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Revitalizing The Higher Education Curriculum Through An Artificial Intelligence Approach: An Overview

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ABSTRACT

Background. Higher education is faced with the challenges of global change which requires innovative curriculum adaptations. In this context, this research aims to develop practical guidelines for higher education institutions in implementing curriculum changes by utilizing artificial intelligence (AI).

Purpose. The aim of the research is to develop practical guidelines for higher education institutions in order to implement innovative curriculum changes and responsive to global change.

Method. Research methodology uses a quantitative approach with survey design. Identify key variables, including students' understanding of AI, preferences for AI learning methods, and their views on its impact on the learning experience. The research process involved developing a comprehensive survey instrument with questions designed to gain in-depth insight into student perceptions. The research sample consisted of 20 respondents from higher education program students who were randomly selected. Surveys can be carried out online or through face-to-face interviews.

Results. Data analysis involves statistical methods, including descriptive analysis, categorization, and coding to identify patterns in student responses. The survey results reflect a positive level of understanding (70%) and confidence (80%) of students in the role of AI in improving the quality of learning. There is a group that is neutral (20%), indicating the need for further understanding.

Conclusion. The survey results create a comprehensive picture of student perceptions and preferences for AI in higher education. Most respondents showed positive acceptance of this technology, with about half expressing a preference for learning involving AI. Overall, this research provides a foundation for higher education institutions to design effective communication and expectation management strategies to ensure optimal acceptance and participation in AI implementation.

KEYWORDS

Artificial Intelligence, Education Curriculum, Higher Education

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INTRODUCTION

Higher education is the main pillar in forming the next generation who is able to face and lead change amidst the complexity of the modern world (Clark, 1983; Son dkk., 2021). In this context, the importance of the higher education curriculum becomes very significant. The curriculum is not just a series of subjects, but also a reflection of how educational institutions prepare their students to face future challenges (Parisi dkk., 2019). Along with global developments, it is important for the

curriculum to continually undergo transformation so that it remains relevant and adaptive to societal dynamics and technological developments. In the context of educational innovation, the role of artificial intelligence (AI) is emerging as a transformative force that can bring substantial changes in teaching and learning approaches (Dwivedi dkk., 2021).

Rapid global changes, especially in the technology sector, have opened the door to the integration of artificial intelligence in the world of higher education (Kuleto dkk., 2021). AI technology provides the potential to increase the efficiency and effectiveness of the learning process, aligning the curriculum with the changing needs of the job market (Okkonen dkk., 2020). However, despite its positive potential, this change also brings its own challenges.

Therefore, this research aims to explore the dynamics between the importance of higher education curricula and the evolution of the role of AI in the context of global change. By understanding the background of global changes in education and the emergence of AI technology, this research will explore the opportunities, challenges, and goals that can guide the development of responsive and innovative curricula (Southworth dkk., 2023).

This research effort was conducted with the aim of understanding fundamental issues and formulating effective strategies to achieve changes needed in higher education. In this way, it is hoped that a more responsive curriculum can be created, producing graduates who are not only of high quality but also ready to compete on the global stage (Ali dkk., 2020; Rodney, 2020).

Before going any further, let’s look at previous research This research investigates the potential of a digital transformation strategy to rejuvenate higher education in war-torn regions, using Syria as a case study. The proposed framework employs a mixed-method approach, including literature reviews, expert interviews, and case analyses, to identify critical challenges faced by Syrian higher education institutions. Focused on digital infrastructure, capacity building for educators, e-learning platforms, digital content, and public-private partnerships, the framework aims to increase education access, foster collaboration, enable remote learning, and enhance global competitiveness in conflict-affected areas. It explores the use of MOOCs, LMS, and blended learning for higher education quality and accessibility (Pieh dkk., 2020). The framework serves as a roadmap for policymakers, educators, and international organizations to implement digital solutions supporting long-term recovery and growth in conflict-affected areas (Ammar dkk., 2020; Panti dkk., 2019).

