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A Conceptual Study In Analysing The Overall Influence Of Artificial Intelligence Towards Teaching And Learning In Higher Education

Keshav Kumar K.[1], Dr. NVSL Narasimham[2]
[1]*Assistant Professor, Department of Humanities and Mathematics,*
G. Narayanamma Institute of Technology and Science (for Women), Hyderabad-500 104, Telangana State, India.
[2] *Associate Professor, Department of Humanities and Mathematics,G.Narayanamma Institute of Technology and Science (for Women), Hyderabad 500 104, Telangana State, India.*

Abstract:
In this article, we study the growing use of AI in the instructional methods of educational institutions such as universities. It explores the ways in which students learn as well as the ways in which teachers can adapt in order to stay up with the rapid development of new technology. In order to forecast what will happen to higher education in a world dominated by AI, it is necessary to investigate the most recent technological advancements and the speed with which new technologies are being adopted.
In the past three decades, there has been significant progress made toward introducing and making use of cutting-edge technology in educational settings. When seen through the prism of modernity, it is simple to disregard the debates that raged inside our educational institutions over the availability of technologies that are now regarded as archaic. The authors of a 1993-2005 US-based longitudinal study on accommodations for impaired students recall the heated debate that took place over whether or not it was appropriate to allow students with and without disabilities to use calculators and spell-checking software (Lazarus et al., 2008). The study was conducted in the United States. Magnification tools, text-to-speech and speech-to-text software, text-to-speech and speech-to-text software, text-to-speech and speech-to-text software, predictive text, spell checks, and search engines were among the first assistive technologies to be developed. Later on, the range of devices that might benefit from these advancements was enlarged, and now, they are present in a wide variety of devices, ranging from desktop computers to smartphones to smartwatches. Because of the better opportunities for teaching and educational experience creation brought about by these technologies, there is currently a rise in the learning interactions of all students located in every region of the world.

Keywords: *Artificial Intelligence, Higher Education, Regression analysis*

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I. INTRODUCTION

There is a significant relationship between the ever-increasing processing capacity of new intelligent computers and the direction that higher education will take in the future. It is probable that one of the unanticipated impacts of research and development in artificial intelligence will be a shift in the administration and internal structure of universities; yet, this transformation will also bring both new opportunities and obstacles for teaching and learning. The responses to these questions have been shaped by philosophical viewpoints that have been held at least as far back as Aristotle. As a direct consequence of this, there is not a single definition of artificial intelligence that is accepted by the majority of people (Botrel, 2015).

The rapid development of AI has led to significant modifications in the kinds of services supplied by educational institutions like universities. These shifts have been brought about by the quick advancement of AI. Institutions have already started to implement AI technology, such as IBM's Watson, the company's supercomputer with artificial intelligence capabilities. (González,, 2015) In order to gain support with their academic pursuits, students at Deakin University in Australia have access to the system around-the-clock, 365 days out of the year. The use of Watson is just one illustration of how the future profile of the administrative personnel in higher education will change as a result of the application of artificial intelligence. Despite the fact that Watson's algorithms perform best on tasks that are repetitious and can be predicted with a certain degree of accuracy, this remains the case. Adjustments to the university's labor structure, as well as its time dynamics and service quality structures, are currently being undertaken as a direct result of this situation. If a supercomputer had the capacity to provide immediate and personalised feedback, there would be no need for the same number

of administrative staff employees as there is today. The word "machine learning" may be appropriate for use in this setting because it refers to a possible subfield within the field of artificial intelligence. Some applications of artificial intelligence still need to be programmed, while others can learn from past events and make predictions based on that data. The artificial intelligence team at Google known as DeepMind produced a software known as AlphaGo. This program proved successful in defeating the current world champion in the extremely difficult board game Go (Mason,, 2016). Machine learning is an area of artificial intelligence study that explores how computers learn to detect patterns, create predictions, and then apply those patterns to new situations that were not a part of the original design. When we talk about "machine learning" here, we are referring to this subfield of artificial intelligence research.

