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AI Literacy Among Rural Undergraduates in Gadchiroli, Maharashtra: Knowledge, Skills and Attitudes Survey

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ABSTRACT

In the context of AI-driven information systems, Artificial Intelligence (AI) literacy which is very important, still has not been adequately addressed in rural India. The present study evaluated AI literacy levels among 560 students from different colleges in the Gadchiroli district of Maharashtra state. The research conducted a thorough assessment of students' knowledge, skills, ethical awareness, and their attitudes towards AI. A moderate overall level of AI literacy was found as the result of the study, with science stream learners being the top performers of all others in arts and commerce. Notwithstanding long-standing issues like poor infrastructure, unskilled teachers, and language hurdles, around 62% students were still in favor of AI education being added to their overall educational courses. The research findings indicate the necessity of dedicated faculty development, creation of community-specific AI learning materials, provision of inexpensive tech access, and active community participation all aimed at bridging the gap in AI literacy. The implications of the research contribute to the development of approaches to the provision of AI education that is accessible across the board in rural tertiary institutions, especially in the formulation of Library and Information Science curriculums that enhance the digital equity.

KEYWORDS: Artificial Intelligence Literacy, Rural Higher Education, Undergraduate Students, AI Competencies, Ethical Awareness in AI, AI Education Challenges.

INTRODUCTION

The last few years have seen the issue of Artificial Intelligence (AI) integration into the daily lives of people at a fast pace and becoming necessary to discuss. AI is already influencing the living and working conditions in various sectors such as education, health care, and agriculture. While the technologically developed countries have gained most of the benefits, poor and rural areas, for instance, Gadchiroli district in Maharashtra, have considerable access and understanding hurdles when it comes to AI. In some areas of Gadchiroli, there is minimal access to gadgets and

the internet, but quite a number of undergraduate students still do not possess the skills and awareness necessary to utilize AI meaningfully. This may lead to their learning and future opportunities being limited. Thus, the study aims at determining the AI literacy rate amongst the local students so as to pinpoint the areas of support and intervention that are most needed. AI literacy means a lot more than just technical skills; it implies comprehending the working of AI, applying AI tools to real-world problems, identifying AI's influence in everyday life, and assessing ethical issues critically **(Salhab et al., 2025).** It is abundantly clear that the promotion of digital literacy is still going on, but research on the AI literacy of rural and tribal undergraduate students is still in its infancy stage. The educational institutions serving these populations face unique social, educational, and infrastructural barriers that influence their interaction with AI **(Chiu et al., 2024; Mansoor et al., 2024).**

Current figures indicate that a mere 31% of the rural population in India are regular internet users, while the percentage is 67% in urban areas **(StudyIQ, 2025).** This disparity of access to technology in the form of internet usage not only prevents the rural students from getting an AI education but also, the situation is aggravated by the fact that AI is not included in the rural curriculum, poor infrastructure, inexperienced teachers, and language issues. It is vital that these inequalities are dealt with so that the rural youth are not left behind in an AI-driven world.

The study is aimed at implementing an exhaustive survey for evaluating undergraduates' knowledge, skills, and attitudes towards AI in Gadchiroli. The results from this survey will be very useful in understanding the AI literacy level of rural students and in planning appropriate library and institutional actions aimed at closing the digital gap and facilitating the use of AI technologies in a significant way.

STATEMENT OF THE PROBLEM

Artificial Intelligence (AI) is rapidly integrating into our daily lives, thus making familiarity with AI a must for everyone. It is, however, a question of how well the rural undergraduates' AI knowledge and use in practice is, especially in Gadchiroli. For these students, the difficulties of limited resources and educational assistance that learning could be difficult are unique challenges. The current research intends to bridge this gap and make it possible for students from all backgrounds to cultivate the AI skills they require in order to thrive in the digital world of today.

RESEARCH OBJECTIVES

1. To evaluate the present status of AI literacy among the undergraduates in Gadchiroli district.
2. To measure the students' knowledge and comprehension of AI ideas and uses.
3. To point out the difficulties and obstacles met by the students in obtaining AI literacy.
4. To investigate the opinions of undergraduate students regarding the use of AI technologies.
5. To suggest methods for enhancing AI literacy teaching in rural higher education.

