An Analytical Study on Engagement of Artificial Intelligence in Teaching Learning Process at HEI's for outcome based evaluation

Dr. Sanjay Ganesh Mishra,
Principal, Shree L. R. Tiwari Degree College of Arts, Commerce & Science, Miraroad (East) 401107, Thane, Maharashtra, India
sanju14mishra@gmail.com

Dr. Saee Sharad Sawant,
Assistant Professor, Shree L. R. Tiwari Degree College of Arts, Commerce & Science, Miraroad (East) 401107, Thane, Maharashtra, India
sawantsaee14@gmail.com

Dr. Roma Ahuja,
Assistant Professor, Shree L. R. Tiwari Degree College of Arts, Commerce & Science, Miraroad (East) 401107, Thane, Maharashtra, India
romakateja88@gmail.com

Dr. Nusrat Choudhary,
Assistant Professor, Shree L. R. Tiwari Degree College of Arts, Commerce & Science, Miraroad (East) 401107, Thane, Maharashtra, India
nusratchoudhary@gmail.com

Abstract:
Artificial Intelligence is the iconic word which has taken over the world with surprises beyond our imagination and it has the power to change the world at large. Introduction of AI in the field of education has given new impetus to the teaching leaning process. The uses of AI tools for assessment have allowed the teachers to think beyond the conventional style of formative and summative assessment. The researcher in his research paper has focused on the outcome based evaluation techniques using AI tools that have given new dimension to the teaching learning process. Few AI tools have found their place in the day to day working of the HEI's viz ChatGTP, Google Bard, Coursera, Grammarly, Canvas and so forth. AI tools have created an environment of novelty, innovation beyond imagination. The use of AI tools both on online and offline platform has made assessments more transparent and systematic.

The researcher under the title of research study for collection of primary data framed Google Questionnaire, which was filled by 74 respondents. 3 objectives were framed, which were measures using the tools such as graphs, charts, percentages, ratios etc. The researcher framed two Hypotheses for the research study. Both the Null hypothesis was tested using the one factor

ANOVA test. The p value (**P value = 0.000459 and P value = 0.003342**) of both the test were less than the **level of significance 0.05**, therefore both the hypotheses were rejected.

The finding of the research study states that the Artificial Intelligence has found its place in the teaching learning process at Higher Education Institutions. The HEI's have started using the AI Educational tools for the outcome based assessment and evaluation purpose. The Faculties at the HEI's are aware about the use of few AI tools. The researcher put forth suggestions to the HEI's management to invest more in the Artificial Intelligence tools and also incorporate it with the Enterprise Resource Planning of the institutions. The training and development program for the faculties needs to be organised to learn the skill to use the technology at its best. The students of the HEI's need to be taught to use the AI tools for their project work, assessments, research work etc.

Key Words: Artificial Intelligence, Teaching Learning Process, Higher Education Institutes (HEI's), Outcome based Evaluation.

Introduction:

"Artificial intelligence is not a substitute for human intelligence; it is a tool to amplify human creativity and ingenuity." Dr. **Fei-Fei Li, American Computer Scientist.**

The about quotes motivates for using Artificial Intelligence as this can help foster our creativity and imaginative power. In the educational landscape the integration of Artificial Intelligence has become the focal point which has enriched the teaching-leaning process. The use of AI with its added tools has revolutionised the traditional education paradigms, proposing novel approaches engaging the students through personal experiences and optimize educational outcomes. The researcher through his research paper embarks on analytical exploration about the fast growing AI tools that it taking over the world in every walk, be it corporate sector, education sector, manufacturing sector, engineering sector and so forth.

Education industry has move a head from the teacher centric approach to student centric approach. The National Education Policy 2020 focuses on the outcome based education. It is through this approach the teaching can being about desired results. The transition from the traditional rote methods and conventional approach of evaluation to outcome based education and new age assessment tools have helped define the future of education for better tomorrow. Outcome based education being the bigger umbrella which covers one of the vertical of outcome based evaluation has ensured that both the teachers and students are at learning mode and acquiring talent, skill, knowledge and competencies for their academic and professional endeavours. HEI's strive to meet the demand of dynamic and competitive global environment which bring challenges and expects speedy solution through effectiveness and efficiency.

Let's understand the meaning terms used in the research paper though researcher's perception:

Artificial Intelligence:

Intelligence exhibited by the computers, machines, and robots through detailed programming to perform the defined task and achieve the desired results, as opposed to the human intelligence or natural intelligence of animal or living creatures. It is the man made intelligence which has helped the humans to easy their effort; assist them for faster, efficient and more accurate work.

Outcome Based Education:

It is the new age theory that origins every aspect or each function of education system to focus on their goals of achieving the excellences through student centric approach. The end results need to be to soothing experience to every learner in their journey of becoming a happy human being.

