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Artificial Intelligence and Curriculum Prospects: An Assessment of Elementary Schools in Azad Jammu & Kashmir

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Abstract
The research aims to investigate artificial intelligence and assessment of curriculum prospects for elementary school education. The study focuses on identifying specific areas within curriculum assessment where AI can be incorporated. This important study will explore the assessment of curriculum either AI may be incorporated or not. This study will provide a way forward to all researchers and curriculum developers that how AI can be the part of the curriculum. Descriptive research design and quantitative approach is used and collected data from 70 participants include school leadership and teachers from elementary schools by using convenient sampling. The study shows the broad thoughtful opportunities and challenges associated with AI in elementary education. Results of the study were that majority of the respondents agreed with introducing AI into curriculum which is helpful for the literacy of AI education and curriculum modification continually according to need of modern era. AI can monitor the usefulness of curriculum and identify specific areas and optimize contents teaching methods and facilitate multimodal teaching style to increase the creativity, innovation and problem solving skills. Artificial intelligence education in elementary school curriculum can better train students for 21st century and increase job opportunities for students through AI and technology integration in education.

Keywords: Artificial Intelligence, Curriculum Prospects, Assessment of Elementary Schools

Introduction

Artificial Intelligence in recent era the most emerging and evolved field.AI was first coined in 1950.(Erica Southgate, August 2019)AI officially coined in 1956 during “Dartmouth Conference”, where John McCarthy and team of researchers proposed the term of “Artificial intelligence”. Artificial Intelligence includes numerous applications that’s were prominent in various fields such as Natural language processing (NLP Models ,Computer vision, Virtual Assistants, Health care diagnostics, Autonomous Vehicles, Gamming, Recommendation systems, Robotics, Fraud Detection, Climate Prediction ,Personalized Marketing and drug

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discovery etc.

AI education is the most demanding field of technology that is used to facilitate the human beings.AI education system is foremost to meet the needs of future and to compete with the modern world and make humans life more comfortable and profit making. All developed countries emphasize on the AI education even at kindergarten level to higher education system because of the awareness about the modern world and 21st century skills. As artificial intelligence (AI) becomes more widespread in society, there will be huge demand for AI workers in the future. Our society faces main public policy issues relating AI technologies, educated citizens are required to understand the fundamentals of AI. To prepare children to cope with the continually changing and technological world and help them ensure their jobs and career prospective in the future, children must be adequately educated to work with AI. The aim of AI has to make the each sector more advanced, accurate and easy not to replace human being

A “school curriculum” refers to all experiences which are planned and guided by teachers, and learned by students, whether it is implemented inside or outside the classroom (Thomas K. F. Chiu, ,2022)Curriculum plays the significant role in education system which instruct policy makers, educators and learners to promotes the expected behaviors in generations. Curriculum encounters unexpected behaviors and activities generation to generations.

Curriculum includes aims, goals, objectives contents, syllabus, curricular and co-curricular activities. Policymakers, Curriculum developers, and school’s administration plays vital role in order to slot in the effective and efficient learners to enhance AI education. The integrations of Artificial intelligence to curriculum is the need for promotion of AI education in students. AI based education system and integration of technology and designing of AI based curriculum enables the education system flexible and results oriented. AI and curriculum integrations take place through defining the objectives of indulging knowledge of AI ,integrated curriculum contents development and implementations of AI based curriculum at elementary schools, problem solving methods of teaching, applications of AI tools and innovative machinery to the educations sectors of elementary schools levels to the higher education.