Further research delves into the evolving landscape of education, emphasizing the dynamic changes in methods, content, concepts, and models over time. Notably, the study focuses on harnessing the potentials of Artificial Intelligence (AI) to address educational challenges, with a specific examination of the current state of AI integration in K-12 education. Through a systematic literature review spanning 2011 to 2021, conducted on articles and conference papers from the Web of Science and Scopus databases, the study identifies and analyzes 210 documents. AI applications in K-12 education are categorized into Student Performance, Teaching, Selection, and Behavior tasks, with Machine Learning (ML) and Intelligent Tutoring System (ITS) emerging as the predominant approaches. High school-related applications are more prevalent, particularly in STEM courses. The findings underscore the remarkable impact of AI on education, offering insights for researchers to implement AI-based education systems. Future work is suggested, including exploring additional databases, investigating excluded papers for inaccessibility, and further examining papers in terms of pedagogical approaches or development tools (Robertson dkk., 2022).

Next research explores the dynamic transformation within the educational landscape, highlighting shifts in methods, content, concepts, and models. A key focus is on leveraging Artificial Intelligence (AI) to tackle educational challenges, specifically examining the current state

of AI integration in K-12 education. Conducting a systematic literature review from 2011 to 2021, analyzing 210 documents from the Web of Science and Scopus databases, the study categorizes AI applications into Student Performance, Teaching, Selection, and Behavior tasks. Predominantly, Machine Learning (ML) and Intelligent Tutoring System (ITS) emerge as the prevalent approaches. Notably, high school-related applications, particularly in STEM courses, are more widespread. The study underscores AI's remarkable impact on education, offering valuable insights for researchers in implementing AI-based education systems. Future research avenues include exploring additional databases, investigating excluded papers for accessibility, and delving into pedagogical approaches or development tools within identified papers (Yunanto dkk., 2019).

The conclusions of the three article abstracts illustrate the important role of artificial intelligence (AI) in shaping and renewing education, especially at the primary and higher education levels. The first abstract highlights efforts to address educational challenges in conflict areas through digital transformation, while the second explores the integration of AI in K-12 education. Meanwhile, the third abstract includes an in-depth understanding of the potential of AI in revitalizing higher education curricula (Zakiyah dkk., 2022). In addition, the research entitled 'Revitalizing the Higher Education Curriculum through an artificial intelligence approach: An Overview' provides a comprehensive review of the application of artificial intelligence in increasing the relevance of higher education curricula, showing that AI has a significant role in facing global dynamics and the latest technology, in line with with the findings from previous abstracts.

The reason this research was conducted was to contribute to filling the gaps that exist in the current higher education system. By understanding the rapid changes in various industries, this research aims to develop a curriculum model that can accommodate these developments (Tikva & Tambouris, 2021). The hope is that this research will not only be a guide for higher education institutions but also provide direction for creating graduates who are ready to compete in the global job market.

Through this State of the art, we will look at the latest developments in the field of higher education curriculum and the application of artificial intelligence in this context (Pease dkk., 2022). The proposed innovation is the integration of artificial intelligence in the higher education curriculum. By aligning the curriculum with technological developments, it is hoped that graduates will have skills that are relevant to future industrial needs.

The research question that will be answered through this research is how to measure the effectiveness of the artificial intelligence approach in updating the higher education curriculum. The aim of this research is to develop practical guidelines for higher education institutions in implementing curriculum changes that are innovative and responsive to global changes.

After this research is completed, an evaluation will be carried out on the implementation of the proposed curriculum in several higher education institutions. It is hoped that the results of this evaluation will provide a better understanding of the impact of curriculum changes on the quality of graduates and the nation's competitiveness. For future researchers, it is hoped that they can expand this research by involving more respondents and digging deeper into specific aspects of the application of artificial intelligence in the context of higher education.

