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Exploring the Perspectives of Undergraduate Students on Blended Learning in Murshidabad District, West Bengal

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Abstract: The purpose of this research is to examine how undergraduate students in Murshidabad district, West Bengal, India, perceive the blended mode of learning. To gather the primary data, the study utilized a quantitative survey approach with the aid of an online questionnaire. The findings revealed that while a larger proportion of students still preferred the traditional mode of learning, a considerable number showed interest in the blended mode. Moreover, students expressed a generally favourable attitude toward blended learning, primarily appreciating its advantages in terms of flexibility, accessibility, and personalized learning experiences. This positive attitude suggests promising potential for the gradual integration and acceptance of blended learning in the educational sphere. However, the study also identified several significant challenges faced by undergraduate students in adopting blended learning. These include the high cost of Internet plans, limited data packs, inadequate training, restricted access to e-resources, poor Internet connectivity, and various technical issues. These findings highlight the key obstacles that must be addressed to ensure the smooth and effective implementation of blended learning for undergraduate students in the region.

Keywords: E-learning, Traditional learning, Blended Learning, Undergraduate students, Murshidabad district

Introduction

In our present-day world, Information and Communication Technology (ICT) plays an indispensable role in shaping every facet of human civilization. Its pervasive influence extends across diverse domains such as the economy, society, politics, geography, and academia. This significant influence has given rise to “new paradigms in the teaching-learning process, namely electronic learning, remote learning (distance learning), and blended learning” [1-2]. By harnessing the capabilities of ICT, these approaches have brought about a revolution in education, empowering the enhancement and diversification of the learning experience. Today, blended learning has emerged as the most effective and widely embraced instructional method in educational institutions [3]. The popularity of this approach arises from its perceived effectiveness in providing students with flexible, timely, and ongoing learning opportunities. By combining traditional and digital elements, blended learning offers a dynamic and adaptable approach to education, catering to the diverse needs of learners [4-6]. Blended learning, which combines instructional materials with online interventions, has been shown to be superior to both traditional face-to-face instruction and fully online instruction. When implemented effectively, this approach combines the advantages both of *face-to-face* and *online learning*, offering a comprehensive and enriched educational experience [7]. By capitalizing on the distinct strengths of each mode, blended learning optimizes the learning process and enhances student outcomes.

Many scholars have identified several significant benefits of blended learning such as it reduces the transactional distance in online education, leading to increased interaction between students and educators; it provides flexibility, pedagogical richness, and improved cost-effectiveness in the educational process; ensures valuable interactions and enhances student engagement in the learning experience; and considered highly valuable for catering to the diverse needs of various types of learners [8-10]. Due to the aforementioned benefits of blended learning, it has garnered recognition as the most widely used and effective style of instruction in educational institutions. Its ability to combine the strengths of traditional and online approaches makes it a favoured choice, allowing institutions to optimize the learning experience and cater to the diverse needs of students effectively.

West Bengal is the fourth largest populated state in India, covering 88,752 sq. km. area. The total population is recorded at 91 million, distributed across 23 districts. According to the Census of India in 2011, the state boasts a literacy rate of 77.08% [11-12]. Murshidabad is one of the oldest districts in West. At present, it spans an area of 5316.11 square kilometres and has a population of 7,102,430. Education in Murshidabad district of West Bengal is an important aspect of the region's development. The district has a significant number of educational institutions that cater to the educational needs of its population. The state government of West Bengal has undertaken various initiatives to develop the quality of education in Murshidabad district. A number of schools, madrasas, colleges, were established. Notably, there are 25-degree colleges functioning in this district [13]. As per the 2011 census, the literacy rate was 66.59% in the district.