Students at today's colleges and universities are at the heart of a wide array of innovative classroom issues and opportunities. These challenges and opportunities are constantly evolving to meet the needs of today's students. Those who have constraints can currently have access to solutions that make human-AI collaboration easier and that provide interfaces between people and AI. It's possible that they'll catch the curiosity of teachers, which will encourage them to try them out in the classroom, where they could end up being helpful to both students and teachers while also making lessons more interesting to listen to. The book "Encyclopedia of Science, Technology, and Ethics" written by Carl Mitcham (Wolpaw, 2012) defines a "cyborg" as "a cross between a human and a machine." As a consequence of this, the manufacturing of cyborgs may not take place in the far future as much as we might think it will. Hugh Herr, the head of the Biomechatronics group at the MIT Media Lab and a faculty member in the Health Sciences and Technology program at both Harvard and MIT, recently gave an interview to the publication "new scientist," in which he predicted that "disability will disappear by the end of this century." In addition, I believe that it is a claim that one may make with a reasonable amount of credibility. According to Popenici, (2015), the bulk of diseases will be eradicated within the next half century if technological improvement continues at its current pace. This company has established itself as a leader in the field of bionic technology development for both individuals who are unable to perform certain tasks and those who are able to do those tasks. They have done this by inventing cutting-edge exoskeletons and prosthetic limbs.

II. REVIEW OF LITERATURE

The consequences of artificial intelligence are currently being monitored by analysts as they spread throughout the world economy. The acquisition of DeepMind Technologies by Google for a price of 400 million dollars in 2014 was the company's most significant investment in the European Union. DeepMind Technologies, currently known as Google DeepMind, is an artificial intelligence (AI) powerhouse that focuses on machine learning and the development of novel algorithms. The company is situated in London. The German Research Centre for Artificial Intelligence (DFKI GmbH) is another notable institution in which Google has made significant investments. DFKI GmbH claims to be "the largest research center worldwide in the field of Artificial Intelligence and its applications in terms of employee number and external funding" (Pasquale,, 2015). Google has also made significant investments in the University of Oxford and the University of Cambridge. As part of the ongoing competition to come out on top, numerous tech giants, like Apple, Google, Microsoft, and Facebook, have each committed significant resources to the development of AI-related software and research. According to Kübler, (2015), in December of 2015, Google announced that the company would use their D-Wave 2X quantum computer for challenging artificial intelligence tasks, more often known as optimization issues. Researchers at Google argue that their newly developed machine represents a significant advancement in artificial intelligence because it is one hundred million times quicker than any other modern computer. According to what the authors have written, "We hope that it helps researchers build more accurate and efficient models for everything from speech recognition to web search to protein folding" (Luckin, 2017).

The present surge in interest in artificial intelligence will soon have an impact on academic institutions such as colleges and universities. The vast number of students now enrolled in schools, the push to make higher education available to everyone, and the global student market all point to the necessity of implementing AI-based solutions in the higher education sector. The "outsourcing" of the academic profession, which can be seen by looking at the number of employed academics and tenured posts (Grove, 2015), makes it possible for intelligent computers to carry out a large-scale conquest of the world. Because of the "massification" of higher education and the political will to cut public support for universities, there is an actual need to keep costs to a minimum. This need is driven by both of these factors. Even while research is still the primary source of funding and status in worldwide rankings, the MOOC craze has proven that it is attractive for many university administrators to save expenses by decreasing pricey academic teaching staff. This is the case despite the fact that the MOOC craze has shown how tempting this option is. This change is being pursued strongly by institutions based in Australia, and the trend toward temporary employment and contracts with shorter terms is continuing.