The importance of AI development has mostly been highlighted in secondary and higher education (Su et al., 2022), but seldom was conducted in kindergarten level. Education modifies the human behavior and activities which involves curriculum.IN education system promotion of basic AI involves the process of As the younger generation now have robots in their homes and intelligent agents in their pockets, children within their first years of life can interact with tablets and toys that have magnitudes more computing power than personal computers just a decade ago(Su, 2022, pp. 1-12). Countries such as China, the United Kingdom, Thailand, Korea, and the European Union are making strides in AI education to standardize what students should learn at various levels. Many groups have created criteria for teaching AI to students in grades K through 12. The Association for the Advancement of Artificial Intelligence (AAAI) and the Computer Science Teachers Association (CSTA) launched a joint working group in May 2018 to create national guidelines for teaching artificial intelligence to K-12 students (AAAI, 2018(Su, Jiahong, 2022)In recent Era developed countries United States, China, Germany, Japan, France, South Korea ,Russia and Finland emphasis on AI integration in education through researches and development of

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AI based curriculum system to incorporate technology.AI has potential to meet the future need of education system. The integration of AI into education system through adaptation of AI based curriculum in elementary school education. Curriculum plays vital role in order to produce productive and efficient learners and to modify the behavior of the learner. Thorough analysis of existing literature and theoretical studies of AI and its role in facilitating personalized learning, inspiration, fostering creativity and improving young students' problem-solving abilities. The case study of AI and curriculum integration through mixed-method approach provide us the practical insight into how AI technologies can effectively and efficiently applied to elementary school setting. We explore the prospects of AI based approach and AI integrated curriculum implications and implementing strategies and ways to govern AI set up in education system through following steps of awareness, initiative, provision of incentive and facilitation in school and following revolution of AI and all other technologies through involving integrated education and application of technology(Jiahong Su, 2022)(Erica Southgate, August 2019) for the kindergarten to higher education and modification of curriculum by the aspects of AI and ICT.

Research Objectives

The objective of the study is:
To assess prospects of artificial intelligence into curriculum of elementary school.

Research Questions

i. How can AI helpful for curriculum intervention?
ii. What is the future of AI in curriculum development?

The organizing framework for the curriculum was the categorization and nesting of different techniques under the umbrella methods in Data Science. We divide DS into traditional data analytics and AI. Within the AI, we differentiate between logic systems that develop models using human-understandable rules to make predictions, and machine learning in which models are built and tuned or adapted from experience, not by writing better rules. Machine learning is further subdivided into supervised learning that uses datasets with labels; and Transfer Learning that uses pre-built models as a base layer to build upon when classifying new data (Irene Lee, 2022.)
Teachers of all subjects should feel empowered to teach AI curriculum, yet teachers frequently feel they need sufficient understanding to teach AI or the capacity to include more curriculum on top of their existing curriculum. Regardless of the proliferation of tools and AI curriculum in response to the recent calls to action, few are widely implemented due to challenges in the classroom that prevent these curricula from being accessible. In order to establish latest practices, researchers and developers should consider the contexts of teachers and invest in additional supports to facilitate the accessibility of AI resources for teachers (JESSICA VAN BRUMMELEN, 2009).
To democratize AI education, K-12 teachers need to be empowered to understand and teach AI. Through engaging in our study, teachers were able to better grasp AI concepts and how to teach AI. In the post-questionnaire, teachers mentioned how the workshops made AI more accessible and feasible to teach, and many of

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them emailed us afterwards asking if they could use the materials in their classrooms. Further teacher-researcher collaboration is encouraged directly to classrooms. This idea is supported by other education research Panel, and Shechtman however, only one study to date to the authors' knowledge has co-designed AI curriculum alongside teachers (Jessica Van Brummelen, 2021).

AI as a discipline can span many other topics, such as government, journalism, and art, therefore AI should not be to better develop AI education resources and bring these resources confined to just computing subjects such as computer science or data science. Tools and curriculum today often teach AI as an extension of computer science curricula or as standalone curricula that is difficult to adjust to other contexts. Adapting those tools and curriculum then becomes especially difficult for teachers who teach core subjects, including English, math, social studies, and science, and may not have any AI experience.