REVIEW OF LITERATURE

Long and Magerko (2020)

Long and Magerko set the first definition of AI literacy, whose meaning consists of the three referred to above. Their outline presents the principles of machine learning, the recognizing of data bias, and the making of ethical decisions, which once again, is a step higher than just basic digital skills. This is crucial for both K-12 and higher education curriculum development.

Ng, Yuen, and Wong (2023)

Ng, Yuen, and Wong came up with an AI literacy scale that was validated for students in higher education, which was based on knowledge, skills, attitudes, and ethical awareness. They found that students are only familiar with AI tools on the surface level but have big gaps in technical mechanisms and ethical reasoning. The scale is customizable for LIS programs and various contexts.

Salhab, Chiu, and Stahl (2025)

Salhab, Chiu, and Stahl employed structural equation modeling and proved that a higher AI literacy is a predictor of responsible generative AI adoption among students. The results of the study point out that plagiarism and bias are to some extent kept under control in academic settings. It brings to the forefront the need of teaching AI as a part of the curriculum in schools that have access to AI tools.

Mansoor et al. (2024)

Mansoor et al. pointed out the wide differences in AI literacy between urban and rural areas, as well as the gaps between developed and developing countries. Rural groups were 35-40% behind the urban areas mainly due to lack of infrastructure and good resources. They endorse proper interventions for places like Gadchiroli, which are cut-off from being taught AI due to their remoteness.

Raj and Sharma (2024)

Raj and Sharma discovered that the literacy rate of AI in the rural areas of Maharashtra among undergraduates was low caused by the infrastructural problems, language restrictions, and lack of AI courses. They suggested focusing on localized programs, community resources, and teacher training appropriate for the rural areas.

Patil and Deshmukh (2023)

Patil and Deshmukh revealed a digital divide in Gadchiroli tribal colleges where there was only minimal awareness of AI. They proposed that the integration of AI literacy in LIS and general curricula would empower the students to take up digital information roles.

Kumar et al. (2025)

Kumar et al. drew attention to the lack of ethical awareness and the problem of access faced by the rural youth in central India. They urged collaboration between government, institutions, and libraries to close the digital divide through policy and infrastructure.

Research Methodology

The research examined undergraduates from Arts, Commerce, and Science faculties of 28 colleges in Gadchiroli district, Maharashtra. A total of 560 students were included in the sample, which consisted of 20 students from each college selected randomly. This sampling was done by taking into account the different academic streams along with the practical constraints of time and resources.

AI literacy was the main focus of data collection which was done through a structured questionnaire. The questionnaire covered the main areas like AI knowledge, skills to use AI, awareness of AI ethics, and critical thinking about AI. The students were asked to self-assess their competencies and attitudes toward AI using a five-point Likert scale. Through this method, clear, quantifiable data that is suitable for quantitative analysis were provided.

Data collection was done in two months from August to September 2025. This period was enough to reach all the 560 respondents from different colleges while also considering the rural setting and the logistical challenges that were involved.

The collected data were analyzed using both descriptive and inferential statistics to find the patterns and the level of AI literacy among the students overall. This complementary approach made it possible to have a clear and honest evaluation that was in alignment with the rural setting and the practical constraints of the study.

SCOPE AND LIMITATIONS

The population of the research consists of 560 undergraduate students from arts, commerce, and science streams of 28 colleges in Gadchiroli district. The study is limited to undergraduate students of these colleges only. The results and findings are confined to this group and are not applicable to other regions or student groups because of the limitations in time, funding, and accessibility that come with this rural area. Nonetheless, the research still yields important and useful information regarding AI literacy of rural undergraduate students, which is closely linked to the Library and Information Science discipline.

RESULTS AND FINDINGS

The research involved 560 undergraduate students who were selected from 28 different colleges in the Gadchiroli district, where Arts, Commerce, and Science streams were represented, and the number of male and female participants was approximately equal. A large proportion of the respondents were from rural areas, which indicates the demographic profile of the district, and the age group was predominantly 18 to 23 years. This diverse and representative sample gives a good ground to analyze the AI literacy levels and other factors in this overlooked rural student population.