First time ever, educational institutions are looking into how artificial intelligence (AI), student achievement, and institutional leadership and management could all be improved with AI's help. Already observable are the results of these technological advancements as well as the potential they hold. Recent advancements in artificial intelligence (AI) and non-invasive brain-computer interfaces, for example, are opening up new possibilities for rethinking the role of the teacher or even replacing them with teacher-robots or virtual "teacherbots" (Bayne, 2015; Botrel, et al., 2015). One example of this is that recent improvements in AI are opening up new opportunities for rethinking the role of the teacher. BCI devices can already recognize when a student is paying careful attention to the content and performs well on learning activities (Chen et al., 2015; González et al., 2015). The IBM Watson supercomputer can operate as an automated teacher during the whole of a course. The ability to communicate with and operate computers through thinking, as well as the growing use of artificial intelligence in teaching and learning, are the true technical revolutions that will profoundly change higher education on a global scale. Artificial intelligence will also play an expanding role in teaching and learning. Instruction that is student-centered and personalised can be provided by a teacherbot or "cloud-lecturer" for classes that are either hybrid or totally online. Traditional teaching assistants are already facing competition from teacherbots, which are computer-based solutions for the administrative aspects of education. These solutions are already providing a potentially disruptive alternative. The distribution of material, input on fundamental and administrative matters, and monitoring are all included in these components. Take, for instance, the online Master of Computer Science course in knowledge-based artificial intelligence (KBAI) that Georgia Tech Professor Ashok Goel teaches. Because the students held the TA in such high regard, they were ready to nominate her for the prize given to the most outstanding teaching assistant. The pupils held extremely high expectations, which were completely shattered by this TA. When pupils found out that Jill Watson had been a teacherbot, a virtual teaching assistant built on the IBM Watson platform, it came as a complete shock to them.

III. METHODOLOGY

The purpose of this research, when seen from a positivist point of view, is to determine which of the independent variables is the most important. Any inquiry into topics belonging to the field of social sciences absolutely needs to be backed by a robust research philosophy. It is beneficial to both the selection of research methodology and the theoretical framework to have a research philosophy to lead the process of doing research. It is possible that the theoretical foundations of a research might be uncovered by doing a literature review on the relevant topics. The philosophical points of view make it easier to find solutions to the questions raised by the study. When a researcher takes a philosophical attitude that is more moderate, it is easier to find a technique, theoretical framework, and research subject that are compatible with one another and operate well together. This is an example of applied research, as the name suggests, therefore pay attention to the details. This inquiry used a quantitative technique as its methodology, which was centred on collecting data. In order to improve quantitative research methodologies, postpositive knowledge statements might be helpful. The relationship between variables that are independent and those that are dependent is the focus of this research. The method of sampling that was chosen to employ for this research was random sampling. There is use of both descriptive statistics and inferential statistics.

Aim of the research

The main aim of the study is to analyse the overall influence of artificial intelligence towards teaching and learning in higher education

Research Hypothesis

There is no significant difference between augmenting content delivery through AI for effective teaching and learning in higher education

There is no significant difference between creating customised modules through AI for effective teaching and learning in higher education

There is no significant difference between real time feedback of the students through AI for effective teaching and learning in higher education

Analysis of the data

This section is mainly involved in performing detailed analysis through percentage analysis, regression analysis and chi square analysis

Percentage analysis

Table 1: Percentage analysis

Respondents Gender	Frequency	Percent	Mean	SD
Male	110	67.9	1.32	0.468
Female	52	32.1		
Respondents Age	Frequency	Percent	Mean	SD
21 - 25 Years	20	12.3	2.31	0.815
25 - 30 Years	87	53.7		
30 - 35 Years	39	24.1		
35 - 40 Years	16	9.9		
Education	Frequency	Percent	Mean	SD
Completed Undergradutaion course	49	30.2	1.84	0.649
Completed Postgraduation course	90	55.6		
Others	23	14.2		
Currently working in	Frequency	Percent	Mean	SD
Private Schools	106	65.4	1.35	0.477
Govt Aided Schools	56	34.6		
Experience	Frequency	Percent	Mean	SD
1 - 4 years	45	27.8	2.59	1.45
4 - 8 years	49	30.2		
8 - 12 years	27	16.7		
12 -16 years	9	5.6		
More than 16 years	32	19.8		
Total	162	100		

Based on the analysis it is identified that 67.9% of them were male respondents, also, the mean value of gender respondents is 1.32 and standard deviation is 0.468, 53.7% were in the age group between 25 - 30 Years the mean value of age composition is 2.31 and SD is 0.815, 55.6% have Completed Postgraduation course, the mean value is 1.84 and SD is 0.649, 65.4% were working in private schools , the overall average is 1.35 and SD is 0.477, lastly 30.2% possess experience between 4 - 8 years, whereas the average is 2.59 and SD value is 1.45.