The lack of integrated AI curricula in core subjects has become one of the barriers to exposing AI to students with little access to computing disciplines(JESSICA VAN BRUMMELEN, 2009).Many academics have confirmed that high-quality early childhood education has a positive impact on children's educational achievement or children-teacher relationships. To ensure high-quality early childhood education, governments and policymakers internationally have started to integrate computational thinking into the curriculum from the earliest grades. A number of studies have proved that using coding or programming apps can help cultivate children's computational thinking skills and contribute to reasoning and communicating in an ever-increasingly digital world (Zhong, 2022).

Methodology

This study is descriptive in nature. The data were collected through questionnaire. These questionnaires were developing in google form. This google form is being shared with all participants. However, keeping in view the situation of the local community both options were the part of the study i.e google form and taking responses on questionnaires. The teachers and school's principals/heads of public and private schools of elementary level from district Haveli Kahuta, Rawalakot, Muzaffarabad, Mirpur and Bagh AJK. Collected data were interpreted for analysis purpose. The focus of the study was to investigate Artificial intelligence and curriculum prospects for elementary school education. Case study of artificial intelligence and curriculum prospects was taken independent variables and elementary school level in Haveli Kahuta was treated as dependent variables.

Population

Population of study consisted of elementary school teachers and schools leadership of public and private schools for the scholastic year 2023.

Sample

The sample of the study comprises of 15 elementary schools selected by using convenient sample techniques 55 teachers and 15 school leaderships of schools were selected as sample from 15 elementary schools.

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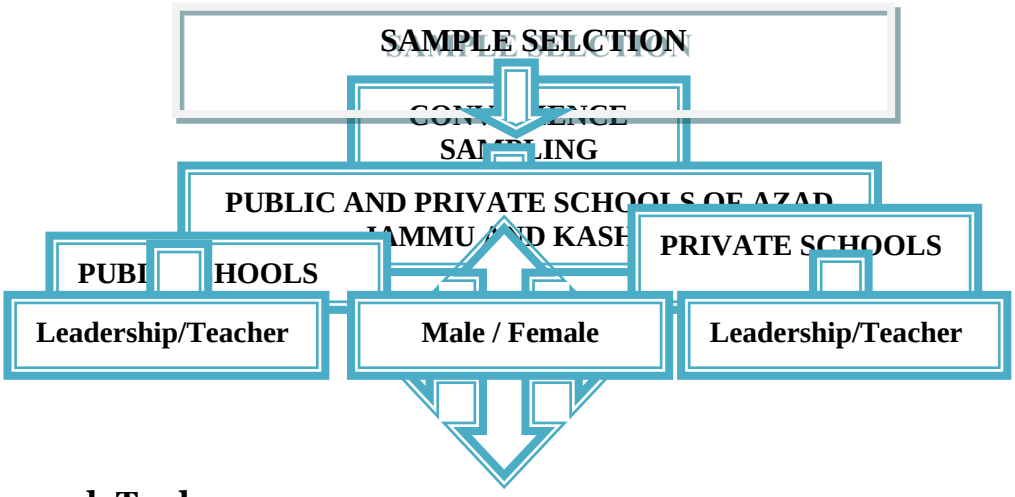

Research Tool

Self-developed questionnaire was used for data collection. 30 close ended items were used.

Data Collection

Data was collected from the teachers and school leaderships of district Rawalakot, Muzaffarabad, Mirpur and Bagh AJK through online Google form which was shared to the teachers and school leaderships of public and private schools. We were received filled close ended items. We collected data from District Haveli AJK through personal visit to schools. We gave questionnaire to teacher and school leadership for they filled

Table 1 AI can make assessment process easy.

Agree	Neutral	Disagree
Frequency 60	07	03
Percentage 85.7%	10%	4.2%

Figure 1 AI can make assessment process easy.