Statement of the Problem

As we are aware, the COVID-19 pandemic led to the closure of all educational institutions in 2020. In order to sustain educational activities during this period, institutions resorted to adopting e-learning methods, utilizing a diverse range of ICT tools. Further, the COVID-19 pandemic acted as a catalyst in driving the widespread implementation of blended learning within each higher education institutions. This shift brought forth a novel approach to teaching and learning, placing significant emphasis on digital formats for the dissemination of information [2]. Blended learning methods have become increasingly popular due to their ability to provide accessible, engaging, relevant, and adaptable learning experiences [14]. Notably, the aim of blended learning is to establish an environment where students can learn in a manner that best caters to their individual needs. Given this context, several questions arise: What is the level of digital literacy skills of undergraduate students hailing from diverse backgrounds in the Murshidabad district of West Bengal? How do they perceive the blended mode of learning? Furthermore, what challenges do they encounter in this new educational approach, especially considering that a significant portion of the population resides in rural areas? Murshidabad district has been chosen for this study because it represents a region with diverse socio-economic conditions and predominantly rural educational settings, where infrastructural and digital disparities may influence students' adaptability to blended learning. Nevertheless, there remains a concern about assessing the perception of undergraduate students towards the blended learning implemented by the degree colleges in the Murshidabad district.

Objectives of the Study

The researchers have framed some specific objectives which are as follows:

- To identify which mode of learning undergraduate students, prefer most;
- To assess the students' level of digital literacy skills;
- To investigate students' perceptions and attitudes towards the blended mode of learning; and
- To identify the challenges encountered by students while embracing a blended mode of learning.

Review of related literature

The primary objective of blended instruction was to address the limitations of pure online instruction [15]. Recognizing that "the both pure e-learning and traditional learning have their own strengths and weaknesses, the idea was to amalgamate the best aspects of both learning environments, resulting in a novel delivery method known

as blended learning" [4]. Consequently, the use of blended instruction has experienced substantial growth, fuelled by instructors' conviction that employing diverse delivery methods can elevate students' satisfaction with the learning experience and enhance their overall learning outcomes [16]. Fan et al. [17] investigated the factors influencing student engagement and retention in online and blended learning environments. The research revealed that various aspects played a role, such as the course's design and structure, the quality of learning resources, institutional support, and students' motivation and self-discipline. Moreover, the study emphasized the significance of fostering a sense of community and belonging among online and blended learning students, achievable through approaches like group work, online discussions, and social networking.

Level of digital literacy skills

Digital literacy indicates to the skill to effectively seek, evaluate, utilize, and generate information using digital technology, communication tools, and online networks [18]. It is the capability to handle information efficiently in various formats from multiple sources while presented via digital medium [19-20]. Adeoye and Adeoye [21] found that "the majority of undergraduate students from Obafemi Awolowo University, University of Ibadan, and University of Lagos expressed a high level of confidence in their digital literacy skills". In a study conducted by Singh [22], it was discovered that over 80% of students at the University of Jammu were familiar with the concept of digital literacy. The majority of these students expressed a preference for utilizing various websites to access the information they needed. Additionally, many students recommended the university to conduct hands-on training programs to enhance their skills in retrieving information from different databases. Another study by Faizan et al. [2] revealed that the majority of the students from Aligarh Muslim University, India exhibited confidence in utilizing diverse electronic devices and various online platforms, such as Zoom, Cisco Webex, Google Meet, etc.

Attitudes towards blended learning

In their study conducted in a Turkish university, Akkoyunlu and Soylu [23] examined how students' learning styles influenced their perceptions of a blended learning environment. The study found that Visual learners generally held a more favourable view of blended learning, whereas auditory learners tended to lean towards traditional classroom settings. Moreover, the research demonstrated a positive correlation between students' perceptions of blended learning, their satisfaction with the course, and their academic performance. Pérez et al. [24] observed that students had a predominantly positive outlook on blended learning. They perceived it as a flexible and interactive approach that significantly improved their learning experiences. Furthermore, the research demonstrated a positive association between students' perceptions of blended learning and their academic outcomes, including their grades and overall engagement with the course. According to Ja'ashan's [25] findings, most undergraduate students at the University of Bisha in Saudi Arabia expressed their appreciation for the blended learning approach. They particularly valued the flexibility and convenience it offered, allowing them to participate in online activities and interact with both peers and teachers through various online platforms. Aladwan et al. [1] investigated the attitudes of university students in Jordan regarding blended learning. They revealed that the majority of students held a positive attitude towards this approach, with 67% of the participants agreeing that blended learning has the potential to enhance their learning experience.

