study.
- **Sample and Sampling Procedure:** college students constitute the population for the present study. Samples of 298 students are selected through purposive sampling from three (3) colleges.
- **Tool:** The researcher developed a tool entitled "Attitude of College Students Toward ICT Integration in Education scale" to collect data for this study. This was a five-point Likert-type scale consisting of 30 items.

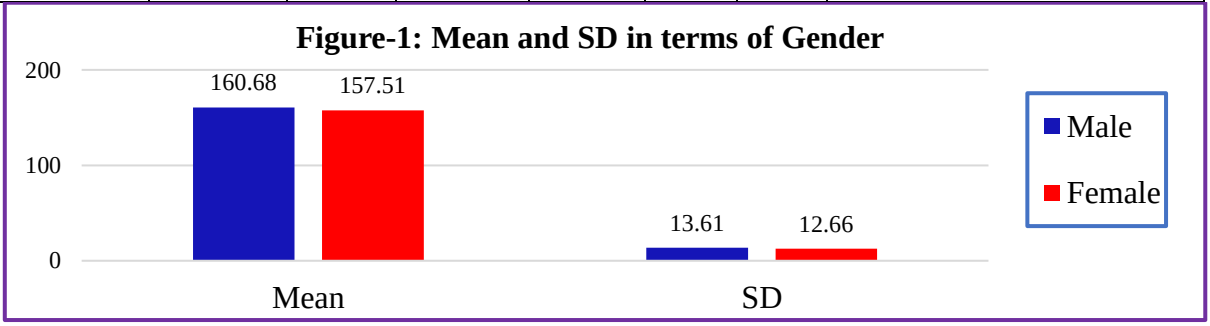
DATA ANALYSIS AND INTERPRETATION

The pattern of analysis followed the requirements outlined in the statement of objectives and hypotheses.

Hypothesis 1.

H_{01}: There is no significant difference between the attitudes of male and female college students toward ICT integration in education.

Variable	Group	N	Mean	SD	df	't' value	Level of significance
Gender	Male	125	160.68	13.61	296	2.07	Significant at 0.05 level
	Female	173	157.51	12.66			

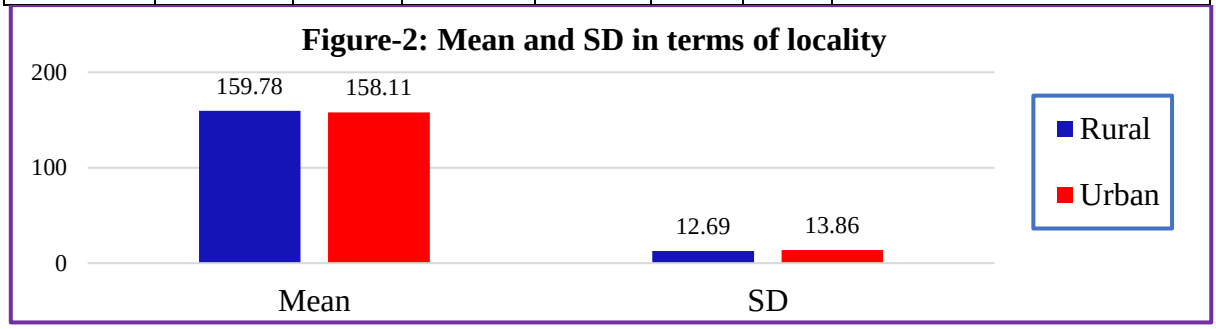


The value is significant. The corresponding null hypothesis is rejected. So, the researcher concluded that there is a significant difference in ICT integration scores between the male and female college students.

Hypothesis 2.

H_{02}: There is no significant difference between the attitudes of rural and urban college students toward ICT integration in education.