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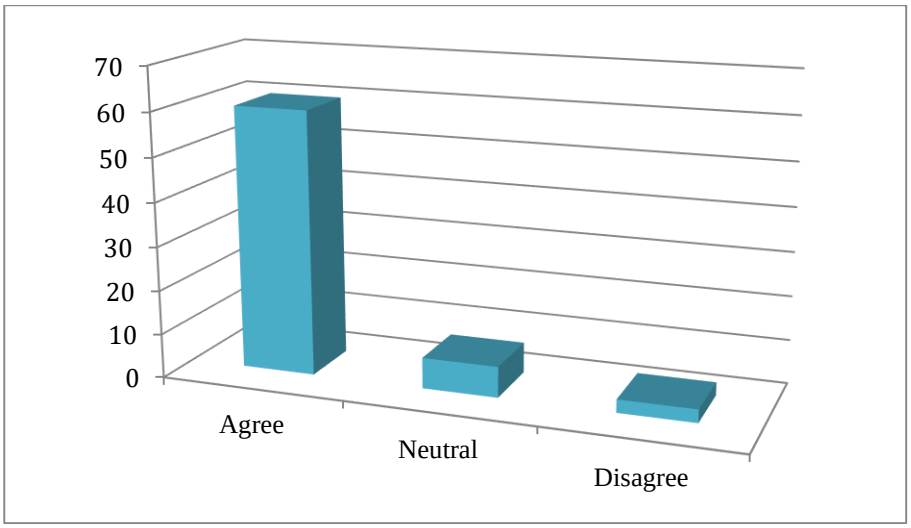
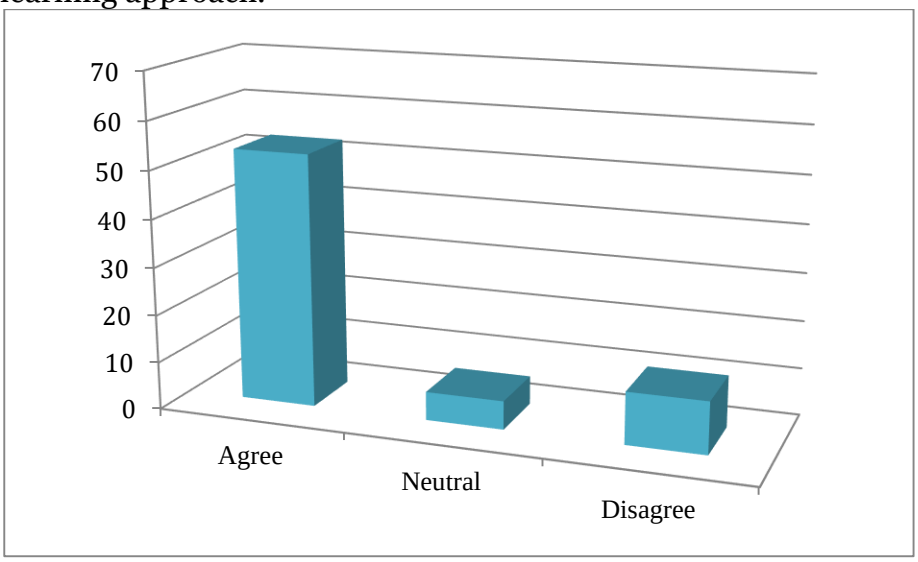


Above table and graph showed that 60 participants were agree AI can make assessment process easy and 03 participants were disagree with this statement and 07 participants showed no response with this statement.

Table 2: AI –Powered assessment tool can provide real time feedback to students, enabling them to trap their progress make necessary adjustment to learning approach.

Agree	**Neutral**	**Disagree**
Frequency 53	06	11
Percentage 75.7%	8.5%	15.7%

Figure 0.24: AI –Powered assessment tool can provide real time feedback to students, enabling them to trap their progress make necessary adjustment to learning approach.



Above table and graph showed that 53 participants were agree AI –Powered assessment tool can provide real time feedback to students, enabling them to trap their progress make necessary adjustment to learning approach. And 11 participants were disagreeing with this statement and 06 participants showed no response with this statement.