Bashir et al. [26] found that undergraduate students had positive perceptions and high satisfaction levels with the blended teaching approach. Additionally, the study found that students who were exposed to the blended teaching approach had higher academic achievement compared to those who were not. The authors suggest that the integration of a blended teaching approach can enhance students' learning experiences, increase engagement, and improve academic outcomes. Alajmi [27] assessed the impact of blended learning on geography skill acquisition among eleventh-grade students in Kuwait. The study revealed that the blended learning group achieved notably higher post-test scores compared to the traditional classroom group. Additionally, the blended learning approach led to significant improvements in the students' map reading and spatial data analysis abilities. Finlay et al. [28] found that the shift to online learning posed challenges for both virtual and blended learning students. However, blended learning students expressed higher levels of satisfaction and engagement with the course materials. This group also felt more connected to their peers and instructors due to some face-to-face interactions, fostering a sense of community and support.

Al-Osaimi and Fawaz [29] examined nursing students' perceptions of motivation strategies in a blended learning setting. Positive perceptions of blended learning were evident, particularly when it supported their learning process. The study identified four essential motivation strategies—technology use, active learning opportunities, immediate feedback, and fostering a positive learning environment—that significantly contributed to enhancing students' academic achievement in the blended learning environment. Indah et al. [30] explored that the majority of students expressed satisfaction with blended learning, stating that it effectively enhanced their English skills. They also indicated that the implementation of blended learning has resulted in a transformation of the teacher's role, with instructors adopting more of a facilitator role in the learning process. Faizan et al. [2] found that a significant number of students expressed comfort with the blended learning mode. The authors underscored the practical significance of their findings for educational institutions and instructional designers, highlighting the importance of using these insights to design and implement effective blended learning approaches.

Challenges of blended learning in developing countries

Researchers from various parts of the world (especially in the developing countries) have identified numerous challenges associated with blended learning. Zainuddin and Keumala [31] contend that blended learning holds promise for improving the quality of education by integrating face-to-face instruction with online learning resources. However, they emphasize that it also comes with several challenges, especially in developing countries like Indonesia. Issues like technical constraints and insufficient institutional support can present obstacles that hinder the effective implementation of blended learning in higher education. In their study, Faizan et al. [2] discovered that the majority of university students held positive attitudes towards blended learning. However, they also found that this mode of learning fell short in meeting their needs, particularly in practical classes. Shorey et al. [14] discovered several challenges in blended learning experienced by students, including technical issues with the online platform, difficulties in time management, and the absence of face-to-face interactions with instructors and peers. The study suggests that institutions should offer ample support to students to address technical problems and ensure a proper introduction and explanation of the blended learning approach to enhance the overall learning experience. Bordoloi et al. [32] highlighted that a significant number of Indian students encountered diverse challenges while adapting to online and blended learning. These challenges encompassed issues like limited internet connectivity, insufficient digital infrastructure, and technical obstacles. According to Bashir et al. [26], the majority of undergraduate students asserted that the blended learning approach proved to be both cost-effective and time-efficient. Notably, several researchers have identified noteworthy challenges faced by students in blended learning, including limited data availability, inadequate training, slow response from teachers, and poorly organized reading materials, etc [3-4, 31].

Methodology

The target population for this study consisted of undergraduate students from various degree colleges located in Murshidabad district, West Bengal. According to the data available on the Murshidabad district website, there are a total of 25-degree colleges spread across different areas within the district (Table 1). However, for this study, the researchers adopted a non-probabilistic sampling approach using the purposive method for the selection of colleges. According to Omeluzor [33], “purposive sampling is a widely recognized and effective approach for selecting cases that can provide the most relevant and rich information for the study’s objectives”. Using this technique, five colleges were selected from urban areas and five from rural areas, making a total of ten-degree colleges. For the selection of undergraduate students, the study employed the snowball sampling technique, a non-probability sampling method often utilized when the target population is difficult to access or lacks a clear sampling frame. “Snowball sampling enabled the researchers to reach a wider range of students across institutions through referrals and peer sharing, ensuring broader participation across faculties and demographic groups” [34].