RESEARCH METHODOLOGY

This research methodology adopts a quantitative approach with a survey design (Mahmood dkk., 2019). The quantitative research design allows for the collection of data that can be measured and statistically analyzed to understand student perceptions of the application of artificial

intelligence in the context of higher education curricula. The research process began with the identification of key variables, which in this case included students' understanding of artificial intelligence, preferences for AI learning methods, as well as their views on its impact on the learning experience (Raga & Raga, 2019; Wilson, 2019).

The research procedure involved the development of a comprehensive survey instrument, designed based on current literature and prioritize aspects that are the focus of research. This instrument includes questions designed to gain in-depth insight into how students view and respond to the integration of artificial intelligence in higher education curricula (Al Hinai dkk., 2021). The research sample consisted of 20 respondents from higher education program students, selected randomly or involving those who had special experience related to the current curriculum. The process of conducting a survey can be conducted online or through face-to-face interviews, which will allow researchers to obtain more in-depth responses (Jain dkk., 2021).

Data analysis will involve statistical methods, such as descriptive analysis, to detail and interpret survey results (Mertler dkk., 2021). Categorization and coding may also be involved to identify certain patterns in student responses. This method is expected to provide a comprehensive understanding of student perceptions regarding the application of artificial intelligence in revitalizing the higher education curriculum. By involving 20 respondents, this research has the potential to provide a representative and significant view of the dynamics involved in the curriculum revolution process.

RESULT AND DISCUSSION

Prior to the analysis of the survey results, an initial discussion will outline the AI approach adopted in designing the survey, as well as provide the theoretical basis behind this choice (Flynn dkk., 2020). There is a need to explain why AI is considered as a potential solution in revitalizing the curriculum, as well as how its application is expected to have a positive impact in higher education reform (Nuzli dkk., 2023). By detailing the theoretical and practical context, methodological steps, and respondent selection, this subchapter will provide a strong foundation before presenting the survey results.

Understanding Artificial Intelligence in Higher Education

First question, How familiar are you with the concept of Artificial Intelligence? With the options Very Familiar, Familiar, Fairly Familiar, Not Familiar. With 20 respondents as follows:

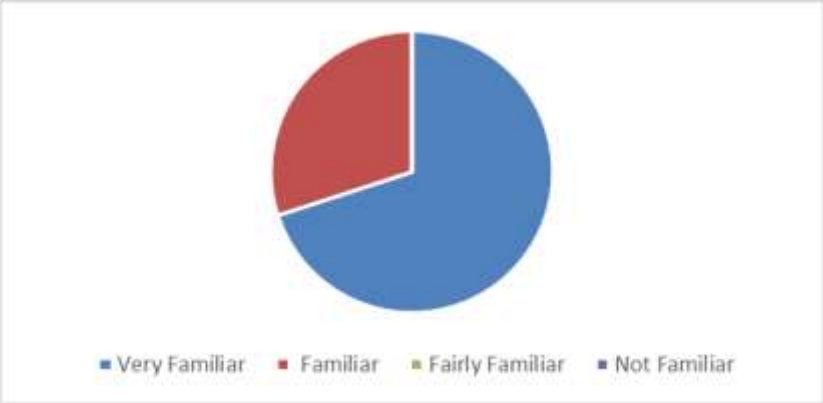

Figure 1. Respondents' results on knowledge of Artificial Intelligence concepts

Based on the survey results, the first findings show that the majority of respondents, namely 70% of the total 20 people, stated that they were very familiar with the concept of Artificial Intelligence (AI), while 30% stated that they were only familiar. These results indicate a generally high or moderate level of understanding regarding AI in the context of higher education among

respondents. This high level of understanding can be interpreted as a positive indication of the potential acceptance and implementation of AI technology in higher education curricula.

A high or moderate level of understanding of AI concepts can be a valuable asset in designing and integrating artificial intelligence-based solutions into higher education environments. The majority of respondents who stated that they were very familiar or familiar with AI indicated that there was a strong foundation for the application of this technology to support learning and curriculum innovation. This can help in improving teaching effectiveness, personalizing the learning experience, and preparing students to face the demands of an increasingly sophisticated and changing world of work (Ikhlas dkk., 2023).