Variable	Group	N	Mean	SD	df	't' value	Level of significance
Locality	Rural	167	159.78	12.69	296	1.08	Not Significant at 0.05 level
	Urban	131	158.11	13.86			



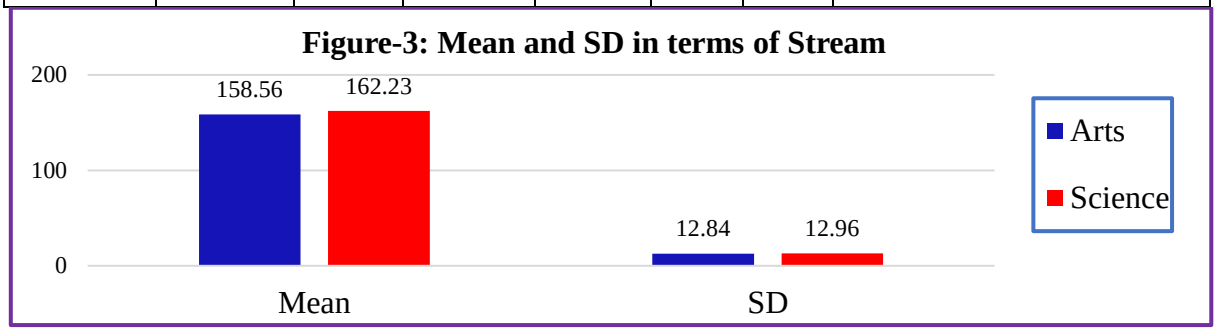
The value is not significant. The corresponding null hypothesis is accepted. So, the researcher concluded that there is no significant difference in ICT integration scores between the rural and urban college students.

Hypothesis 3.

H_{03}: There is no significant difference between the attitudes of arts and science college students toward ICT integration in education.

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Variable	Group	N	Mean	SD	df	't' value	Level of significance
Streams	Arts	194	158.56	12.84	296	2.34	Significant at 0.05 level
	Science	104	162.23	12.96			

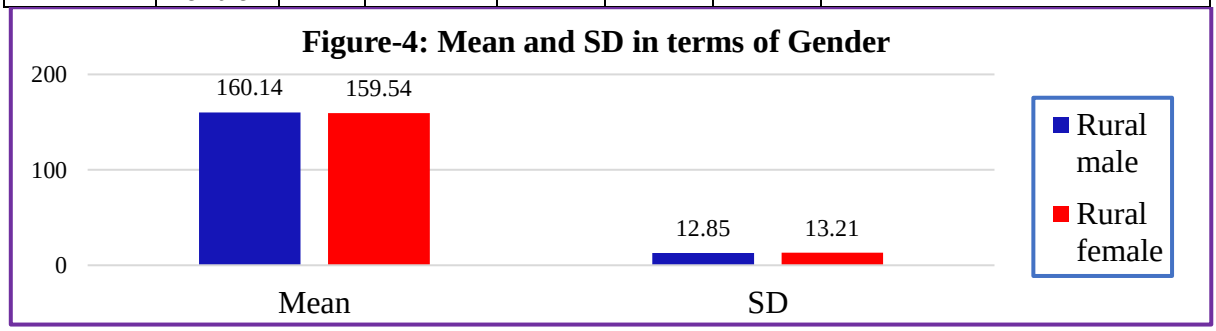


The value is significant. The corresponding null hypothesis is rejected. So, the researcher concluded that there is a significant difference in ICT integration scores between the arts and science college students.

Hypothesis 4.

H_{04}: There is no significant difference between the attitudes of rural male and rural female college students toward ICT integration in education.

Variable	Group	N	Mean	SD	df	't' value	Level of significance
Gender	Rural Male	61	160.14	12.85	165	0.29	Not Significant at 0.05 level
	Rural Female	106	159.54	13.21			



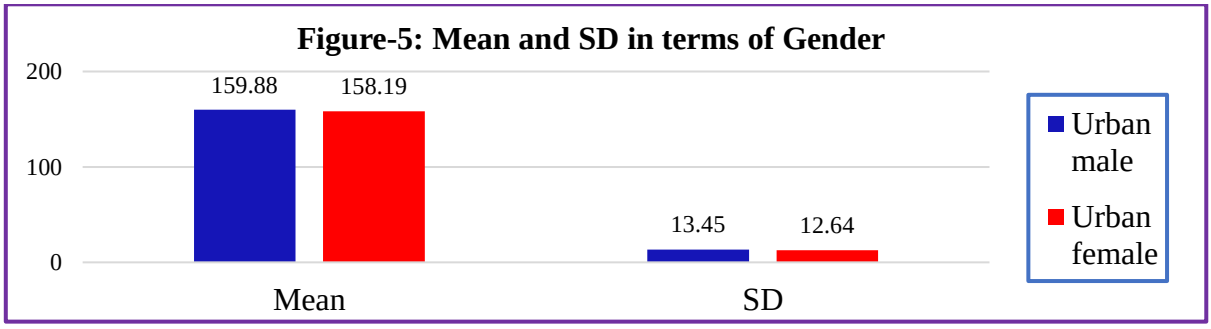
The value is not significant. The corresponding null hypothesis is accepted. So, the researcher concluded that there is no significant difference in ICT integration scores between the rural male and rural female college students.