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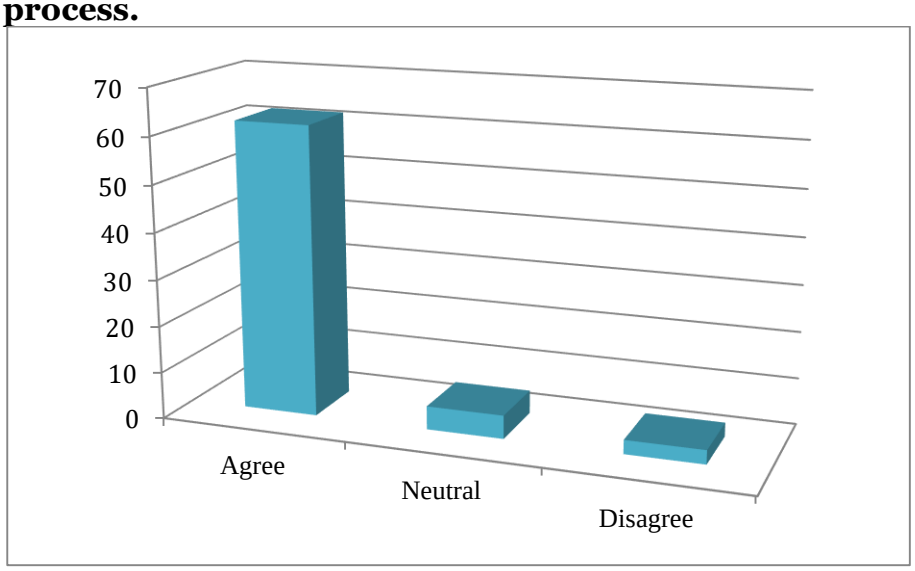
Table: AI education can increase the effectiveness of evaluation process

Agree	Neutral	Disagree
Frequency 62	05	03
Percentage 88.5%	7.1%	4.2%

Figure : AI education can increase the effectiveness of evaluation process.



Above table showed that 62 participants were agree AI education can increase the effectiveness of evaluation process and 03 participants were disagree with this statement and 05participants showed no response with this statement.

Table 0.26: AI reduces human interaction

Agree	Neutral	Disagree
Frequency 50	09	11
Percentage 71.4%	12.8%	15.7%

Figure 0.26: AI reduces human interaction

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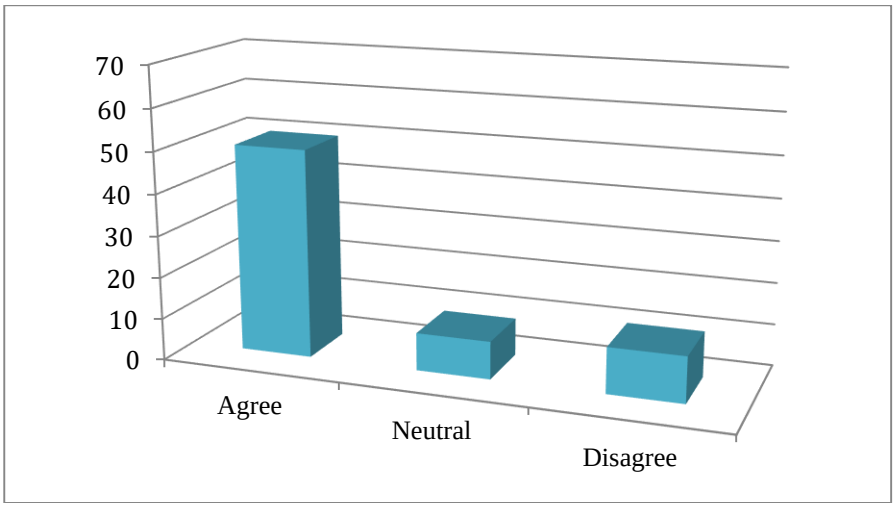
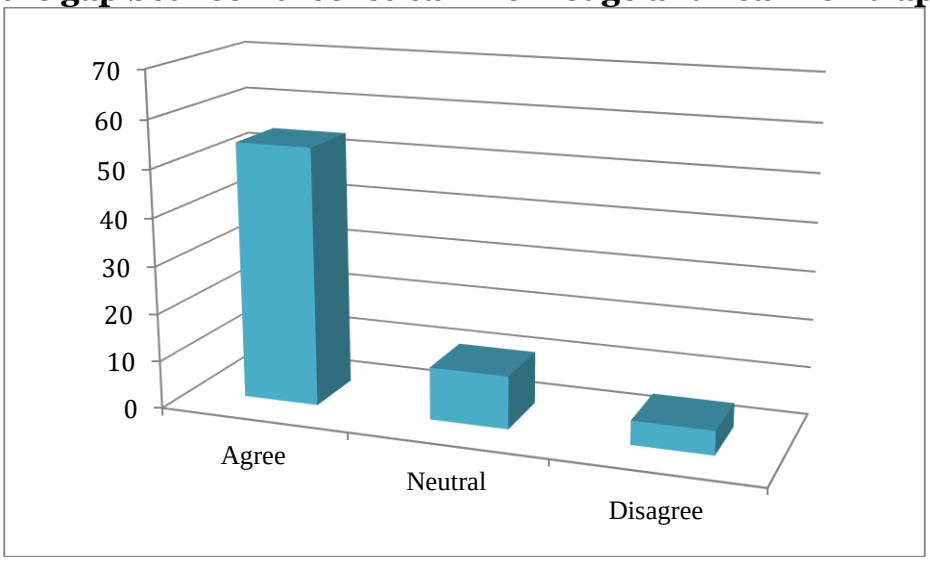


