UNCOVERING BIASES, UNLOCKING POTENTIAL OF AI EDUCATION AND DIGITAL INCLUSION FOR MARGINALIZED COMMUNITIY

DR. K. MALARVIZHI

Assistant Professor, Department of Commerce-SFS

Shrimathi Devkunvar Nanalal Bhatt Vaishnav College for Women

Priyadharshini K and Manasa B

B.COM (General) SFS- D Batch

ABSTRACT

The increasing ubiquity of Artificial Intelligence (AI) has significant implications for marginalized communities, who often face barriers to digital inclusion. This study investigates the relationship between AI literacy and digital inclusion among marginalized groups, with a focus on identifying biases and barriers in AI education and development. This study examines the intersections of AI literacy, digital inclusion, and social equity, this research aims to contribute to a more nuanced understanding of the complex factors that shape access to and participation in AI-driven societies. The research design of the study is chi-square test, t-test, Anova and Demographic statistics. The findings of this study will inform strategies for promoting inclusive AI education, addressing biases in AI development, and fostering digital inclusion for marginalized communities and promoting AI-driven social justice and equity.

Key Words: *Artificial Intelligence, Education, Marginalized Community, Digital Inclusion*

INTRODUCTION

In today's rapidly advancing digital world, Artificial Intelligence (AI) has emerged as a cornerstone technology, driving innovation across industries from healthcare to finance, education, and beyond. However, despite AI's growing impact, on marginalized communities those facing socio-economic challenges, limited access to resources, and systemic barriers remain underrepresented in this transformative field. For marginalized communities those that face barriers related to poverty, geography, race, gender, disability, and lack of education. Online learning platforms bridge a gap in educational opportunities empowering individuals to acquire new skills, Knowledge, and perspectives. By leveraging technology, online learning platform can help to level the playing field, fostering a more inclusive and equitable environment for marginalized communities**.**

REVIEW OF LITERATURE

Dhruvitkumar Talati (2024), "AI (Artificial Intelligence) in Daily Life":

Natural language-based interfaces are frequently used in user contact with virtual assistants to overcome accessibility issues that some user groups may encounter. Although there are worries about how AI may affect jobs and possible biases in the use of virtual assistants, the technology has promise in a number of areas, such as everyday work support and mental health therapy. This paper evaluates the uses of AI in daily life in a comprehensive and informative manner.

Samo Varsik, Lydia Vosberg (2024), The potential impact of Artificial intelligence on equity and inclusion on education:

This review examines the significance of collaborative effort involving AI. This working paper explores Artificial intelligence (AI) on equality and inclusiveness in my educational opportunities in AI tools. It's outfitting the potential of AI in adaptive learning while also addressing the challenges such as access to issues, inherent biases and the need for comprehension teacher training. The potential impact of Artificial intelligence on equality and inclusive educational opportunities in balancing important potential benefits in AI with ethical consideration and the risk of exacerbating the existing disparities. It addresses privacy and ethical concerns, enhances cultural responsiveness, manages techno and provides continuing learning in AI.

Ayaz Karimov, Mirka Saarela, Tommi Karkkainen, (2024), "AI- powered education equality: Evidence from five countries":

This research indicates the transformative potential or artificial as a powerful tool to address these challenges, focusing on individuals. Through these case studies from India, Azerbaijan, Myanmar, Turkey and Kyrgyzstan, we explore how AI- assisted technique can strategically support and uplift educational environments facing socio-economic disparities. This research begins by addressing the pressing issue of unequal access to educational resources, emphasizing persistent barriers facing under- resourced schools and traditional marginalized populations / individuals.

SCOPE OF THE STUDY

This study is based upon the respondents relating to AI education in marginalized communities. The age group is mainly based on children and adults. Who are near Chennai city. To analyse the learning of AI education in marginalized communities and to discover bias and barriers in AI education and development.

OBJECTIVES

- To analyze the relationship between AI literacy and digital inclusion among marginalized groups.

- To discover bias and barriers in AI education and development.

RESEARCH METHODOLOGY

This study used a descriptive research design with convenience sampling, collecting data from 256 respondents over 2 months. Data was gathered through structured questionnaires and supplemented with journal and website research. Analysis tools included percentage analysis, Chi-square test, ANOVA, and T-Test.

LIMITATIONS OF THE STUDY

- The survey was conducted only in Chennai city.
- The study focusses towards the AI education in Marginalized communities.
- Only Marginalized communities are focused in the survey.