Hypothesis 5.

H_{05}: There is no significant difference between the attitudes of urban male and urban female college students toward ICT integration in education.

Variable	Group	N	Mean	SD	df	't' value	Level of significance
Gender	Urban Male	55	159.88	13.45	129	0.74	Not Significant at 0.05 level
	Urban Female	76	158.19	12.64			

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The value is not significant. The corresponding null hypothesis is accepted. So, the researcher concluded that there is no significant difference in ICT integration scores between the urban male and urban female college students.

DISCUSSION

The attitudes of college students in West Bengal towards ICT integration in education are positive, highlighting the transformative potential of technology in enhancing learning and teaching processes (Das, 2016). However, challenges such as infrastructure deficiencies, socioeconomic disparities, and insufficient digital literacy training hinder the effective integration of ICT in education. Traditional teaching practices often conflict with ICT-based methods, with urban colleges adopting ICT more readily due to better infrastructure and resources. The COVID-19 pandemic has also influenced attitudes (Daher et al, 2018) with concerns such as screen fatigue and reduced interpersonal engagement emerging. To maximize the potential of ICT integration, targeted interventions, such as investments in infrastructure, equitable access to technology, and digital literacy programs, are essential. Further research and innovative approaches are crucial for ensuring ICT integration enhances the educational landscape in West Bengal (Singha,2020).

The study also revealed that male students have more positive attitudes toward ICT integration in education than female students and rural students exhibit higher attitudes than urban students. Moreover, it was found that science students have more positive attitudes toward ICT integration in education than arts students. It can be concluded that rural male students have slightly higher attitudes toward ICT integration in education than rural female students. Furthermore, the study revealed that urban male students exhibit slightly higher attitudes toward ICT integration in education compared to urban female students.

CONCLUSION

The integration of Information and Communication Technology (ICT) in education has gained global attention, with India being among the countries working to enhance their educational systems through technological advancements. In West Bengal, the attitudes of college students towards ICT integration are generally positive, but they are influenced by factors such as prior exposure to technology, the quality of ICT infrastructure, and the perceived relevance of digital tools to academic objectives. Students with more access to digital technologies and higher levels of digital literacy are more likely to embrace ICT tools in their learning. However, there are challenges in the successful integration of ICT in higher education institutions in West Bengal. The quality and availability of ICT infrastructure remain significant barriers to widespread adoption. Urban colleges in West Bengal have higher levels of ICT awareness, while rural colleges struggle with inadequate access to digital resources and insufficient technical support. This digital divide has led to discrepancies in how students from different geographical locations perceive the usefulness of ICT in their education.

Moreover, many students still face challenges in fully utilizing digital tools due to a lack of sufficient training and support. Research shows that when students feel confident in their ability to use ICT, they exhibit more positive attitudes and higher levels of engagement with the technology. Unfortunately, many institutions have insufficient or not tailored training and professional development programs for students, limiting the impact of ICT on their educational experiences. To overcome these barriers, it is essential to invest in improving ICT infrastructure, particularly in rural areas, and provide students with the necessary tools and skills to navigate digital technologies effectively. Additionally, creating a more inclusive environment that ensures equitable access to ICT resources for all students, regardless of their socio-economic background, will be crucial in promoting the widespread adoption of ICT in higher education.