Table 1. College wise Distribution of the Respondents

Sl. No.	Name of College	Establishment	Location	No. of participant	Parentage
1.	Krishnath College	1853	Urban	28	7.3
2.	Berhampore Girls College	1946	Urban	59	15.3
3.	Sripat Sing College	1949	Urban	71	18.4
4.	Kandi Raj College	1950	Urban	40	10.4
5.	Jangipur College	1950	Urban	20	9.8
6.	Dumkal College	1999	Rural	38	5.2
7.	Hazi A.K. Khan College	2008	Rural	30	7.8
8.	Jatindra Rajendra Mahavidyalaya	1986	Rural	16	4.1
9.	Sagardighi Kamada Kinkar Smriti Mahavidyalaya	2008	Rural	20	5.2
10.	Lalgola College	2006	Rural	64	16.6
	Total			**386**	**100**

Primary data were collected using an online questionnaire (Google Form), which was designed based on insights from prior studies [1-2, 27]. A pilot test was conducted with 20 undergraduate students from Berhampore Girls' College to ensure clarity and relevance. Feedback from the pilot study was incorporated to refine the final questionnaire. The questionnaire divided into five parts: The first part focused on the demographic characteristics of undergraduate students, including information about their colleges, gender, age group, and faculty. The second section explored the preferences of students regarding their learning mode. The third section assessed the level of digital literacy skills possessed by the students. The fourth section delved into the participants' attitudes towards blended mode learning. The fifth and final section addressed the problems encountered by students while engaging with blended learning.

The web-link of the questionnaires was shared among the undergraduate students of each selected college through WhatsApp. Additionally, several students were approached *via* Facebook and asked to participate in the survey. A total of 386 students responded positively and submitted their completed online questionnaires. Subsequently, the collected data was analysed using SPSS version 25. The reliability of the data was assessed using "Cronbach's alpha reliability analyses". Cronbach's alpha is a statistical measure employed to evaluate the internal consistency or reliability of a set of scale or test items. Table 2 shows the Cronbach's alpha reliability coefficients for "*level of digital literacy skills*" ($\alpha = 0.977$), and "*perceptions and attitudes towards blended mode of learning*" ($\alpha = 0.978$). The composite reliability of the scale of total 19 statements was $\alpha = 0.980$. The relatively high alpha values may be attributed to the internal homogeneity of the items measuring similar constructs. However, multicollinearity and redundancy were checked during item analysis, and no items were found to be fully overlapping or conceptually redundant; hence, all were retained. Although the alpha values are higher than typical thresholds (0.7–0.9), they still indicate strong internal consistency and reliability of the scale [35-37].

Table 2. Variables, number of statements/items and Cronbach's alpha values

Study variables	Number of items	Cronbach's alpha
Level of digital literacy skills	9	0.977
Opinion regarding blended learning	10	0.978
Composite reliability	**19**	**0.980**

Table 3 shows the demographic information of the participants. The data analysis reveals that more than fifty percent of the participants (53.4%) were from female category, while the remaining 46.6% are male. Most of the participants (56.5%) were form urban background followed by rural. A significant number of respondents (57.0%) from the Faculty of Arts. When asked about their age group, most of the participants (59.1%) belonged to the age group of 19-20 years followed by 22-24 years old.

Table 3. Demographic characteristics of the respondents

Demographic variables		No. of respondents (*n*=386)	Percentage
Gender	Male	180	46.6
	Female	206	53.4
Area	Urban	218	56.5
	Rural	168	43.5
Faculty	Arts	220	57.0
	Science	166	43.0
Age	16-18 Years	43	11.1
	19-21 Years	228	59.1
	22-24 Years	99	25.6
	24 years above	16	4.1

Results

Mode of learning

The objective of this study was to explore the learning mode preferred by undergraduate students. The findings indicate a greater preference for traditional and blended learning over purely online modes (Table 4).