Table 1: Demographic Profile of Undergraduate Participants

Demographic Variable	Category	Frequency	Percentage
Gender	Male	290	51.8%
	Female	270	48.2%
Academic Stream	Arts	180	32.1%
	Commerce	190	33.9%
	Science	190	33.9%
Residence	Rural	420	75.0%
	Urban	140	25.0%
Age Group	18–20 years	350	62.5%
	21–23 years	210	37.5%

The presented sample shows an even distribution of genders (51.8% men) and streams, where 75% of the rural participants are a true representation of Gadchiroli's population. This group is mainly composed of the young (62.5% are aged 18-20), which allows the strong discussion of AI literacy differences in rural undergraduate areas.

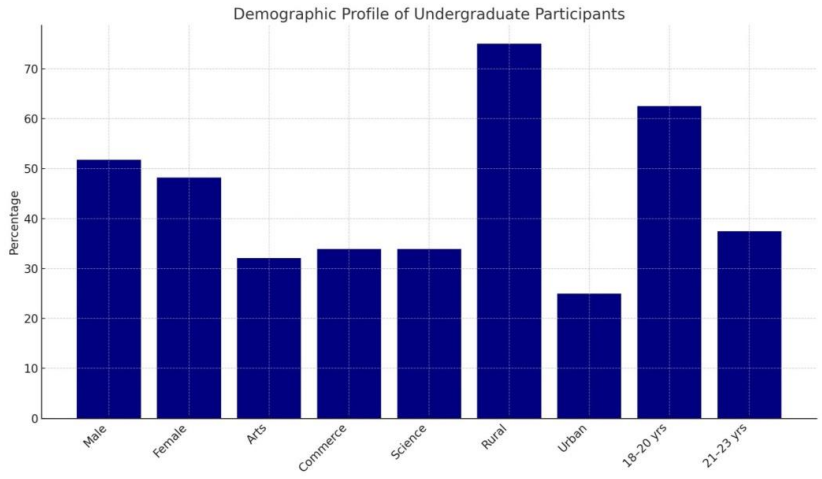

Figure 1: Demographic Profile of Undergraduate Participants

The distribution of students by gender is nearly equal, and the shares of the Arts, Commerce, and Science streams are nearly the same, thus reflecting a balanced academic mix. The greatest number of students come from the rural areas as compared to the urban ones, and the majority of respondents are from the 18–20 age group, with the 21–23 group being the least. In general, the chart illustrates a young, mainly rural population that is appropriate for the study of AI literacy among undergraduates in Gadchiroli.

Table 2: AI Knowledge and Comprehension Across Academic Streams

Stream	High Knowledge (%)	Moderate (%)	Low (%)
Arts	12	41	47
Commerce	18	47	35
Science	27	52	21

Science students show a 27% high AI knowledge level, which is still superior to Arts and Commerce students (12% and 18% respectively), however, more than 70% of students from all streams have moderate-low knowledge. Thus, it is necessary to fill the curriculum gaps through the integration of AI in each stream accordingly.