Teaching Learning Process:
The combination of two words;
a) **Teaching** which related the mentor/teacher and their efficiency, skill and representation and efforts b) **Learning** which relates the learner/student interest in the subject and the acquisitive power for conceptual understanding
and the process is the pathway that takes the process through systematic, planned, sequential and two way approach to achieve the desired outcomes of the process.

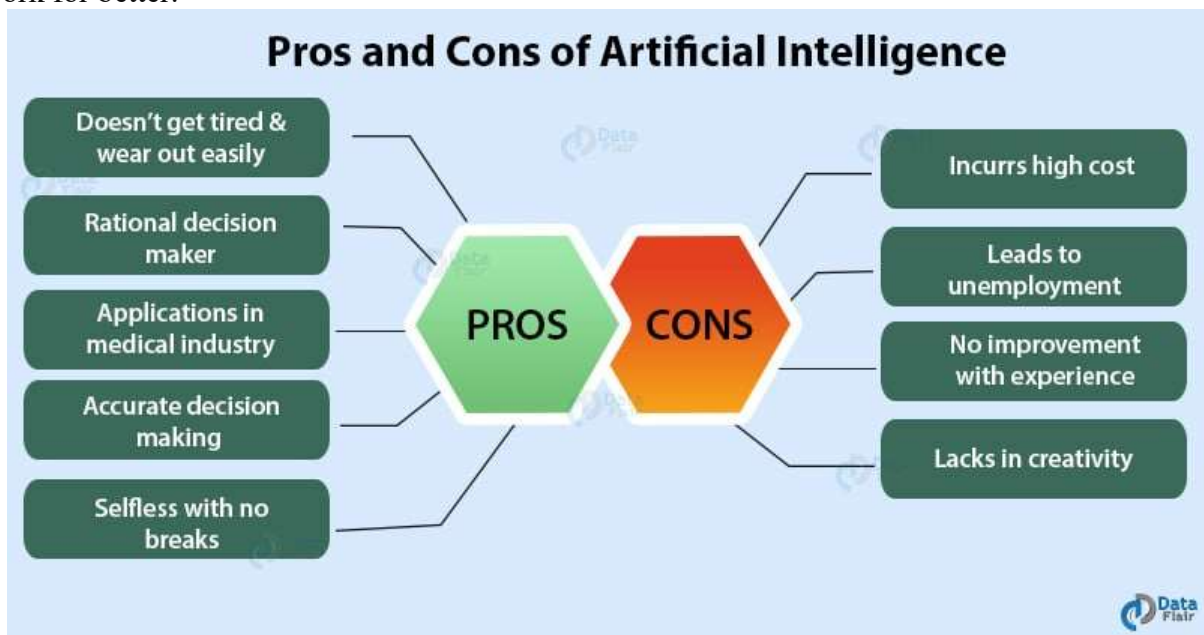**Outcome Based Evaluation/Assessment:**
The type of evaluation/assessment approach that are used in various Higher Education Institutions (educational and professional) to assess the learner for his/her skills, knowledge, and/or competencies based on specific predefined objective or the outcome.

Artificial Intelligence Educational Tools:
The AI educational tools that are those tools that helps in assessing the learner for summative and formative test. These AI tools have emerged as treasured resource of technological advancements that helps both the teacher and taught for seeking teaching learning experiences.

Artificial Intelligence - Pros and Cons:
Every innovation that leads to technological advancement aims to ease the life of the humans, assists them for accuracy, safety, transparency, faster and controlled work. But with every positive inventions come the challenges, and we humans need to accept these cons and make the technology work for better.

Pros and Cons of Artificial Intelligence

PROS
- Doesn't get tired & wear out easily
- Rational decision maker
- Applications in medical industry
- Accurate decision making
- Selfless with no breaks

CONS
- Incurrs high cost
- Leads to unemployment
- No improvement with experience
- Lacks in creativity

https://data-flair.training/blogs/artificial-intelligence-advantages-disadvantages/#google_vignette

The researcher seeks to address the critical questions by conducting an in-depth analysis of engagement of Artificial intelligence in the Teaching Learning Process at HEI's with a particular emphasis on its impact on outcome-based evaluation. By synthesizing the existing literature, empirical evidences and case studies, this study aims to elucidate the opportunities and challenges inherent in leveraging AI for educational enhancement within the context of outcome based education. In essence, the integration of both the educational and technological worlds has represented a transformative endeavour with profound implication for educational practice and policy. This journey has helped the to pave the way for informed decision making aimed at fostering students success and innovation in Higher Education.

Review of Literature:

Adoption of artificial intelligence in higher education: a quantitative analysis using structural equation modelling. (Sheshadri Chatterjee and Kalyan Kumar Bhattacharjee) September 2020. DOI:10.1007/s10639-020-10159-7

The researchers in their research study has showed the importance of artificial intelligence in Higher Education which has and who AI can support the teacher learning process by enriching the teachers and learners. The main aim and purpose of this research study is to explore the possibilities of use of AI by the stakeholders. The researchers have used the 'Unified Theory of Acceptance and Use of Technology' (UTAUT) model. The researchers' collected primary data from 329 responses, The objectives were measures using the survey method. The finding of the research study stated that the model can be adopted by the authorities at higher education which would support the stakeholders.