REFERENCES

1. *Ahmed, M., Rashed, N., & Hussein, S. (2019). Barriers to ICT integration in higher education classrooms. Educational Technology Journal, 45(3), 45–61.*
2. *Barak, M., & Dori, Y. J. (2005). Learning from the past, looking to the future: ICT-based learning for developing scientific reasoning. Journal of Research in Science Teaching, 42(1), 9-32. https://doi.org/10.1002/tea.20029*
3. *Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. British Journal of Educational Technology, 39(5), 775-786. https://doi.org/10.1111/j.1467-8535.2007.00793.x*
4. *Burhan-Horasanlı, K. (2022). A critical review of ICT integration in education. Journal of Educational Technology, 39(4), 263–278.*
5. *Cheung, W. S., & Slavin, R. E. (2013). The effectiveness of educational technology applications for enhancing reading achievement in K–12 classrooms: A meta-analysis. Educational Research Review, 9, 88-113. https://doi.org/10.1016/j.edurev.2013.01.002*
6. *Daher, W., Baya'a, N., & Anabousy, A. (2018). Mathematics teachers' ICT integration as an innovative practice. International Journal of Innovation and Learning, 23(4), 385–400.*

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
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7. *Das, S. (2016). Effectiveness of ICT in enhancing education quality in West Bengal colleges. Educational Technology and Pedagogy, 33(1), 78–90.*
8. *Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340.*
9. *Graham, L., Stols, G., & Kapp, R. (2020). Exploring teachers' integration of ICT using UTAUT framework. Journal of Educational Technology Research and Development, 68(4), 1–20.*
10. *Granic, A., & Marangunic, N. (2019). The role of digital access in higher education ICT integration. Computers in Human Behavior, 97, 44-56.*
11. *Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. Educational Technology Research and Development, 55(3), 223-252. https://doi.org/10.1007/s11423-007-9035-8*
12. *Kar, S., Das, P., & Das, R. (2014). Attitude of university students toward e-learning in West Bengal. Journal of Educational Technology, 45(2), 56–67.*
13. *Keskin, S., Yildirim, S., & Bicen, H. (2016). The impact of ICT on learning and collaboration in higher education. International Journal of Educational Technology, 8(2), 112–128.*
14. *Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: A review of the literature. Journal of Information Technology for Teacher Education, 9(3), 319-342. https://doi.org/10.1080/14759390000200096*
15. *Nachimuthu, K. (2020). Attitude of teacher educators of B.Ed colleges toward ICT. Journal of Education and Practice, 11(6), 12–17.*
16. *Ng, W. (2012). Can we teach digital natives digital literacy? Computers & Education, 59(3), 1065-1078. https://doi.org/10.1016/j.compedu.2012.04.016*
17. *Oliveira, T., & Martins, M. F. (2011). Literature review of information technology adoption models at firm level. Electronic Journal of Information Systems Evaluation, 14(1), 110-121. https://www.ejise.com*
18. *Prensky, M. (2001). Digital natives, digital immigrants. On the Horizon, 9(5), 1-6. https://doi.org/10.1108/10748120110424816*
19. *Prestridge, S. (2012). The role of ICT in the teaching and learning of primary and secondary education in Australia. Educational Media International, 49(3), 241-257. https://doi.org/10.1080/09523987.2012.728702*
20. *Rahimi, M., & Tafazoli, D. (2022). The effect of ICT on academic outcomes: A review of recent studies. Educational Research and Reviews, 17(3), 56–71.*
21. *Roy, S., Chakraborty, R., & Ghosh, P. (2017). ICT awareness among college teachers in West Bengal. Journal of Educational Research and Practice, 7(3), 15–29.*
22. *Shodin, G. (2013). Enhancing student learning through ICT: A case study of flexible learning. Educational Media International, 50(3), 247-260.*
23. *Singha, M. (2020). Attitudes of student-teachers toward online learning. International Journal of Educational Research, 12(2), 50–63.*
24. *Ullah, M. (2018). Attitudes toward ICT integration in teacher education. Journal of Teacher Education and Practice, 28(5), 79–92.*
25. *Valencia-Medina, E. M., López-Valencia, S. M., Jaramillo-Mediavilla, K. M., Andrade-Palacios, J. C., & Jaramillo-Mediavilla, S. J. (2024). Integration of ICT in attitudes and knowledge of university students. Evolutionary Studies in Imaginative Culture, 8(2), 398–406. https://doi.org/10.70082/esiculture.vi.819*
26. *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.*
27. *Wang, X., He, W., & Li, L. (2022). Factors influencing college students' attitudes toward ICT adoption: A case study in China. Educational Technology Research and Development, 70(2), 75–92.*
28. *Watson, W. R., & Watson, S. L. (2007). An argument for clarity: What are learning management systems, what are they not, and what should they become? TechTrends, 51(2), 28-34. https://doi.org/10.1007/s11528-007-0023-2*