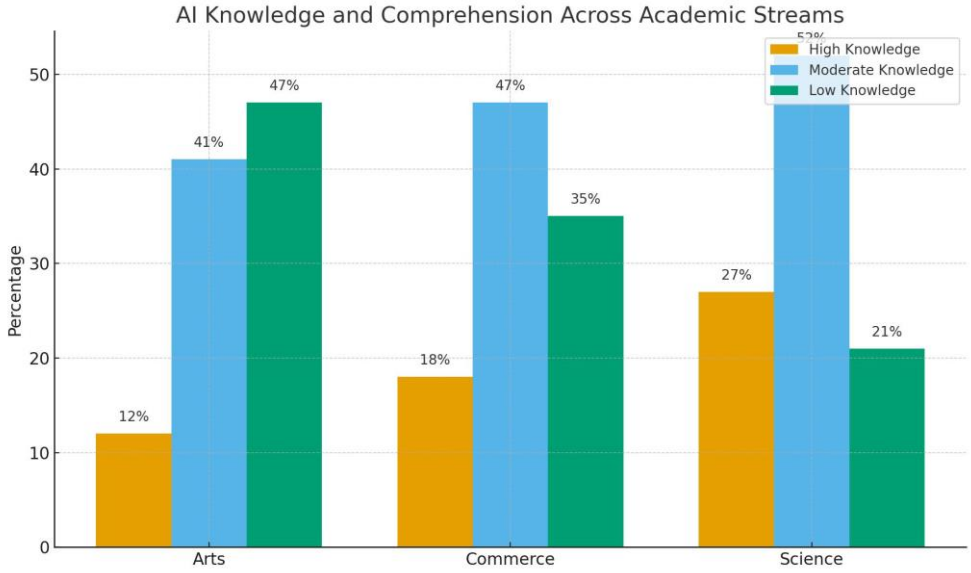

Figure 2: AI Knowledge and Comprehension Across Academic Streams

The graph indicates that science students possess the most profound knowledge of AI, as 27% of them claimed high and 52% moderate understanding. Commerce students are mainly at a moderate level (47%), with 18% high and 35% low, respectively. Art students are the least secure, with only 12% being aware of the highest knowledge and 47% in the group of low knowledge.

Table 3: Self-Assessed AI Skills in Data Analysis, Tool Use, and Ethical Decision-Making

Skill Area	High (%)	Moderate (%)	Low (%)
Data Analysis	20	49	31
Using AI Tools	13	37	50
Ethical Decision-Making	14	44	42

The skill of data analysis (20% high) is more than practical AI tool usage (13% high) and ethical decision-making (14% high). However, ratings of 42-50% are considered low. Therefore, the interventions should be directed towards the practical application and ethical training.

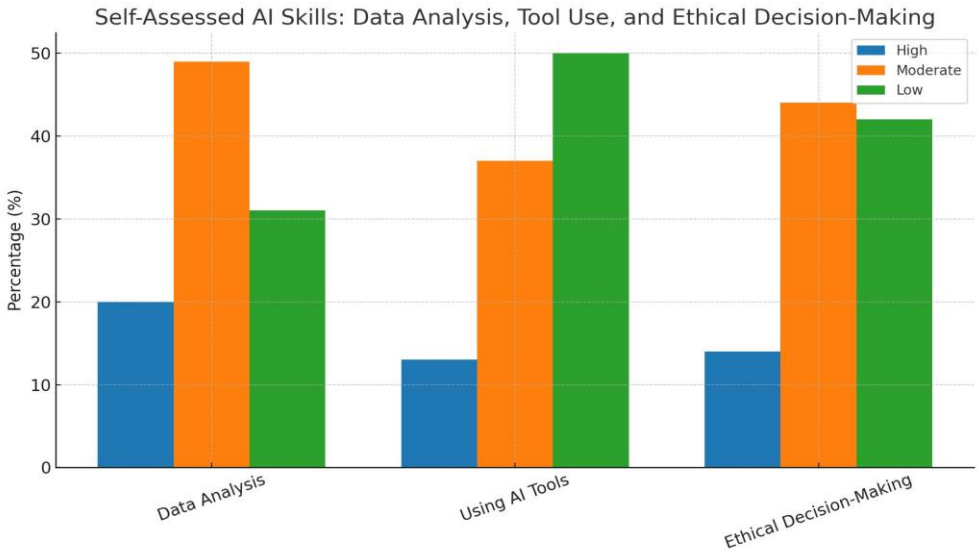

Figure 3: Self-Assessed AI Skills in Data Analysis, Tool Use, and Ethical Decision-Making

The students evaluated themselves the best in data analysis, where the percentages of high, moderate, and low abilities are 20%, 49%, and 31%, respectively. The students' confidence was lowest when it came to using AI tools, as only 13% considered themselves highly skilled, while 50%, or half of the respondents, regarded their skills as low. Ethical decision-making was positioned between the two extremes, with 14% of the students stating they had high and 42% low skills, indicating a significant demand for both practical and ethical AI training.