In addition, a comparison between very familiar and familiar respondents provides a more detailed picture of the distribution of AI-related knowledge among survey participants. Further analysis of respondents' views and expectations regarding the application of AI in higher education may provide additional insights for designing more effective implementation strategies and responding more specifically to the needs of students and higher education institutions (Patry dkk., 2023). Next Question, How would you describe your understanding of the role of Artificial Intelligence in higher education? Very good, good, quite good, not good. With 20 respondents as follows:

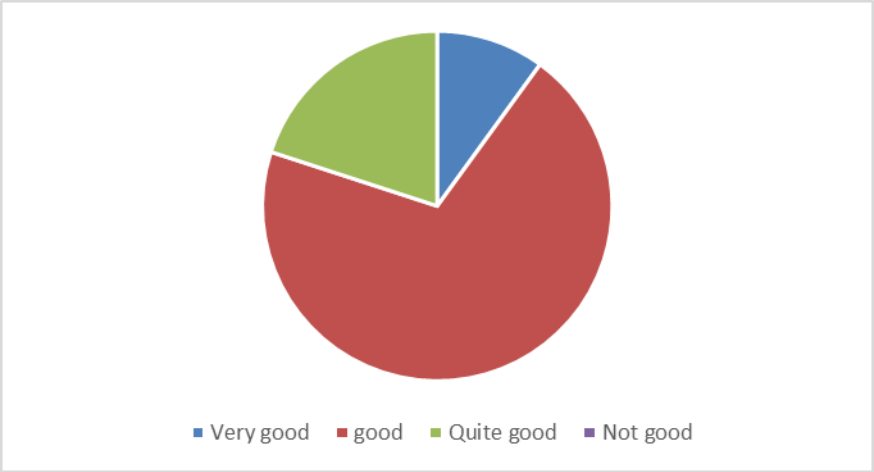

Figure 2. Respondents' results on the description of understanding of the role of Artificial Intelligence in higher education

The survey results show variations in respondents' understanding of the role of Artificial Intelligence (AI) in higher education. Of the 20 respondents, the majority, namely 14 people or 70%, stated that their understanding of the role of AI could be categorized as 'Good,' while 2 people or 10% felt their understanding was very good. On the other hand, there were also 4 people or 20% of respondents who gave the rating 'Pretty Good.' Although smaller in number, this group can provide valuable insight into certain aspects that may need to be clarified or enhanced in the explanation of the role of AI in the context of higher education.

It is important to note that the majority of respondents who gave positive assessments demonstrated a good understanding of the contribution and the potential benefits of AI in improving learning and teaching in higher education settings. Meanwhile, the group that gave a 'Fairly Good' rating may need further attention to understand in depth the role of AI. Therefore, recommendations for follow-up include holding in-depth outreach or training sessions, as well as providing concrete case studies to provide examples of successful AI implementation in higher education institutions (Owoc dkk., 2021). In this way, it is hoped to achieve an even and positive understanding among all respondents regarding the role of AI in supporting higher education.

Perception of Artificial Intelligence in Learning

Questions related to student perceptions of AI in learning with the question To what extent do you believe that the integration of Artificial Intelligence can improve the quality of learning in higher education? With answer options Strongly Believe, Believe, Neutral, Don't Believe, Very Distrust. With the following results:

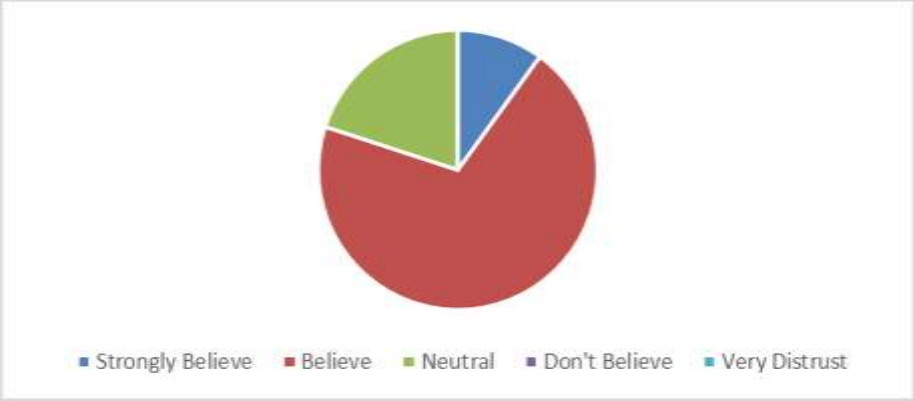

Figure 3. Respondents' results on Artificial Intelligence integration can improve the quality of learning in higher education

Based on the survey results, it can be identified that the majority of students have positive perceptions regarding the integration of Artificial Intelligence (AI) in learning in higher education. Of the 20 respondents, 75% stated that they 'believe' that the implementation of AI can improve the quality of learning. Apart from that, there were 5% of respondents who stated 'Very Trust'. This positive view reflects a belief in the contribution of AI in increasing the effectiveness and efficiency of learning in the academic environment.

However, around 20% of respondents stated that they were 'Neutral' regarding the integration of AI in learning. Although smaller in number, this neutral view offers an opportunity to deepen understanding and address potential concerns or uncertainties some students may have regarding the use of AI technology. A follow-up process through open dialogue and detailed explanations of AI implementation can help clarify and assuage concerns, providing a more comprehensive understanding to this group.

Further analysis of students' views regarding AI in learning could provide valuable insights for higher education institutions (Southworth dkk., 2023). By understanding student views and expectations, institutions can direct AI implementation according to student needs and expectations, creating an innovative and responsive learning environment.

Next question. In your opinion, how important is the integration of Artificial Intelligence in revitalizing the higher education curriculum? With answer options Very Important, Important, Neutral, Less Important and Not Important. With the following survey results:

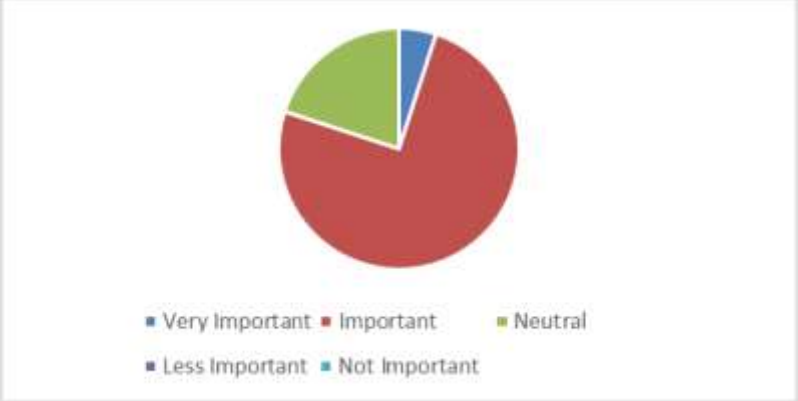

Figure 4. Respondents' results on the importance of Artificial Intelligence integration in revitalising the higher education curriculum

Based on the survey results, it can be identified that the majority of students have positive perceptions regarding the integration of Artificial Intelligence (AI) in learning in higher education. Of the 20 respondents, 75% stated that they 'believe' that the implementation of AI can improve the quality of learning. Apart from that, there were 5% of respondents who stated 'Very Trust'. This positive view reflects a belief in the contribution of AI in increasing the effectiveness and efficiency of learning in the academic environment.

However, around 20% of respondents stated that they were 'Neutral' regarding the integration of AI in learning. Although smaller in number, this neutral view offers an opportunity to deepen understanding and address potential concerns or uncertainties some students may have regarding the use of AI technology. A follow-up process through open dialogue and detailed explanations of AI implementation can help clarify and assuage concerns, providing a more comprehensive understanding to this group.

Further analysis of students' views regarding AI in learning could provide valuable insights for higher education institutions (Mehrabi dkk., 2022). By understanding student views and expectations, institutions can direct AI implementation according to student needs and expectations, creating an innovative and responsive learning environment.