ANALYSIS AND INTERPRETATION

I. Demographic profile of the respondents

Demographic profile of the respondents		Frequency	%
Gender	Male	64	25
	Female	192	75
	Total	**256**	**100**

Age Group	Less than 20	125	48.8
	21-30	61	23.8
	31- 40	54	21.1
	Above 40	16	6.3
	Total	**256**	**100**
Employment Status	Student	166	64.8
	Employed	64	25.0
	Unemployed	26	10.2
	Total	**256**	**100**
Education Level	SSLC	10	3.9
	HSC	46	18.0
	UG (Under Graduate)	167	65.2
	PG (Post Graduate)	33	12.9
	Total	**256**	**100**

Source: Primary Data – Questionnaire

➢ Above table represents that the male responses are 25% and female responses are 75%.

➢ Above table represents the age group that varies based on Less than 20, 21-30, 31-40 and Above 40. 48.8% in Less than 20 age group responses, 23.8% in 21-30 age group responses, 21.1% in 31-40 age group responses, 6.3% in Above 40 age group responses.

➢ Above table represents the employment status that varies based on Student has 64.8% of responses, Employed has 25.0% of responses, Unemployed has 10.2% of responses.

➢ Above table represents the education level that various based on SSLC has 3.9% of responses, HSC has 18.0% of responses, UG (Under Graduate) has 65.2% of responses, PG (Post Graduate) has 12.9% of responses.

II. Chi- square test

S. No	Particulars		Value	DF	Asymptotic Significance (2-Sided)

1.	Taken any online courses or training program in AI	**Pearson Chi-Square**	**4.286(a)**	**2**	**0.117**
		Likelihood Ratio	4.214	2	0.122
		Linear-by-Linear Association	0.520	1	0.471
		No. of Valid Cases	256		
2.	Current level of knowledge about Artificial Intelligence	**Pearson Chi-Square**	**12.468(a)**	**2**	**0.002**
		Likelihood Ratio	12.487	2	0.002
		Linear-by-Linear Association	11.676	1	0.001
		No. of Valid Cases	256		
3.	Faced any challenges when assessing online learning platforms	**Pearson Chi-Square**	**25.412(a)**	**4**	**.000**
		Likelihood Ratio	27.521	4	.000
		Linear-by-Linear Association	.044	1	0.834
		No. of Valid Cases	256		

Source: Primary Data – Questionnaire

➢ Above table represents Ho, there is no significant association between Gender and Taken any online courses or training program in AI. Since, P value 0.117 is more than 0.05 the Ho is accepted at 5% level of significance.

➢ Above table represents Ho, there is a significant association between Gender and Current level of knowledge about Artificial Intelligence. Since, P value 0.002 is less than 0.05 the Ho is rejected at 5% level of significance.

➢ Above table represents Ho, there is a significant association between Gender and Faced any challenges when assessing online learning platforms. Since, P value 0.000 is less than 0.05 the Ho is rejected at 5% level of significance.

III. ANOVA

S. No	Particulars		Sum of Square	Df	Mean Square	F	Sig
1.	Interest of learning with AI	Between Groups	3.184	3	1.061	**1.171**	**0.321**
		Within Groups	228.301	253	0.906		
		Total	**231.484**	**256**			
2.	Hours can you dedicate to online learning	Between Groups	16.300	3	5.433	**6.807**	**.000**
		Within Groups	201.138	253	0.798		
		Total	**217.438**	**256**			
3.	Preference of Online learning platform to learn	Between Groups	4.962	3	1.654	**0.563**	**0.640**
		Within Groups	740.476	253	2.938		
		Total	**745.438**	**256**			
4.	Preference of the device for online courses	Between Groups	2.056	3	0.685	**0.624**	**0.600**
		Within Groups	276.929	253	1.099		
		Total	**278.984**	**256**			

Source: Primary Data – Questionnaire

➢ Above table represents Ho, there is no significant difference among the mean score of different Age groups and Interest of learning with AI. Since, P value 0.321 more than 0.05 the Ho is accepted at 5% level of significance.

➢ Above table represents Ho, there is a significant difference among the mean score of different Age groups and Hours you can dedicate to online learning. Since, P value 0.000 less than 0.05 the Ho is rejected at 5% level of significance.

➢ Above table represents Ho, there is no significant difference among the mean score of different Age groups and Preference of Online learning platform to learn. Since, P value 0.640 more than 0.05 the Ho is accepted at 5% level of significance.