Table 4. Mode of learning preferred by the students (*n*=386)

Sl. No.	Questions		No. of Respondent	Percentage
1.	What is your favourite mode of educational learning?	Traditional mode	161	41.7
		Online mode	91	23.6
		Blended mode	134	34.7
2.	What is your preferred mode of examination?	Hand-written	166	43.0
		Online mode	86	22.3
		Both	134	34.7
3.	What format do you prefer the most for homework assignments?	Hand-written	265	68.7
		Online	121	31.3
4.	What mode do you favour for hands-on classes?	Traditional mode	227	58.8
		Online mode	59	15.3
		Blended mode	100	25.9

A majority of the participants (41.7%, N=161) expressed a preference for the traditional method of learning, while 34.7% (N=134) favoured blended learning. Only 23.6% (N=91) preferred the online mode. Based on these results, it can be inferred that students still show a preference for the traditional education system rather than online learning. Regarding the preferred examination method, the largest group of respondents (43.0%, N=166) favoured the traditional hand-written mode. A substantial minority (34.7%, N=134) supported a combination of both hand-written and online modes. For homework, approximately seventy percent of the respondents indicated a preference for the hand-written mode (68.7%, N=265) over the online mode (31.3%, N=121). Finally, concerning the preferred mode for hands-on (practical) classes, a clear majority of the respondents (58.8%, N=227) favoured the traditional mode over blended (25.9%, N=100) or online (15.3%, N=59) instruction (Table 4).

Level of digital literacy skills

Digital literacy skills refer to the ability to effectively use digital technologies and navigate the digital world. In today's technology-driven society, digital literacy is essential for individuals to participate fully in various aspects of life, including education, work, communication, and information access. Digital literacy skills are crucial for UG students to excel academically, participate in online learning, collaborate effectively, prepare for future careers, think critically, and navigate the digital information responsibly [21]. These skills empower students to thrive in the digital

age and become lifelong learners capable of adapting to technological advancements [22]. In order to evaluate the digital literacy skills among undergraduate students, a five-point Likert scale was employed, with responses ranging from 1=Not Confident At All to 5=Completely Confident.

Table 5. Digital literacy skills among the students (*n*=386)

Sl. No.	Items	1	2	3	4	5	Mean (x)	SD
1.	I feel confident using electronic gadgets (Laptop, desktop, smart phone, tab, etc.)	68 (17.6%)	62 (16.1%)	44 (11.4%)	106 (27.5%)	106 (27.5%)	3.31	1.465
2.	I feel confident searching e-resources from different websites, blog, social media, etc.	62 (16.1%)	60 (15.5%)	61 (15.8%)	94 (24.8%)	109 (28.2%)	3.33	1.437
3.	I feel confident downloading e-resources from the Internet	66 (17.1%)	63 (16.3%)	53 (13.7%)	112 (29.0%)	92 (23.8%)	3.26	1.424
4.	I feel confident in using social bookmarking to organise and share e-resources	67 (17.4%)	99 (25.6%)	90 (23.3%)	70 (18.1%)	60 (15.5%)	2.64	1.226
5.	I feel confident examine the accuracy of internet-based resources	65 (16.8%)	70 (18.1%)	100 (25.9%)	93 (24.1%)	58 (15.0%)	3.02	1.326
6.	I feel confident to communicate, received and share e-resources through email	66 (17.1%)	67 (17.4%)	68 (17.6%)	93 (24.1%)	92 (23.8%)	3.20	1.420
7.	I feel confident receiving online classes using various online platforms	67 (17.4%)	70 (18.1%)	55 (14.2%)	95 (24.6%)	99 (25.6%)	3.23	1.449
8.	I feel confident in my ability to use social networking sites to receive and share up-to-date information.	20 (5.1%)	45 (11.6%)	72 (18.7%)	93 (24.1%)	156 (40.4%)	3.98	1.003
9.	I feel confident understanding copyright and plagiarism	168 (43.5%)	95 (24.6%)	66 (17.1%)	20 (5.1%)	37 (9.7%)	2.23	1.753

Scale: *1=Not Confident At All, 2= Slightly Confident, 3=Somewhat Confident, 4=Quite Confident, 5=Completely Confident*.

As shown in Table 5 that nine self-assessment statements were asked among the participants to know the level of digital literacy skills. The study found that a significant number of participants (More than fifty percent) expressed *completely confident* and *quite confident* in various digital tasks. These are includes using electronic gadgets like laptops, desktops, smartphones, and tablets; searching for e-resources on different websites, blogs, and social media platforms; downloading e-resources from the Internet; communicating, receiving, and sharing e-resources through email; attending online classes through platforms like Zoom, Cisco Webex, Google Meet, etc.; and possessing knowledge of using social networking sites for staying updated and disseminating information. Notably, when asked about their confidence level in reading social bookmarking and sharing e-resources with their peers, as well as their understanding of copyright and plagiarism, most of the participants felt *slightly confident* or *somewhat confident*.