Preference for Learning Methods with Artificial Intelligence

Regarding preferences for Learning Methods using Artificial Intelligence with the question, Do you prefer learning that involves Artificial Intelligence or traditional learning methods? With a choice, prefer Artificial Intelligence, Prefer Traditional Methods, Neutral. The following results were obtained:

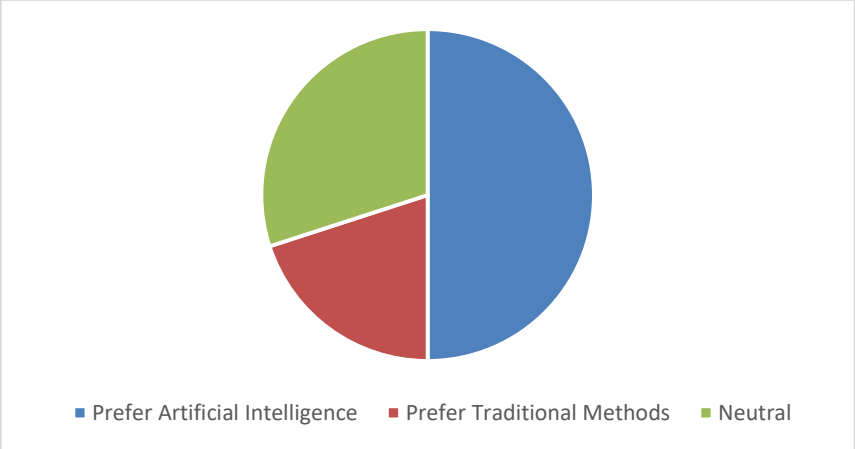

Figure 5. Respondents' results on the favourability of learning involving Artificial Intelligence or traditional learning methods

The survey results showed variations in student preferences regarding learning methods, especially in the context of using Artificial Intelligence (AI). Of the 20 respondents, 50% said they preferred learning that involved AI (choice a), 20% preferred traditional methods (choice b), and 30% were neutral (choice c).

Analysis of these preferences provides an interesting picture of how students accept learning concepts involving AI technology. The majority of respondents who chose option a showed interest and readiness to adopt innovations in learning, seeing the potential of AI in increasing interactivity and personalization of learning. Although the number is smaller, respondents who chose option b

showed a preference for traditional methods. This could indicate that some students may feel comfortable with conventional learning approaches and may have uncertainty or concerns regarding the use of AI technology (Almaiah dkk., 2022).

The group of respondents being neutral provides an opportunity for further exploration of factors that may influence their preferences. Further clarification or additional information may be needed to detail the benefits and potential advantages of AI in learning. Through further understanding of these preferences, higher education institutions can design strategies for implementing AI technology that are more targeted, taking into account the diversity of preferences among students.

CONCLUSION

The survey results present a comprehensive picture of student perceptions and preferences for Artificial Intelligence (AI) in higher education. In terms of understanding, the majority of respondents (70%) indicated a high or moderate level of understanding of AI concepts. This creates a strong foundation for acceptance of AI technology among college students. However, when turning to perceptions of the role of AI in higher education, approximately 80% of respondents expressed their belief that AI integration can improve the quality of learning. Despite this, 20% remained neutral, indicating there is room for further understanding or addressing uncertainty regarding AI.

When looking at preferences for learning methods, half of respondents (50%) expressed a preference for learning involving AI, indicating an interest in innovation. In contrast, 20% preferred traditional methods, confirming the diversity of preferences among students. Overall, these results reflect the importance of designing effective communication strategies and expectation management to ensure optimal acceptance and participation in AI implementation.

Further recommendations include additional outreach and training to increase understanding, open dialogue with groups that are neutral or prefer traditional methods, as well as a gradual AI implementation approach. These conclusions form the basis for higher education institutions in designing AI implementation approaches that suit student needs and expectations, creating innovative and inclusive learning environments.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

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