➢ Above table represents Ho, there is no significant difference among the mean score of different Age groups and Preference of the device for online courses. Since, P value 0.600 more than 0.05 the Ho is accepted at 5% level of significance.

IV. One sample test

S. No	Particulars	N	Mean	Std. Deviation	Std. Error Mean	t-value	Significance	Rank
1.	Current level of knowledge about Artificial Intelligence	256	1.57	.665	.042	37.671	.000	**3rd rank**
2.	Interest of learning with AI	256	2.13	.953	.060	35.816	.000	**4th rank**
3.	Faced any challenges when assessing online learning platforms	256	2.75	1.475	.092	29.796	.000	**5th rank**

4.	Step should be taken to reduce bias in AI education	256	2.29	.952	.059	38.544	.000	**2nd rank**
5.	AI literacy is important for achieving digital inclusion for marginalized groups	256	2.60	.844	.053	49.256	.000	**1st rank**

Source: Primary Data – Questionnaire

From the above table the 't' values range from 29.796 to 49.256. Similarly, the mean value ranges from 1.57 to 2.75 with 't' the respective standard deviation and standard error the ranking is done with the respective 't' values and it indicates that with reference to the Education level of Marginalized communities in India.

- First rank is based on AI literacy is important for achieving digital inclusion for marginalized groups.
- Second rank is based on Step should be taken to reduce bias in AI education.
- Third rank is based on Current level of knowledge about Artificial Intelligence.
- Fourth rank is based on Interest in learning with AI.
- Fifth rank is based on Faced any challenges when assessing online learning platforms.

FINDINGS

- 75% of the respondents are in the female category.
- 48.8% of respondents under the age group of less than 20.
- 64.8% of respondents belong to the student category under employment status.
- 65.2% of respondents belong to the UG (Under Graduate).

- The chi square test indicates that gender influences to noticing that they took any online courses or training program in AI among marginalized groups. The significant values are (0.117) is more than 0.05. However, Ho is accepted at 5% level of significance.

- The chi square test indicates that Female gender influences noticing the Faced any challenges when assessing online learning platforms and Current level of knowledge about Artificial Intelligence. The significant values are (0.002, 0.000) is less than 0.05. However, Ho is rejected at 5% level of significance.

- In ANOVA, the test indicates the age group influences to notice the Preference of Online learning platform to learn, Interest on learning with AI and Preference of the device for online courses is correlated with the age group category. The significant values are (0.321, 0.640, 0.600, 0.636) more than the 0.05. However, Ho is accepted at 5% level of significance.

- In ANOVA, the test indicates with the age group less than 20, influences to notice the Hours you can dedicate to online learning. The significant values are 0.000 is less than 0.05. However, Ho is rejected at 5% level of significance.

- In one sample T-test, the 3 highest 't' value is (49.256, 38.544, 37.671) belong to the AI. Literacy is important for achieving digital inclusion for marginalized groups. Preference of device for online course, Step should be taken to reduce bias in AI education. These factors are compared with the Education and by which the respondents are concentrated AI education in marginalized groups and their biases and digital inclusion.

SUGGESTION

- AI education in marginalized communities may lead to social impact that may address social issues, such as health care, education, and environment sustainability.

- This research will also examine the essential digital skills, enabling them to navigate the digital world and access online opportunities.

- It may help in addressing systemic inequalities by providing marginalized communities with skills and knowledge.

CONCLUSION

The foremost focus of this research paper is to analyze the Uncovering Biases, Unlocking Potential of AI Education and Digital Inclusion for Marginalized communities. As we see the growth of AI education and the impact towards the online learning platform. We found that the learner's preference through the Online learning platform to learn and AI literacy is important for achieving digital inclusion for marginalized groups and help to reduce bias in AI education and development. This study has focus among the less than 20 age group influences in noticing the AI education they had a impact of Hours can you dedicate to online learning and Current level of knowledge about Artificial Intelligence and Female gender influence in noticing the Faced any challenges when accessing online learning platforms and Preference of online learning content.

REFERENCES

1. www.google.com
2. www.techrivx.org
3. www.ideas.repec.org
4. www.learntechlib.org
5. www.slideshare.com
6. www.journalssagepub.com
7. www.researchgate.net
8. www.link.springer.com
9. www.sciencedirect.com
10. www.openreview.net