Attitude towards blended mode of learning

In the post-COVID era, numerous educational institutions have embraced the blended learning approach because of its adaptability and flexibility, allowing for customization to meet diverse learning needs. While this mode of learning has provided various opportunities during the challenging times of the pandemic, it is crucial to take into account students' perception of this approach. Understanding how students view blended learning can help enhance its effectiveness and address any potential concerns they may have. However, to know the perception among undergraduate students, a five-point Likert scale was used, ranging from "1= *Strongly Disagree* to 5= *Strongly Agree"*. Table 6 displays the results that can provide insights into understanding their perspective.

It is interesting to note that when participants were presented with self-assessment statements regarding blended learning, the responses were overwhelmingly positive. The findings of the study indicate that a majority of the

students (33.2%) *agree* with the effectiveness of blended learning compared to traditional learning. Furthermore, more than half of the respondents (52.8%) *strongly agree* and *agree* that the content delivery process is highly effective in the blended learning mode. Additionally, a significant number of respondents (34.2%) *agree* that the blended mode of learning provides a better scope for engaging in learning activities. Interestingly, a considerable portion of the respondents (26.9%) expressed *uncertainty* regarding whether blended learning offers a wider range of learning opportunities and if it is less stressful than traditional techniques. Regarding time utilization, a substantial proportion of the participants (35.5%) *agreed*, and a notable percentage (20.2%) *strongly agreed* that blended learning optimizes time usage. This indicates a positive attitude towards time management in the blended learning environment.

Table 6. Perception regarding blended learning (*n*=386)

Sl. No.	Statements	SD	D	U	A	SA	Mean (x)	SD
1.	Blended learning is more effective than the traditional classroom	38 (9.8%)	66 (17.1%)	76 (19.7%)	128 (33.2%)	78 (20.2%)	3.37	1.254
2.	Content delivery process is very effective in blended learning mode	34 (8.8%)	52 (13.5%)	96 (24.9%)	104 (26.9%)	100 (25.9%)	3.48	1.253
3.	It provides the better scope of learning engagement activities	36 (9.3%)	57 (14.8%)	87 (22.5%)	132 (34.2%)	74 (19.2%)	3.39	1.217
4.	It is less stressful than traditional classroom	44 (11.4%)	52 (13.5%)	104 (26.9%)	99 (25.6%)	87 (22.5%)	3.23	1.320
5.	Blended learning helps in effective utilization of time	30 (7.8%)	67 (17.4%)	74 (19.2%)	137 (35.5%)	78 (20.2%)	3.43	1.211
6.	In blended learning mode, collaboration and interactivity is presence in a better way	46 (11.9%)	54 (14.0%)	76 (19.7%)	107 (27.7%)	103 (26.7%)	3.43	1.334
7.	Blended learning approach supports flexibility in learning which interrupt learner's progress	30 (7.8%)	73 (18.9%)	82 (21.2%)	75 (19.4%)	126 (32.6%)	3.37	1.213
8.	Blended learning approach is very effective to achieve maximum learning	40 (10.4%)	56 (14.5%)	119 (30.8%)	81 (21.0%)	90 (23.3%)	3.52	1.275
9.	It gives us access to class materials at anytime from anywhere	30 (7.8%)	57 (14.8%)	75 (19.4%)	133 (34.5%)	91 (23.6%)	3.43	1.183
10.	blended learning activities increase student's satisfaction level	36 (9.3%)	64 (16.6%)	84 (21.8%)	117 (30.3%)	85 (22.0%)	3.39	1.255

Scale: *SD=Strongly Disagree, D=Disagree, U=Uncertain, A=Agree, SA=Strongly Agree*

