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VISION VIKSIT BHARAT 2047

# EDUCATION 4.0

Enhancing India's Workforce for the AI-Powered Future

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# PREFACE

The 21st century has heralded a transformative shift in global dynamics, driven by rapid advancements in technology and the emergence of Industry 4.0. At its heart lies artificial intelligence (AI), robotics, big data, and automation, redefining the way we live, work, and learn. India, standing at the cusp of this technological revolution, has an unprecedented opportunity to align its aspirations with global progress through the visionary framework of “Vision Viksit Bharat 2047.” As the nation envisions becoming a developed and self-reliant power by its centenary year of independence, the role of education in nurturing a future-ready workforce becomes paramount. Education 4.0, a forward-thinking approach to learning, seeks to bridge the gap between traditional education and the demands of an AI-powered economy, ensuring that India’s vast demographic dividend is effectively utilized to achieve this ambitious goal.

The concept of Education 4.0 emphasizes an adaptive, personalized, and technology-driven learning ecosystem. It integrates cutting-edge tools like AI, machine learning, and immersive technologies to foster creativity, critical thinking, and problem-solving skills among learners. By reimagining education as a dynamic and continuous process, it aims to prepare individuals to excel in roles that demand not only technical expertise but also emotional intelligence, cultural sensitivity, and ethical judgment. This transformation is essential for India to stay competitive in a global market increasingly shaped by digital innovation. Moreover, as the world turns toward sustainable and inclusive development, Education 4.0 also promotes equity by democratizing access to quality learning resources. This preface underscores the significance of aligning education reforms with national and global priorities, setting the stage for India to emerge as a leader in the AI-driven future while ensuring social and economic prosperity for all.

The book is the outcome of the papers presented in the one Day National Level Seminar on “VISION VIKSIT BHARAT 2047 EDUCATION 4.0 ENHANCING INDIA'S WORKFORCE FOR THE AI-POWERED FUTURE-” sponsored by Indian Council of Social Science Research- Southern Regional Centre, Hyderabad held on 24th January 2025 organised by the Department of Commerce with Business Process Services, Nallamuthu Gounder Mahalingam College, Pollachi . A spectrum of different subjects covered at the seminar are included in this book. In chapters that are contextualized in contemporary Education 4.0, a number of authors have provided reliable and meaningful chapters. Beyond educators and students, there are other national policymakers who could benefit from this initiative. We express our gratitude to the Indian Council of Social Science Research-- Southern Regional Centre, Hyderabad for their Sponsorship to organize the national level seminar. We also thank the authors who whole heartedly contributed chapters to the book.

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# ROLE OF ARTIFICIAL INTELLIGENCE IN EDUCATION

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## Abstract

*Artificial Intelligence is the most flourishing and booming sector in today's world. AI is increasingly becoming an integral part of the educational landscape. AI is reducing the human efforts in learning and teaching. Accordingly, it becomes essential to study role of Artificial Intelligence in education in Pollachi Taluk. Data for study have been collected from 132 students through questionnaire by adopting convenience sampling method. Simple Percentage, Weighted Average Ranking and Chi-Square have been used to analyze the data. The study reveals that majority of the students belong to the age group of 17-20 years residing in rural area who lives as nuclear family whereas most of the students family income is above Rs.50000. It is observed that among the various factors available for perception of students about AI, majority of the students strongly agree with personalized and immediate learning, writing and brain storming support followed by research and analysis, visual and audio multi-media and Administrative support. It is also found that age, area of residence, educational qualification, number of members in family and family income are found to be significant with perception of students about AI in education.*

**Keywords:** Role- Perception – Artificial Intelligence– Education -Students.

## Introduction

AI (Artificial intelligence) has become a transformative force across multiple sectors and education is no exception. Education is a field where the presence of teachers is mandatory, which is the best educational practice, the emergence of artificial intelligence is changing the work of teachers who are indispensable in the education system. In recent years, young people tend to spend a lot of time with their smartphones or tabs. This gives them a chance to learn for ten to fifteen minutes in their free time using AI applications. Ahmad et al (2021) in educational settings, AI holds the potential to revolutionize conventional teaching methodologies by offering personalized learning experiences that cater to the unique requirements of each student. Tang et al (2023) the personalized nature of AI-driven instruction promotes self regulated learning and encourages student autonomy and metacognitive skills. So, in this study an attempt has been made to examine the Role of Artificial Intelligence in education.