Above table and graph showed that 50 participants were agree AI reduces human interaction and 11 participants were disagree with this statement and 09 participants showed no response with this statement.

Table 0.27: Incorporating AI in the curriculum can help to connect the gap between theoretical knowledge and real world application

Agree	Neutral	Disagree
Frequency 54	11	05
Percentage 77.1%	15.7%	7.1%

Figure 0.27: Incorporating AI in the curriculum can help to connect the gap between theoretical knowledge and real world application.



Above table and graph showed that 54 participants were agree Incorporating AI in the curriculum can help to connect the gap between theoretical knowledge and real world application and 05 participants were disagree with this statement and 11 participants showed no response with this statement

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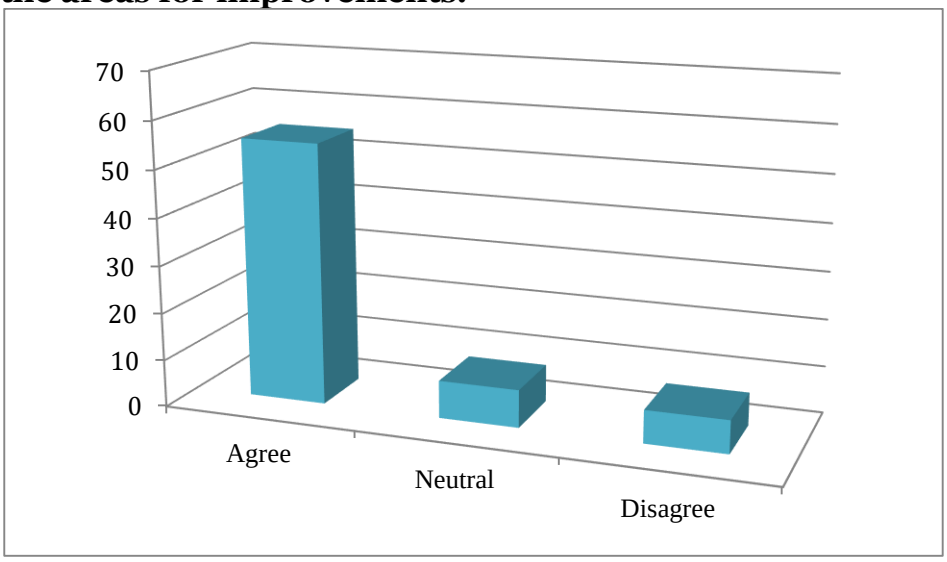
Table 0.28: AI can monitor the usefulness of the curriculum identify the areas for improvements.