1) **Exploring the factors affecting the adoption AI techniques in higher education: insights from teachers' perspectives on ChatGPT** (Habiba Al-Mughairi, Preeti Bhaskar) Journal of Research in Innovative Teaching & Learning 19 January 2024.

The researchers in their study has emphasised on the adoption of ChatGPT in the academic world, but has also raised the concern of its impact on quality of education. The research study undertaken aims to know the teachers perspectives on ChatGPT and adoption of it for educational purpose. The researchers used the interpretative phenomenological analysis approach, collected the primary data through interview method from 34 teachers. The finding of the study bring out that the teachers are positive to adopt ChatGPT as it would help them to bring in quality and enhance the teaching learning process.

2) **The Impact of adopting AI educational technologies on projected course satisfaction in university students** (Paul Rodway, Astrid Schepman) Computers and Education: Artificial Intelligence Volume 5, 2023, 100150.

In their research study the researchers mentioned that educational institutions need to invest in Artificial Intelligence technologies with caution to give their students an upper edge for completing their course. In this research study 302 students were asked the questions regarding AI and its use to them in course completion. AI is were well accepted by the students when it comes to educational application, but the satisfaction level drops when AI is used for evaluations. The researchers through their research study recommended that education institutions should take caution while introducing AI to students with huge amount of investment.

3) **Opportunities and Challenges of Adopting Artificial Intelligence for Learning and Teaching in Higher Education** (Aniekan Essien, Godwin Chukwukelu & Victor Essien Teeside)

The research chapter bring in the benefits of practical application of Artificial Intelligence to Higher Education. The chapter also focused on the emerging technologies that bring in innovative techniques and methods for teaching learning process. The institutes at higher education need to adopt the new age technologies and bring in changes in teaching pedagogies. The concluding remark of the chapter discusses the challenges that new age technology would bring it with it. The higher education intuitions should use it with attentiveness so as to get maximum benefit out of it.

4) **Adoption of artificial intelligence in science teaching: From the vantage point of the African Science teachers.** (Cecilia Obi Nja, Kimson Joseph Idieqe, Uduak Edet Uwe, Anne Ndidi Meremikwu, Easter Etop Ekon, Costly Manyo Erim, Julius Ukah Ukah, Eneryo Okon Eyo, Mary

Open Access

Ideba Anari & Bernnedette Umalili Cornelius-Ukpepi) Smart Learning Environment Vol 10, article no: **42(2023).**

 The research study by use of 'Technology Acceptance Model' investigated the influence of AI on science teachers. Factors such as self-esteem, stress and anxiousness, ease of utilization, behavioural intention etc were studied with 79 science teachers through primary data collected through questionnaire. The study used the descriptive and analytical research design. Reliability test was conducted using the Cronbach's alpha. The finding of the study shows that the science teachers were very positive in utilization of the AI in teaching. The research study recommends that the teachers needs to be trained for using the AI at its best.

5) **Artificial Intelligence in Indian Higher Education Institutions: a quantitative study on adoption and perceptions.** (Silky Sharma, Gurinder Singh, Chandra Shekhar Sharma, Shikha Kapoor) January 2024 DOI:10.1007/s13198-023-02193-8

The study focuses on the integration of AI into higher education that has potentials to generate novel approaches in teaching and learning. The challenges possessed by this are ethical concerns and job displacement. The study is based on quantitative research design where data was college from stakeholders of education institutions. The result of the study indicates relationship of various factors such as self-efficacy, behavioural intention to adopt AI. The findings guide the strategies planning and decision making related to AI.

6) **Exploring the impact of artificial intelligence on teaching and learning in higher education.** (Stefan A.D. Popenici & Sharon Kerr) *Research and Practice in Technology Enhanced Learning* **volume 12**, Article number: 22 (2017)

The exploratory paper opinions the emergence of use of AI in teaching learning at higher education. The future nature of education for the learners would be fabric of AI at universities. It also emphasises the challenges to higher education for adoption and administration.

7) **Applied Artificial Intelligence Applications in Higher Education Institutions: A Systematic Review.** (Ayman Bassam Nassuora) May 2022.

The research bring out the digital information processing techniques that have been developed for higher education. The researcher conveys that the technologies built have the potentials to bring large scale changes in the field of education, but it is used impact fully only at companies and other sectors. The study aims to investigate and assess the view of faculty members for introduction of Artificial Intelligence.

8) **Impact of Artificial Intelligence on Outcome-Based Education.**

(Milan Mehta, Prof Rupal Mehta, Mr Akshat Mehta, Prof Parth Mehta) January 2024 DOI:10.32628/CSEIT228619.