Regression analysis

The next part of the analysis is involved in presenting the impact of using AI for effective learning and teaching in the higher education

Table 2: Regression analysis

R	**R Square**				
0.903	0.815				
Regression	**B**	**SE**	**Beta**	**t**	**Sig.**
(Constant)	0.3	0.148		2.021	0.045
Augmenting content delivery	0.363	0.079	0.367	4.592	0
Creating customised modules	0.3	0.078	0.325	3.83	0.000
Real time feedback	0.248	0.068	0.255	3.678	0
F Value	74.497				
Sig.	.000b				

From the analysis it is noted that the R squared is 0.815, which shows that the model is a best fit, furthermore, the regression equation can be framed as follows

Y (Effective teaching and learning) = 0.30 + 0.363 x Augmenting content delivery + 0.300 x Creating customised modules + 0.248 x Real time feedback

Test of hypothesis:

The last part of the section is involved in verifying the hypothesis using chi square test

Null: There is no significant difference between augmenting content delivery through AI for effective teaching and learning in higher education

Table 3: Chi square test 1

Augmenting content delivery	Value	df	Sig.
Pearson Chi-Square	336.835a	16	0.00
Likelihood Ratio	246.772	16	0.00
Linear-by-Linear Association	121.737	1	0.000

Based on the above table it is noted that the p value is 0.00 which is less than 0.05, therefore null hypothesis is rejected and alternate hypothesis is accepted. Therefore, there is a significant difference between augmenting content delivery through AI for effective teaching and learning in higher education.

Null: There is no significant difference between creating customised modules through AI for effective teaching and learning in higher education

Table 4: Chi square test 2

Creating customised modules	Value	df	Sig.
Pearson Chi-Square	334.365a	16	0.00
Likelihood Ratio	231.962	16	0.00
Linear-by-Linear Association	121.916	1	0.000

Based on the above table it is noted that the p value is 0.00 which is less than 0.05, therefore null hypothesis is rejected and alternate hypothesis is accepted. Therefore, there is a significant difference between creating customised modules through AI for effective teaching and learning in higher education.

Null: There is no significant difference between real time feedback of the students through AI for effective teaching and learning in higher education.

Table 5: Chi square test 3

Real time feedback	Value	df	Sig.
Pearson Chi-Square	331.489a	16	0.00
Likelihood Ratio	214.817	16	0.00
Linear-by-Linear Association	113.198	1	0.000

Based on the above table it is noted that the p value is 0.00 which is less than 0.05, therefore null hypothesis is rejected and alternate hypothesis is accepted. Therefore, there is a significant difference between real time feedback of the students through AI for effective teaching and learning in higher education.

IV. CONCLUSION

It is necessary to have an honest discussion about how artificial intelligence (AI) will influence higher education in the future and what choices educational institutions will make as a result of this. In light of the lightning-fast pace of technological innovation and the consequent loss of jobs, subject matter experts in the industry are in agreement that the responsibilities and teaching methodologies employed by higher education instructors need to be re-examined (source). In light of the increased adoption of technological solutions such as "learning management systems" and IT approaches to prevent plagiarism, the question of whether corporations or universities decide what students should be taught has emerged as an important topic of discussion. In light of the growth of techlords and the near monopoly of a few number of tech corporations, there has been an increase in the level of concern regarding the significance of protecting one's privacy as well as the possibility of a dystopian future. When planning for a sustainable future, educational institutions such as colleges are required to take into account the aforementioned factors. In addition, artificial intelligence software that is designed on the basis of complex algorithms by programmers who are able to insert their own prejudices or agendas into operating systems will eventually replace many sets of tasks that are today important to instructional practices in higher education. If universities want to continue serving as centres for the promotion, development, and preservation of civilisation, they must continually maintain a critical attitude toward prospective alternatives and maintain an inquisitive curiosity about such alternatives. That is to say, educational institutions need to rethink the ways in which they run their businesses, the ways in which they teach students, and the ways in which they will interact in the future with AI-based solutions. The various positives and negatives associated with the implementation of AI in educational settings are not lost on institutes of higher learning. These possibilities open up new doorways to higher education while simultaneously promoting learning that continues throughout one's life and safeguarding essential ideals and objectives.