Agree	Neutral	Disagree
Frequency 55	08	07
Percentage 78.5%	11.4%	10%

Figure 0.28: AI can monitor the usefulness of the curriculum identify the areas for improvements.



Above table and graph showed that 55 participants were agree AI can monitor the usefulness of the curriculum identify the areas for improvements and 07 participants were disagree with this statement and 08 participants showed no response with this statement.

Table 0.29: AI can monitor educators to refine optimize the content teaching methods continually.

Agree	Neutral	Disagree
Frequency 61	05	04
Percentage 87.1%	7.1%	5.7%

Figure 0.29: AI can monitor educators to refine optimize the content teaching methods continually.

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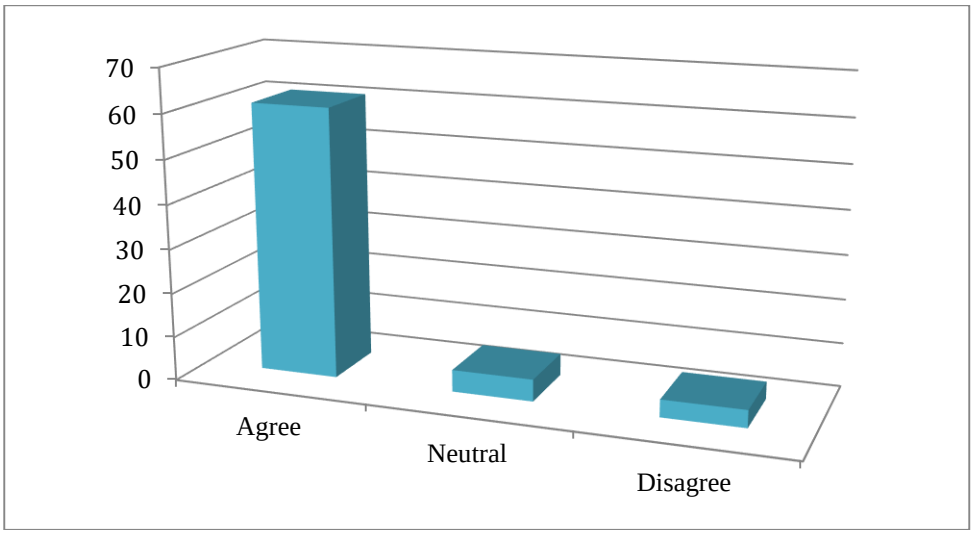
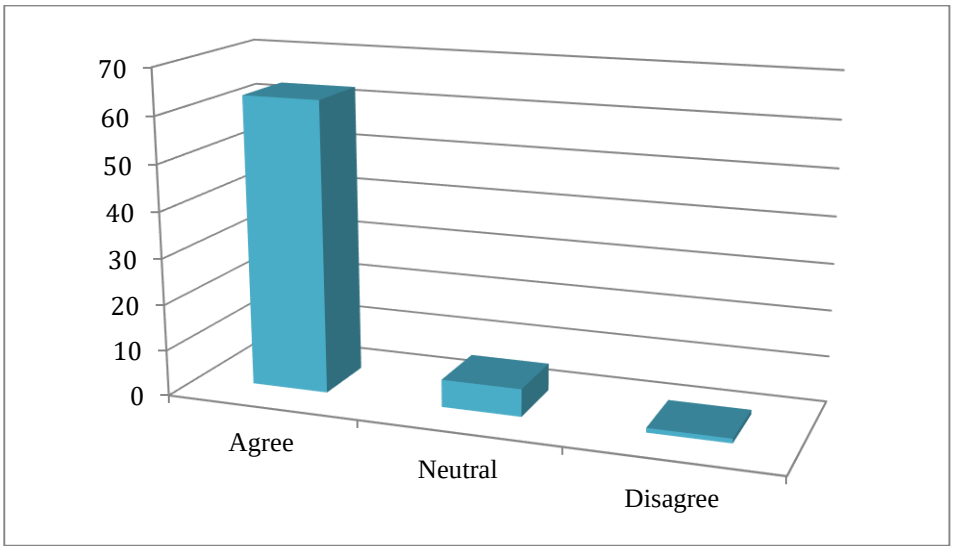