The research paper by the authors advocated Outcome based Education as mentioned in National Education Policy 2020. The paper focuses on PO, PSO, CO, Unit Outcomes with integration of Bloom's Taxonomy for effective assessment process. The change from conservative approaches to modern outcome based approach has changed the outlook of the education sector. The use of OBE for refining curriculum, pedagogy and assessment methods can help enhance the education standards.

Open Access

Gap Analysis of research study:
The review of literature helped the research identify the gap, where research can be conducted. The research have given few gap analysis from the literature review

1. The study under the research title was studied in bits and pieces in the past
2. The study conducted in the past focused on Outcome based education and not on outcome based evaluation.
3. The AI tools for assessment are used rarely in some HEI's.
4. The awareness of the teachers towards the new age AI tools is bit low.
5. Basic tools of ICT have found place in teaching at Higher Education.

Rationale (Problem of the study):
1. The Artificial intelligence tools are not used excessively for the teaching learning process.
2. The teachers are not aware about various tools of AI which can be used for outcome based evaluation.
3. The awareness of the different tools of Artificial intelligence is restricted to few users only.

Research Methodology:
Research Design:
A Research study title on engagement of Artificial Intelligence in Teaching Learning Process at HEI'S for outcome based evaluation has used the **Descriptive Research Design** through the analysis of data was done for understanding the use of Artificial Intelligence. The researcher gathered the primary data through structured questionnaire. The data was analysed using various statistical tool.

Universe or population of the study:
Under the purview of the study, the faculties working at Higher Education Institutions at Mumbai have been considered as the universe of the study.

Samples of the study:
In order to carry of the study, the researcher has purposively selected faculties from around colleges from Mumbai Metropolitan city.

Reference period of the study:
The research study is conducted in the month of March 2024.

Source of Data Collection:
Primary Data:
The researcher for collecting the primary data for the study have used Google questionnaire based on the Likert scale. The data was collected from the target respondents working at the Higher Education Institutions. In all 72 respondents responses were collected for the data analysis and interpretation. The questions asked were objective specific and helped the researcher to measure the objectives. The primary data helped the researcher in understanding the true sense of the problem at study.

Secondary Data:
The secondary data was collected through, books and periodicals, browsing of internet, magazines, newspapers etc. The researcher was able to integrate the theme under study and understand the views of the research scholars who have presented their research papers on a similar subject. The review of literature helps the researcher for in-depth knowledge about the subject matter and helped

for gap analysis. This exercise helped in framing the objective and hypothesis of the original work of research.

Objective of the study:

1. To study the engagement of Artificial Intelligence in teaching learning process at HEI's.
2. To find whether AI tools are useful at HEI's for Outcome Based Evaluation.
3. To suggest the stakeholders of HEI's to use AI tools for enhancing the quality of evaluation.

Hypothesis of the Study:

1. **Alternative Hypothesis (H1)** – The faculties at HEI's engages Artificial Intelligence for teaching learning process.
   Null Hypothesis (H0) – The faculties at HEI's does not engage Artificial Intelligence for teaching learning process.
2. **Alternative Hypothesis (H1)**- The AI tools used for outcome based evaluation at HEI's are highly useful for the teachers.
   Null Hypothesis (H0) – The AI tools used for outcome based evaluation at HEI's are useless (not useful) for the teachers.

Data Analysis and Interpretation:

Researcher has analysis the data for the study with the help of graphs, pie-charts, ratios, tables etc. With the above techniques researcher has drawn the interpretation to justify the objectives. Hypothesis testing is done using the statistical tools. The correlation between the objectives and hypothesis is explained in the finding and suggestion.
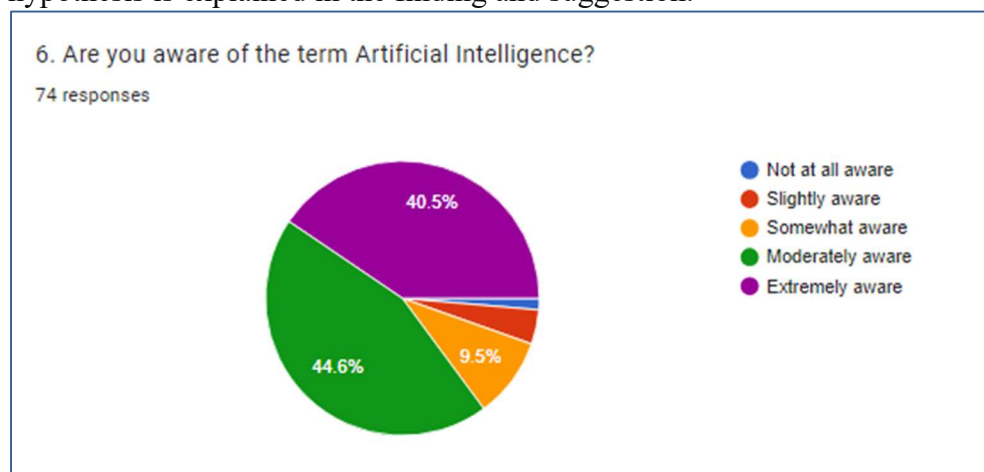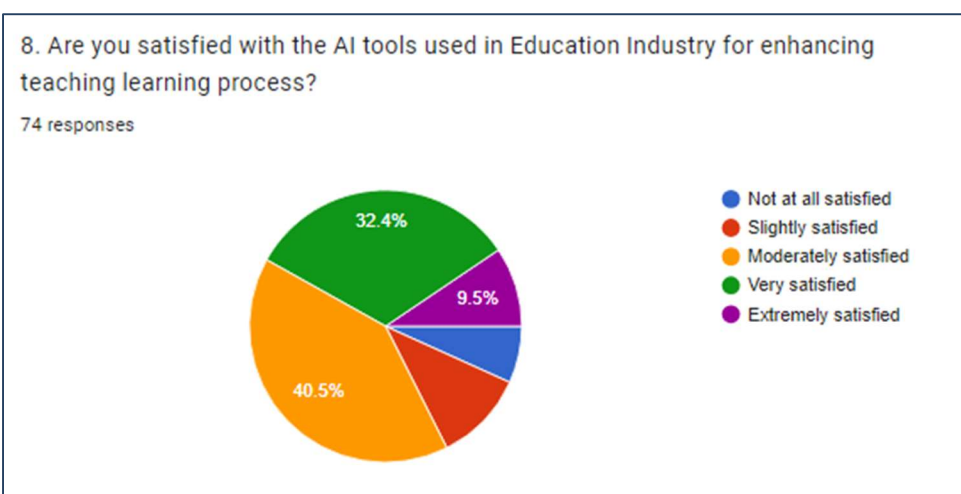

Source: Primary Chart No: 1

The above pie chart shows that nearly 85.1% respondents are aware of the term artificial intelligence. Artificial Intelligence has become the buzz world in the education sector as well.
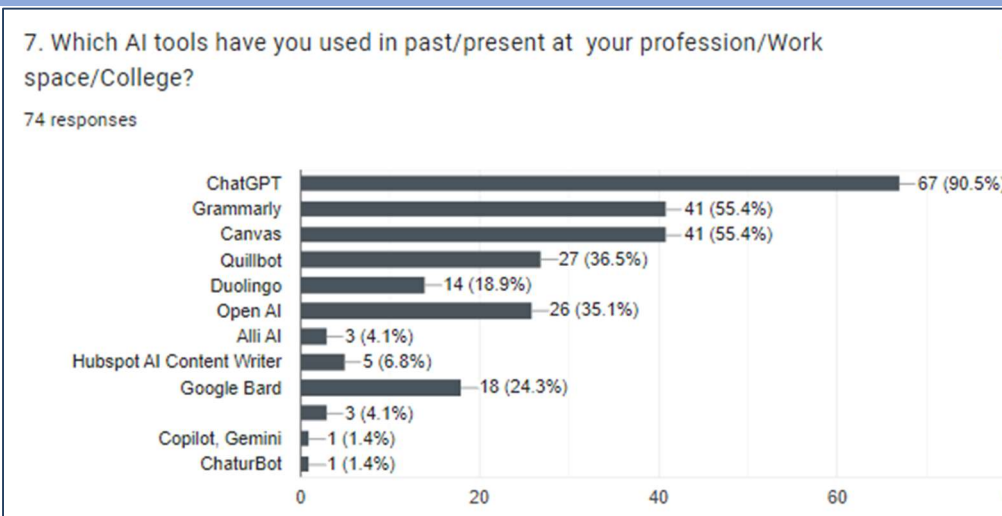
Source: Primary Graph No.: 1

The above bar graph shows that Artificial Intelligence tools like ChatGPT, Gammarly, Quillbot, Canvas, Google Bard are popular among the respondents. Near 90.5% respondents have used ChatGPT for their professional work or at Educational Institution for teaching learning process.
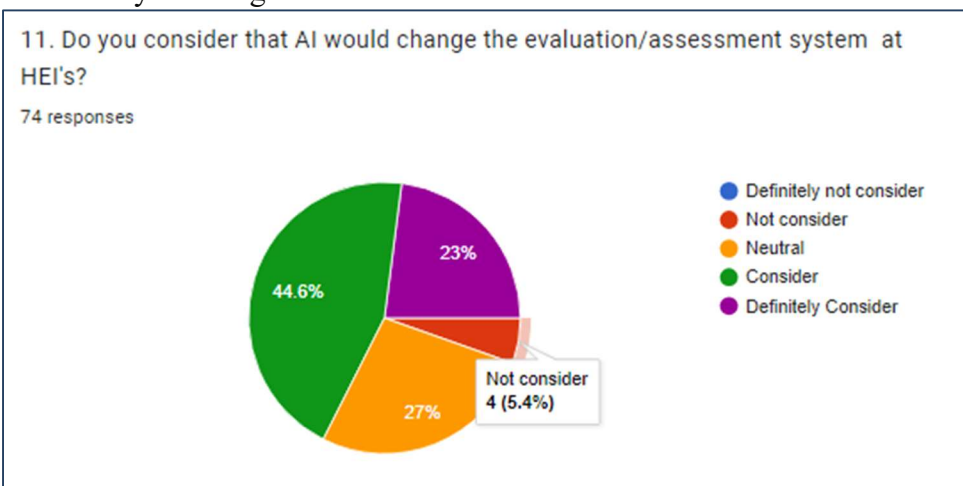