Table 4: Obstacles to AI Literacy Reported by Students

Obstacle	Percentage of Reporting
Poor Internet/Infrastructure	72
Lack of Trained Instructors	68
High Cost of Devices/Tools	54
Language Barriers	43
Limited Course Material	61

The main difficulties encountered are those of insufficient infrastructure (72%) and lack of teaching staff (68%), followed closely by insufficient resources (61%) and expenses (54%). These structural challenges highlight the necessity, for the policies, of an increased rural infrastructure through the government.

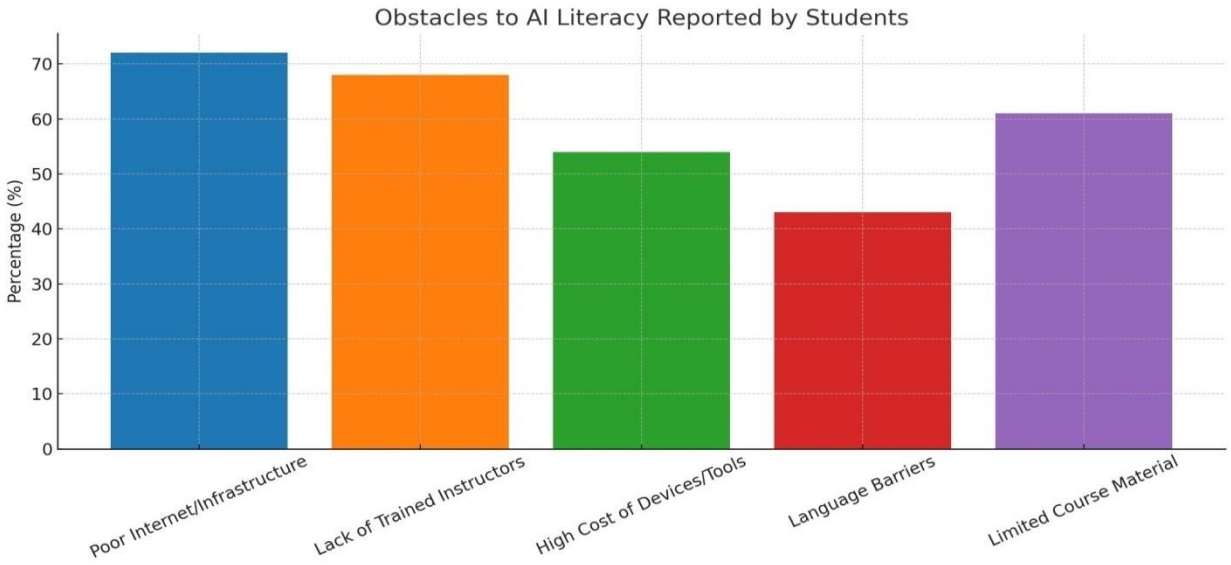

Figure 4: Obstacles to AI Literacy Reported by Students

The graph indicates that poor internet/infrastructure, which represents roughly 72% of the respondents, and absence of skilled teachers that accounts for nearly 68%, are the main obstacles to AI literacy. Insufficient course materials, approximately 61%, and high prices of gadgets/tools, approximately 54%, are also serious constraints on learning AI for students. Language barriers, although lower at 43%, still impact a sizeable group of students.

Table 5: Student Attitudes Towards AI Integration and Ethical Concerns

Attitude Statement	Agree (%)	Neutral (%)	Disagree (%)
AI can improve learning outcomes	59	28	13
AI poses ethical/privacy challenges	46	39	15
AI should be part of curriculum	62	26	12
Fear over loss of traditional skills	35	33	32

The majority of respondents, 62%, support the idea that the curriculum should be strongly backed by the use of AI, while only 46% share the view that the use of AI raises ethical issues. The traditional skill concerns are split almost evenly among the three categories (35/32/33%). The results suggest that the students are open to AI usage but still very careful about it.