When asked about the level of collaboration and interactivity in blended learning mode, over fifty percent (54.5%) of the respondents *agreed* and *strongly agreed* with the statement. Regarding the effectiveness of the blended learning approach in supporting flexible learning, a majority of the respondents (52%) *agree* and *strongly agreed*, indicating their recognition of blended learning's adaptability and versatility. On the topic of the overall effectiveness of blended learning in achieving maximum learning outcomes, a significant number of respondents (25.4%) expressed *uncertainty*, implying that there are mixed opinions or doubts about its efficacy. Nonetheless, a substantial majority of respondents (58.4%) *strongly agreed* and *agreed* with the statement "*Blended learning gives us access to class materials at anytime from anywhere*", highlighting their appreciation for the accessibility and convenience offered by this approach. Furthermore, when it comes to student satisfaction levels, most respondents (52.3%) also expressed *agree* and *strongly agree* with the statement, indicating that a significant portion of students is content with their blended learning experiences.

Overall perception regarding blended learning

When we asked about the overall perception regarding blended learning, a significant number of respondents (40.4%) reported that they are comfortable with the blended learning, followed by 90 (23.3%) who said they are

very comfortable. However, only a small percentage of respondents reported feeling uncomfortable with the blended mode. As shown in Table 7, the overall mean value is 3.70, with a standard deviation (SD) of 1.018.

Table 7. Overall perception regarding blended learning (*n*=386)

Sl. No.	Faculty	No. of Respondent	Percentage	Mean (X)	SD
1.	Very comfortable	90	23.3	3.70	1.018
2.	Comfortable	156	40.4		
3.	Neutral	79	20.5		
4.	Uncomfortable	57	14.8		
5.	Very uncomfortable	4	1.0		
Total		386	100		

Problems faced by students

Both e-learning and the blended learning come with various technological complexities. Before the COVID-19 pandemic, students were not familiar with either of these methods. However, in the post-COVID era, the blended mode is extensively used by the majority of educational institutions in the Indian subcontinent. Despite its dynamic nature, blended learning still faces a number of challenges, as outlined in Table 8.

Table 8. Problems confronted by the students

Sl. No.	Items	Yes	Rank
1.	Data packs are costly	263 (68.1%)	1
2.	Limited data	246 (63.7%)	2
3.	Inadequate training	243 (63.0%)	3
4.	Insufficient e-resources	241 (62.4%)	4
5.	Poor Internet connectivity	240 (62.2%)	5
6.	The educators aren't on time	233 (60.4%)	6
7.	Technical problem	224 (58.0%)	7
8.	Teachers do not respond quickly	223 (57.8%)	8
9.	It makes us socially isolated	223 (57.8%)	9
10.	Reading materials are not well organized	219 (56.7%)	10

Murshidabad district has a predominantly agrarian economy, with agriculture being the primary occupation for a significant portion of the population. Most of the population lives in rural areas. However, the researchers attempted to identify the challenges faced by undergraduate students when embracing blended mode learning. According to the data presented in Table 7, a significant proportion of respondents (68.1%) expressed that internet packs are highly expensive, while a substantial number of participants (63.7%) reported limited data packs as another prominent issue. A considerable majority of the respondents, accounting for over sixty percent, highlighted inadequate training and insufficient e-resources as significant challenges. Poor internet connectivity emerged as a major issue faced by students, particularly in rural regions of India. In addition to these issues, students also indicated various other challenges, including instructors not being punctual for all activities, technical problems, delayed response from teachers, feelings of social isolation, and poorly organized reading materials.

Regression Analysis

As shows in Table 9 that the β-values for gender and faculty were negative, indicating that there was no significant difference in digital literacy skills between male and female students, or between students in different faculties. However, the β-value for area was positive, indicating that there was a significant difference in digital literacy skills between urban and rural students. The P-value for area was 0.001, which is less than 0.05, the standard threshold for statistical significance. The β-value for age was also positive, indicating that digital literacy skills increase with age. The P-value for age was 0.68, which is greater than 0.05, so the difference in digital literacy skills between students of different ages is not statistically significant. Therefore, the results of this study suggest that there is a significant

difference in digital literacy skills between urban and rural students. However, there is no significant difference in digital literacy skills between male and female students, or between students in different faculties.