Source: Primary   Chart No.: 2

The pie chart shows that nearly 72.9% respondents are satisfied using the AI tools in their profession. Using of the AI tools has enhanced their teaching learning process. The faculties teaching at HEI's needs to accept and adopt the technological advancement, this would boost teaching skills.
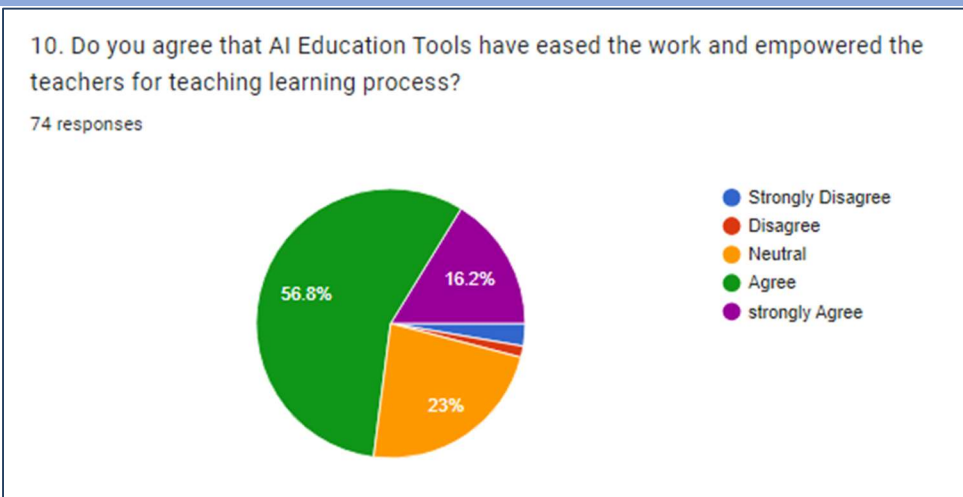
Source: Primary   Chart No.: 3

The above chart shows that 73.0% of the respondents have agreed that using the AI Educational tools have eased their work and have empowered them with new age skills. Artificial Intelligence has marked the golden era for teaching learning process by creating an environment of innovation and novelty of thoughts and idea.
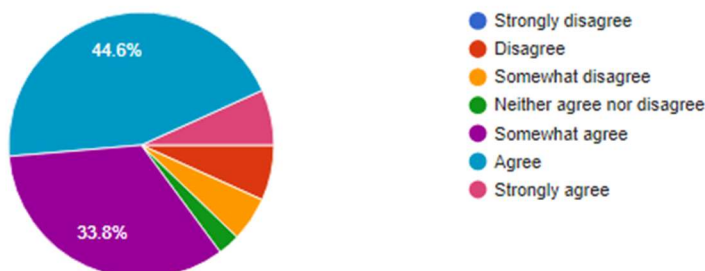

Source: Primary   Chart No.: 4

The new age AI tools have been used by the HEI's for the evaluation system which have eased the work and have made the work more systematic. Nearly 67.6% of the respondents consider that AI assessment tools have new strength to the faculties.
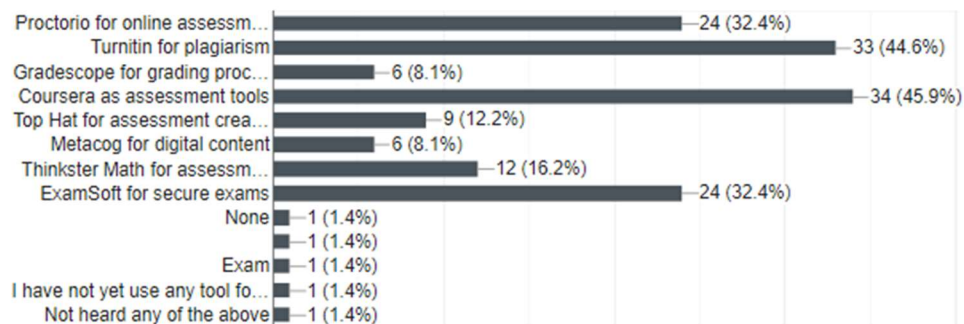
Source: Primary   Chart No.: 5

The above chart shows that almost 78.4% of the respondents agree that summative and formative assessment at the HEI's can be done easily. This shows that adoption of AI tools by the faculties can help the in better and faster assessments.