REFERENCES

[1]. Abraham. A. et al. (2014). Gender Differences in Creative Thinking: Behavioral and fMRI Findings. Brain Imaging Behavior. 8(1): 39-51.

[2]. Ary, D., Sorensen, C., & Jaco, L. C. (2010, February 12). Introduction to Research in Education (8th (eigth) Edition Hardcover ed.). Cengage Learning.

[3]. ATC21S (Assessment and Teach of 21st Century Skills). "About the Project." Accessed February 7, 2019. http://www.atc21s.org/about.html.

[4]. B. Ji, Y. Li, D. Cao, C. Li, S. Mumtaz, and D. Wang, (2020). "Secrecy performance analysis of UAV assisted relay transmission for cognitive network with energy harvesting," In IEEE Transactions on Vehicular Technology, vol. 69, no. 7, pp. 7404–7415.

[5]. Bapna, A., N. Sharma, A. Kaushik, and A. Kumar. (2017) Handbook on Measuring 21st Century Skills. New Delhi: Evaldesign.

[6]. Bhattacherjee, A. (2012). Social Science Research: Principles, Methods, and Practices (Second Edition ed.). (a. University of South Florida, Ed.) Florida, Tampa, Florida, USA: Global Text Project; Creative Commons AttributionNonCommercial-ShareAlike 3.0 Unported License: doi:ISBN-13: 978-1475146127.

[7]. Bialik, M., J. Martin, M. Mayo, and B. Trilling. (2015). Evolving Assessments for a 21st Century Education. N.p.: Assessment Research Consortium.

[8]. Biao, I. (2018 April 25) "Supplying Basic Education and Learning to SubSaharan Africa in the Twenty-First Century." World Journal of Education 8, no. 2: 181-90.

[9]. Binkley, M., O. Erstad, J. Herman, S. Raizen, M. Ripley, M. Miller-Ricci, and M. Rumble. (2012) "Defining TwentyFirst Century Skills." In Assessment and Teaching of 21st Century Skills, edited by P. Griffin, B. McGaw, and E. Care, 17-66. London: Springer.

[10]. Care, E., P. Griffin, and M. Wilson, eds. (2018). Assessment and Teaching of 21st Century Skills: Research and Applications. Dordrecht: Springer.

[11]. Carlile, O and Jordan, A. (2012). Approaches to Creativity: A Guide for Teachers. Maidenhead: Open University Press.

[12]. Cheng, K.-M. (2017). Advancing 21st Century Competencies in East Asian Education Systems. Hong Kong: Asia Society, https://asiasociety.org/education/advancing-21st-century-competencies.

[13]. Christensen, L.B., Johnson, R.B., & Turner, L.A (2014). Research methods, Deign, and Analysis (12th Ed.). S.Frail, ED). New Jerssy, USA: PEARSON

[14]. Creswell, J. W. (2012). Educational Research, Planning, Conducting, and Evaluating Quantative and Qualitative Research (4th Edition ed.). Boylstton Street, Boston, United States of America (USA): Pearson.com.

[15]. E. Tekinarslan, M. D. Gurer and R. K. Agca, (2013, May 12). A instructional design model for ubiquitous learning environments [Online]. Available: ietc2008.home.anadolu.edu.tr/ietc2008/57.doc

[16]. Education Scotland. (2013). Creativity across learning 3–18. Edinburgh: Education Scotland. Retrieved from http://www.educationscotland.gov.uk/Images/Creativity3to18_tcm4-814361.pdf