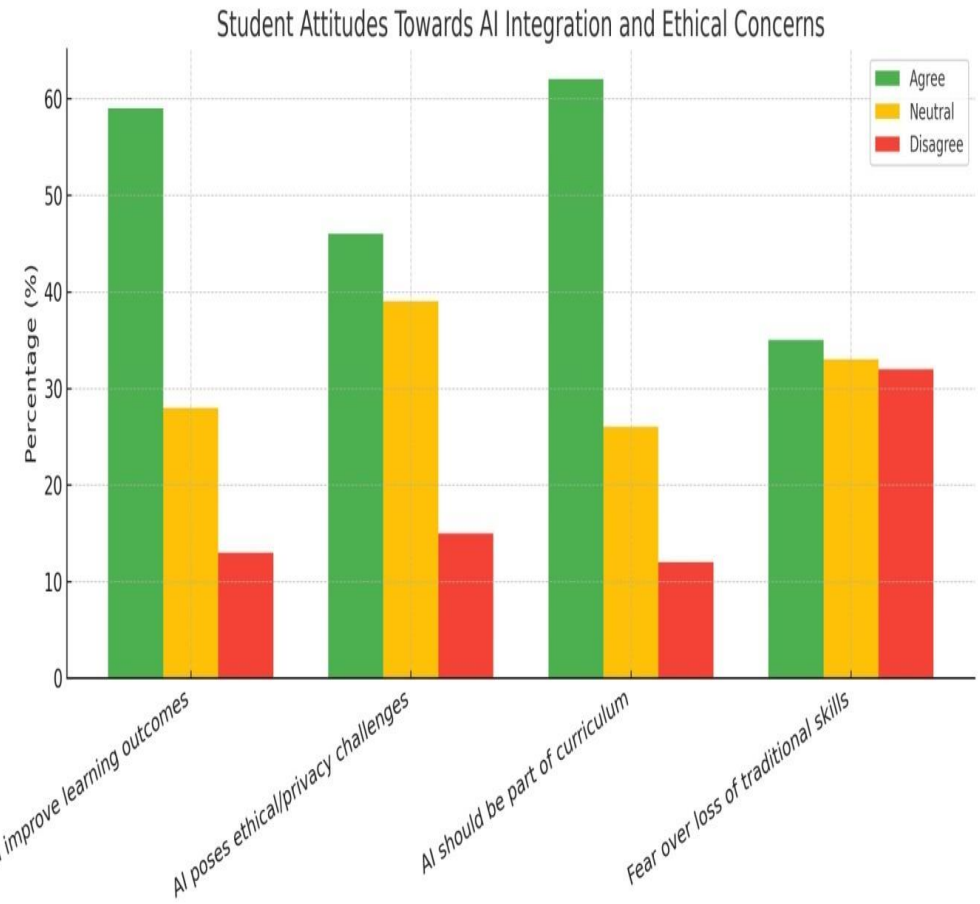

Figure 5: Student Attitudes Towards AI Integration and Ethical Concerns

The majority of students believe that AI enhances education and agree it has to be part of the curriculum, with a concensus of more than 59-62%. Almost 50% say that AI creates moral and privacy issues, but a large number are still uncommitted in this regard. The views on AI being a threat to traditional capabilities are almost equally divided among the three groups: agree, neutral and disagree.

Table 6: Key Recommendations for Enhancing AI Literacy in Rural Higher Education

Recommendation	Description	Endorsement (%)
Faculty AI Training and Capacity Building	Organize workshops and training programs to improve instructors' AI knowledge and skills.	81
Development of Localized Language AI Resources	Create AI learning materials in local languages to overcome language barriers.	64
Affordable Access to AI-Enabled Devices and Tools	Provide subsidized or shared access to AI-related technology and tools for students.	73
Establishment of AI Labs in Colleges	Set up dedicated AI labs equipped with necessary infrastructure for hands-on learning.	55
Community Engagement and Awareness Campaigns	Implement awareness initiatives to involve local communities in the benefits of AI literacy.	60

The areas of faculty development (81%) and affordable access (73%) were the most supported ones, which indicates that the students acknowledge the need for teachers' capabilities and the necessary infrastructure for the successful implementation of AI literacy programs in rural areas.