*Source: Primary   Graph No.: 2*

The above graph shows various AI tools and its awareness among the respondents. The graph shows that 44.6% respondents are aware of Turnitin for plagiarism, nearly 45.9% respondents are aware of Coursera as assessment tool. Though the awareness is not very high, but this shows that the faculties are HEI's have started experimenting and using AI tools for evaluation.
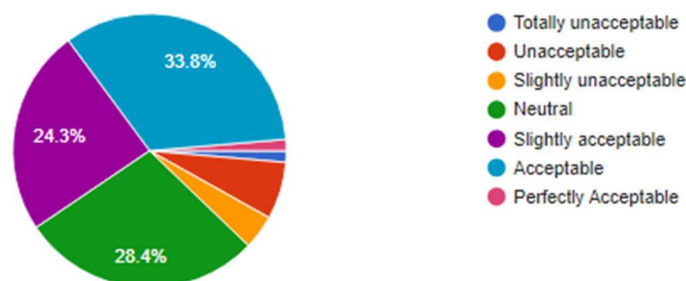
Source: Primary   Chart No.: 6

The above chart shows that 58.1% of the respondents have given their positive remark for acceptance of AI tools for evaluation. AI tools has been a support system for the teachers for evaluation and with the passage of the time, AI tools would rule the education sector.

Hypothesis Testing:

Total number of respondents: 74

1: To study the engagement of Artificial Intelligence in teaching leaning process at HEI's.

Question: (G1) Are you satisfied with the AI tools used in Education Industry for enhancing teaching learning process?

Question	No of Respondents
Extremely Satisfied	7
Moderately satisfied	30
Slightly satisfied	8
Very Satisfied	24
Not at all satisfied	5
Total	**74**

Question: (G2) Do you agree that AI Education Tools have eased the work and empowered the teachers for teaching learning process?

Question	No of Respondents
Agree	42
strongly Agree	12
Neutral	17
Disagree	1
strongly Disagree	2
Total	**74**

Using one factor ANOVA test:

AI Tools Used in Industry for Enhancing and Empowering Teaching Learning Process

	Satisfied	Not Satisfied	Total
G1	69	5	74
G2	71	3	74
Total	140	8	148

H0: The faculties at HEI's does not engage Artificial Intelligence for teaching learning process.
H1: The faculties at HEI's engage Artificial Intelligence for teaching learning process.
Level of Significance: 0.05
ANOVA: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
Satisfied	2	140	70	2
Not Satisfied	2	8	4	2

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	4356	1	4356	2178	0.000459	18.51282

o u p s W it h i n G r o u p s	4	2	2
T o t a l	4 3 6 0	3	

Conclusion: Since, P value = 0.000459 is less than level of significance, thus null hypothesis is Rejected.

Therefore, Null Hypothesis is rejected and Alternative is selected.

Therefore, the faculties at HEI's engage Artificial Intelligence for teaching learning process.

2. **To suggest the stakeholders of HEI's to use AI tools for enhancing the quality of assessment and evaluation.**

Question 01: (G1) Do you agree that summative and Formative assessment and its evaluation can be done easily using the AI tools?

Question	No of Respondents
Agree	33
Strongly agree	5
Somewhat agree	25
Neither agree nor disagree	2
Disagree	5
Somewhat disagree	4
Total	**74**

Question 02: (G2) Do you consider that AI would change the evaluation/assessment system at HEI's?

Question	No of Respondents
Definitely Consider	17
Consider	33

Neutral	20
Not consider	4
Total	74

Using one factor ANOVA test:

HO: The AI tools used for outcome based evaluation at HEI's are useless (not useful) for the teachers.
H1: The AI tools used for outcome based evaluation at HEI's are highly useful for the teachers.

Level of Significance: 0.05

Group	In Favour	Not in Favour	Total
G1	65	9	74
G2	70	4	74
Total	135	13	148

ANOVA: Single Factor
SUMMARY

Groups	Count	Sum	Average	Variance
In Favour	2	135	67.5	12.5
Not in Favour	2	13	6.5	12.5

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit

					0.003342	18.51282
...ation						
Between Groups	3721	1	3721	297.68	0.003342	18.51282
Within Groups	25	2	12.5			
Total	3746	3				

Conclusion: Since, P value = 0.003342 is less than level of significance, thus null hypothesis is Rejected.

Therefore, Null Hypothesis is rejected and Alternative is selected.

Therefore, The AI tools used for outcome based evaluation at HEI's are highly useful for the teachers.

Limitations of the study:

This study has the following limitations

1) Improper application of statistical tools cannot be denied.

2) It is practically impossible to cover all the HEI's for the study.