## Review of Literature

**Kandula Neha (2021)** observes that AI is the backbone of all information science enabled intelligent tutor systems. This helps in responsive deep queries, partitioning conflict statements and choice-making skills. **Ahmet Gocen and Fatih Aydemirb (2020)**, found that schools and teachers get new products, benefits and also face issues with the arrival of AI in education. It is also found that teachers, academicians, Lawyers and Judges have some drawbacks in AI so it needs some improvements on legal grounds for AI in

education and future. **Soumi Datta (2022)**, found that AI is used to improve communication and interaction on online platforms. This is definitely a good alternative, but not a replacement. There cannot be any substitute for the traditional offline teaching methods. But, obviously, in the years to come, this disparity will slowly get bridged to a maximum extent with the evolution of AI.

### **Statement of the Problem**

Nowadays technology plays significant role in education system through development of Artificial Intelligence (AI). **Abdulaziz AI-Shammari and Sharefah AI-Enezi (2024)** observe that pre-service social studies teachers are well-versed in incorporating AI in to learning process and have successfully achieved better learning outcomes through AI use. Practical training improves teachers' skills and prepares them for the job market. **Madhuri Hooda and Chandan (2023)** found that equity in learning is given through the use of ICT tools and AI- based learning. New AI based applications are constantly changing the ways of learning in education system but they are several challenges like lack of proper network, lack of competency of teachers and lack of monetary resources. In this backdrop, it is essential to know the students perception about role of artificial intelligence in education. To find solution for the said questions, the following objective has been framed and tested.

### **Objectives of the Study**

- To know the socio-economic profile of sample students.
- To identify the students perception about the role of artificial intelligence in education
- To ascertain the variables that associate with perception of students about AI in education.

### **Research Methodology**

The study is based on primary data collected through questionnaire. It contains questions relating to the socio-economic profile and perception of students about AI in education. A sample of 132 students residing in Pollachi Taluk has been selected by adopting convenience sampling method. Simple Percentage, Weighted Average Ranking and Chi-Square test have been used to analyse the data.

### **Findings**

The findings of the study are divided into four sections namely, Socio-economic profile, reasons for preferring AI in education, perception of students about AI and variables associated with perception of students about role of AI in education.

#### **(i) Socio-Economic Profile of Students**

Socio-economic profile of students like age, area of residence, marital status, educational qualification, type of family, Number of members in the family and family income are showed in the following table.

**Table-1 :Socio-Economic Profile of Students**

Variables	Number of Students (N=132)	Percentage (%)
<b>Age(Years)</b>		
17 -20	87	65.91
21-23	36	27.27
Above 23	9	6.82
<b>Area of Residence</b>		
Urban	60	45.45
Rural	72	54.55
<b>Marital Status</b>		
Married	8	6.06
Unmarried	124	93.94
<b>Educational Qualification</b>		
Under Graduate	74	56.06
Post Graduate	58	43.94
<b>Type of Family</b>		
Joint	54	40.91
Nuclear	78	59.09
<b>Number of Members in the family</b>		
1-3 members	69	52.27
Above 3 members	63	47.73
<b>Family Income (per month)</b>		
Up to Rs.25000	21	15.91
Rs.25001-50000	52	39.39
Above Rs.50000	59	44.70

- Majority of the students, 87 (65.91%) belong to the age group 17-20 years.
- Majority of the students, 72 (54.55%) are residing in rural area.
- Majority of the students, 124(93.94%) are unmarried.
- Majority of the students, 74(56.06) are under graduate.
- Majority of the students, 78 (59.09%) belong to nuclear family.
- Majority of students 55(52.88%) have above 3 members in their family
- Most of 59(44.70%) students family income is above Rs.50,000.