Table 9. Regression Analysis on gender, age, faculty, and area of the respondents

Coefficients[a]					
Model-1	**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	2.648	.383		6.905	.000
Gender	.006	.136	.002	.047	.962
Age	.180	.098	.095	1.831	.068
Faculty	.128	.136	.048	.941	.348
Area	.159	.009	.122	3.467	.001

Dependent Variable: Digital literacy skills

Table 10 shows that the β-values for gender, age, and faculty were all negative (.407, .292 and .252 respectively), indicating that there was no significant difference in perception of blended learning between male and female students, students of different ages, or students in different faculties. However, the β-value for area was positive, indicating that there was a significant difference in perception of blended learning between urban and rural students. The P-value for area was 0.002, which is less than 0.05, the standard threshold for statistical significance. The positive β-value for area indicates that urban students have a slightly more positive perception of blended learning than rural students. This difference is likely due to the fact that urban students have more access to technology and the internet, which can make blended learning more feasible for them.

Table 10. Regression Analysis on gender, age, faculty, and area of the respondents (*Perception of blended learning*)

Coefficients[a]					
Model-2	**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	2.868	.334		8.579	.000
Gender	.099	.119	.043	.831	.407
Age	.090	.085	.055	1.056	.292
Faculty	.136	.118	.059	1.147	.252
Area	.146	.008	.143	3.662	.002

Dependent Variable: Perception of blended learning

Discussion

The findings of the study highlights that most participants expressed a preference for the traditional method of learning. These results strongly indicate that students still demonstrate a clear inclination towards the traditional education system, rather than online learning. Similarly, Faizan et al. [2] and Bashir et al. [26], highlighted that although blended learning method is quite suitable for flexibility, however, face-to-face leaning is most effective for practical orientated study. Significantly, a large number of participants indicated that a high level of confidence in handing electronic gadgets and various digital tasks. Al-Osaimi and Fawaz [29] and Indah et al. [30] found that young learners today possess inherent digital competencies due to increased exposure to modern technology. When we asked about their perception towards blended learning, a majority of the students *agree* with the effectiveness of blended learning compared to traditional learning. Interestingly, many students strongly agreed with the statement "*Blended learning gives us access to class materials at anytime from anywhere*". This indicates that students are receptive to the blended learning approach and acknowledge the benefits it offers in terms of flexibility, accessibility, and personalized learning experiences. Such positive feedback bodes well for the continued integration and success of blended learning in the educational landscape, aligns with the positive findings of many scholars [1-2, 26].

Further, the study also identified some critical challenges faced by undergraduate students when embracing blended mode learning. The most significant problems raised by the students were that internet plans are highly expensive and data packs are limited. According to the West Bengal District Factbook [38], "The main source of income in the district is from the agriculture sector and the per capita income is Rs. 50,186". Additionally, they reported that many families cannot afford to send their children to school, especially if they live in rural areas. Most of the students reported that inadequate training and insufficient e-resources were major challenges. Poor internet connectivity was particularly problematic for students in rural areas. Other challenges included instructors not being punctual, technical problems, delayed responses from teachers, feelings of social isolation, and poorly organized reading materials. In this context, several researchers have also found similar issues encountered by the students in adopting blended learning method [2-3, 32].

Conclusion

The study found that while a majority of undergraduate students in Murshidabad district still prefer the traditional mode of learning, they also exhibit a positive opinion towards blended learning. Most participants expressed confidence in handling digital devices and recognized the benefits of blended learning, particularly in terms of flexibility, accessibility, and personalized learning experiences. This indicates that although students remain attached to conventional classroom methods, they are open to adopting blended approaches that enhance learning efficiency and engagement. However, several challenges hinder the effective implementation of blended learning. The study was limited to undergraduate students from only ten-degree colleges in Murshidabad district; therefore, the findings cannot be generalized beyond this specific context. Future research could expand the sample size and include multiple districts or states to provide a more comprehensive understanding of blended learning adoption.

Despite these limitations, the results hold significant practical implications for higher education policymakers and administrators. Colleges in West Bengal should implement structured digital literacy and blended learning training programmes, enhance Internet infrastructure in the college premises, and ensure access to adequate e-resources. Such initiatives would strengthen students' digital competencies, reduce inequality between rural and urban learners, and support the sustainable integration of blended learning in higher education.

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