3) The study undertaken by the researcher is based on primary data, with limited respondents.
4) The secondary data available through sources was not objective specific and was available in bits and pieces.
5) The biasness of the responded towards the data collected cannot be overlooked.
6) The studies conducted were restricted to specific objective and had limitations of responses.

Scope of the study:

The scope of study under the research title is precisely argued & discoursed with extensive and has varied implications to policymakers, government authorities, university, and educational institutes management. The students and teachers being the core in teaching learning process have to accept and adopt the new age technological advancements viz AI tools. The scope is just not restricted to the HEI's but implication can be sought at schools level too. The study also support the companies dealing in programming the Artificial Intelligence tools for education sector to innovate and bring novelty in process that can help the teachers and students with teaching learning process.

Significance of the Study:

The significance of the study brings out the following
1. The study helps the HEI's to use the AI tools which helps in data mining and information, accuracy, security and safety for assessment of the learners.
2. The study helps the faculties to investigate with the new tools for outcome based evaluation.
3. The management of the HEI's would take strategic decision and plans accordingly for investment in AI.
4. The new methods would to wipe out the old age methods that were marks centric rather than student centric.
5. The objectives of the education would meet the end results, by building the career of the students.

Findings of Research Study:

The finding of the research study states that
1. The teachers readily and eager accept the technological advancement i.e Artificial intelligence tools for teaching learning.
2. The faculties have used some of the AI tools in their professional work space or classroom, this shows their readiness to adopt the technology
3. The training and development programs organised by the HEI's in regards to AI tools have met its goals.
4. The National Education Policy 2020 have shown the way to outcome based education, and HEI's have started using it.
5. Due to the use of few AI tools, both the evaluation methods - summative and formative to assess the learners' skill and knowledge have become easy.
6. AI is the future for education industry and the students and teachers have to live with AI.

Suggestions:

The researcher through his research study would like to provide few suggestions to the stakeholder of the Education sector.
1. The teachers must undergo training, attend workshops, sensitization programmes for having neck with AI tools

2. The HEI's need to frame strategic plans and take decisions for investing in AI tools specifically for education purpose.
3. The parents and students should be ready to accept the change that would be brought in education sector, for this they must learn about AI tools.
4. The corporates need to connect with the teachers at HEI's to know the need of outcome based education and provide AI solutions for the same.
5. The policy makers need to frame certain policy that can restrict the use of AI tools for positive impact. As every technology has it pros and cons.

Conclusion of the research study:

The introduction of Artificial Intelligence in the field of Education has given new impetus to the teaching learning process. Both the teachers and the students have benefited due to the new age technology. The AI tools like ChatGPT, Grammarly, Canvas, Google Bard etc have made learning so very interesting for the students that they finds interest in their project works, research work, assignment etc. The faculties at HEI's have new AI tools which help them to do their work at a faster pace with accuracy. HEI's management should support the teachers by investing more funds in introducing the AI tools for smooth and efficient teaching learning process. The researcher concludes that the next generation is full of AI and we need to accept with all its pros and cons.

References:

1. https://www.researchgate.net/publication/340323941_Adoption_of_artificial_intelligence_in_higher_education_a_quantitative_analysis_using_structural_equation_modelling
2. https://www.emerald.com/insight/content/doi/10.1108/JRIT-09-2023-0129/full/html
3. https://www.sciencedirect.com/science/article/pii/S2666920X23000292
4. https://www.irma-international.org/viewtitle/262722/?isxn=9781799848462
5. https://slejournal.springeropen.com/articles/10.1186/s40561-023-00261-x
6. https://www.researchgate.net/publication/377828368_Artificial_intelligence_in_Indian_higher_education_institutions_a_quantitative_study_on_adoption_and_perceptions
7. https://telrp.springeropen.com/articles/10.1186/s41039-017-0062-8
8. https://timesofindia.indiatimes.com/blogs/voices/higher-education-institutions-instilling-artificial-intelligence-and-machine-learning-to-promote-skill-development/
9. https://publications.jrc.ec.europa.eu › JRC113226
10. https://www.researchgate.net/publication/360835195_Applied_Artificial_Intelligence_Applications_In_Higher_Education_Institutions_A_Systematic_Review
11. https://www.researchgate.net/publication/377534644_Impact_of_Artificial_Intelligence_on_Outcome-Based_Education
12. https://www.researchgate.net/publication/377063368_Transformative_Impact_of_Artificial_Intelligence_in_Education_A_Comprehensive_Analysis_of_Student_and_Teacher_Perspectives
13. https://idronline.org/article/education/can-generative-ai-help-the-education-sector-in-india/?gad_source=1&gclid=EAIaIQobChMI7u-Ey7uOhQMVFs48Ah1ZQAf_EAAYASAAEgJ2-fD_BwE
14. https://www.academia.edu/43821533/Research_Methodology_by_C_R_Kothari