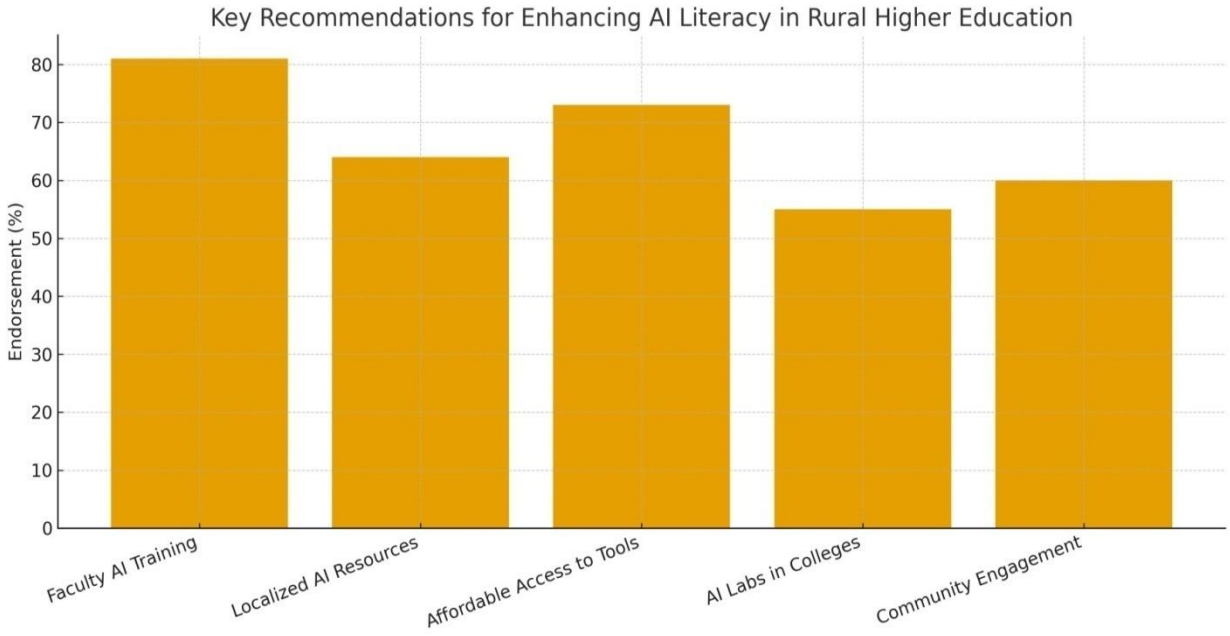

Figure 6: Key Recommendations for Enhancing AI Literacy in Rural Higher Education

The chart indicates that the highest support is given to faculty AI training (around 81%), and then to the providing of affordable access to tools of AI (about 73%). Localized AI resources (approximately 64%) and active community participation (around 60%) are additionally recognized as effective methods and get a lot of support. The creation of AI laboratories in universities, even if it is a bit lower in support at approximately 55%, is still thought to be an important suggestion for the improvement of AI competence in the rural areas of the country's higher education system.

DISCUSSION

The findings indicate that Gadchiroli undergraduates have a moderate level of AI literacy, with science students being the best among all (Table 2). Thus, it would be logical to provide AI modules in all streams of education to prevent this gap in skill development from becoming wider.

Major reasons preventing AI engagement are infrastructure short falls (72%), untrained staff (68%), and insufficient resources (Table 4). Rural colleges require a common AI access point, training workshops for teachers, and multilingual resources that are affordable and cater to rural life.

The students are quite supportive of the AI course integration (62%) and at the same time are aware of the ethical implications (46%) (Table 5). Universities should teach the use of AI tools and at the same time, impart ethics as these are the main components for responsible technology adoption.

The students' suggestions (Table 6) point out the need for faculty training (81%) and the provision of low-cost gadgets (73%). The educational institutions should conduct these activities through workshops, resource centers, and the provision of cheap technology to make the rural colleges AI-ready.

CONCLUSION

The present study highlights that there are significant AI literacy gaps among all the different streams of rural Gadchiroli undergraduates, which are mainly caused by infrastructural and socio-economic barriers. The rural higher educational institutions need to take prompt actions based on these findings to prevent the digital divide.

The students' positive attitudes are an indication of their willingness. Earning youth from the villages will be empowered to have AI futures and professional careers through faculty training, localized resources, affordable tech access, and community engagement.

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