Above table and graph showed that 61 participants were agree AI can monitor educators to refine optimize the content teaching methods continually and 04 participants were disagree with this statement and 05 participants showed no response with this statement.

Table 4.30:There is need to incorporate AI into the elementary school and curriculum.

Agree	Neutral	Disagree
Frequency 63	06	01
Percentage 90%	8.5%	1.4%

Figure 4.30: There is need to incorporate AI into the elementary school and curriculum.



Above table and graph showed that 63 participants were agree that there is need to incorporate AI into the elementary school and curriculum. And 06 participants were disagreeing with this statement and 01 participant showed no response with this statement.

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Discussion

Majority of the respondents believed AI can make assessment process easy, AI – Powered assessment tool can provide real time feedback to students, enabling them to trap their progress make necessary adjustment to learning approach, AI education can increase the effectiveness of evaluation process, AI reduces human interaction and Incorporating and AI in the curriculum can help to connect the gap between theoretical knowledge and real world application.

Majority of the respondents agreed with AI can monitor the usefulness of the curriculum identify the areas for improvements, AI can monitor educators to refine optimize the content teaching methods continually and AI can monitor educators to refine optimize the content teaching methods continually.

AI education identify the skills which are the need of modern era for jobs opportunities previous study of Jiahong Su , Yuchun Zhong in 2022 also mentioned AI education to cope the demand of global world. AI integration to curriculum can promote innovation in students and also engage learners in learning. AI application in educational assessment can increase the accuracy, effectiveness and efficiency and helpful to provide feedback in few minutes. Related study of Olaf Zawacki-Richter, Victoria I. Marín , Melissa Bond and Franziska Gouverneur in 2019 discuss about the Baker and Smith (2019) approach educational AI tools from three different perspectives; a) learner-facing, b) teacher-facing, and c) system-facing AIEd.

Learner-facing AI tools are software that students use to learn a subject matter, i.e. adaptive or personalized learning management systems or ITS. Teacher-facing systems are used to support the teacher and reduce his or her workload by automating tasks such as administration, assessment, and feedback and plagiarism detection.

AI based education system can boost the creativity of students of elementary schools by facilitating multimodal learning experiences AIEd tools also provide insight into the learning progress of students so that the teacher can pro-actively offer support and guidance where needed Integration of AI aligns with the need to equip students with the digital literacy skills essential for the 21st century.

The major issues of implementation of AI in elementary schools include financial constraints, teacher willingness, ethical concerns and possible risks to students' privacy and psychological well-being. The future of AI in curriculum is promising. As AI technology evolves it will offer more advance and modified learning experiences. AI-driven tools and platform will become more integrating into the educational process.AI can monitor the usefulness of the curriculum and identify the areas for improvements.AI can monitor educators to define optimize the content teaching methods.

Recommendations

- It is suggested that educators may offer AI technology to solve Problems of real world to increase the accuracy of process of the solving problem.
- It is recommended that educators may offer quick and easy feedback through the application of AI based technology. It was found that it is easy to provide feedback through AI powered tools, so teachers and principals may train to use these solutions.
- It is recommended that curriculum developers and designers may consider the inclusivity of students

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- It is recommended that educational sectors may abide by the principal of flexibility in terms of AI curriculum and environment to inculcate AI education in students.
- It is recommended that the government may offer the financial and technical incentives for the promotion of AI education in public and private education sectors.

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