**(ii) Reason for Preferring Artificial Intelligence in Education**

An attempt has been made to know the various reasons for preferring AI in education by students. Weighted Average Ranking has been used to know the reason for using AI.

**Table-2 :Reasons for Preferring AI- Weighted Average Ranking**

Reasons	Ranking
Generating Idea	III
Creation of Content	II
Video Creation	V
24/7 Support	I
Large volume of Information	VIII
Data Privacy Protection for Analytical Models	IX
Tutoring	VI
Coding	IV
Increased productivity	VII

It is observed from the above analysis that among the various reasons available for preferring AI, the respondents prefer 24/7 support as the highest reason for preferring AI in education followed by creation of content, generating idea, coding, video creation, tutoring, increased productivity, large volume of information and data privacy protection for analytical models.

**(iii)Students Perception towards Role of Artificial Intelligence in Education**

An attempt has been made to know the factors that influence the students' perception towards role of AI in education.

**Table-3 :Students Perception towards Role of Artificial Intelligence in Education**

Factors	Strongly Agree	Agree	Disagree
Personalized and Immediate Learning	83 (62.88)	44 (33.33)	5 (3.79)
Writing and Brainstorming Support	82 (62.12)	49 (37.12)	1 (0.76)
Research and Analysis Support	79 (59.85)	49 (37.12)	4 (3.03)
Visual and Audio Multi-Media Support	74 (56.06)	54 (40.91)	4 (3.03)
Administrative Support	74 (56.06)	49 (37.12)	9 (6.82)

It is observed from the above analysis that among the various factors that influence on AI, majority of the students strongly agree with personalized and immediate learning, writing support followed by research and analysis, visual and audio multi-media and Administrative support.

**(iv) Variables Associated with Perception of Students about Artificial Intelligence in Education**

In order to find out the association between the selected variables namely age, area of residence, marital status, educational qualification, type of family, and family income and Perception of students towards AI. Chi-square test has been made use of. Level of significance is five percent.

**Table-4 :Variables Associated with Perception of students about Artificial Intelligence in Education**

Variables	Calculated Chi-Square Value	D.f	Table Value @ 5% Level
Age	14.788*	4	9.488
Area of residence	9.572*	2	5.991
Marital Status	5.129	2	5.991
Educational Qualification	8.339*	2	5.991
Type of Family	5.379	2	5.991
Number of Members in Family	6.233*	2	5.991
Family Income	9.868*	4	9.488

The above discloses that out of seven variables selected, five factors namely age, area of residence, educational qualification, number of members in family and family income are found to be significant with perception of students about AI in education at five percent level.

**Suggestions**

- Infrastructure development like speed internet connectivity to students in College may be provided to access AI.
- Promote ethical AI use through curriculum development and provide training to teachers for updating AI tools.
- To provide AI-based learning for students educational institutions may have association with Techno companies.
- Government may provide financial support for researchers, educational Institutions and startups in the field of AI-based learning.

**Conclusion**

It is observed that Age, Area of Residence, Educational Qualification, Number of Members in Family and Family Income have significantly associated with the preference level of AI in education. AI is not meant to replace teachers, but rather to help them be more effective and efficient. Teachers can still provide important social-skills and a nurturing learning environment. AI has important role in enhancing learning experiences, promoting inclusivity and accessibility, improving productivity and efficiency. The role of

AI in education is pivotal in shaping the future of learning. This transformative technology holds the potential to enhance student engagement, adapt to individual needs, and pave the way for a more inclusive and effective educational landscape.

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