

FIVE MINDS FOR THE FUTURE: REIMAGINING INCLUSIVE EDUCATION IN THE AGE OF AI

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Abstract

This study aims to explore how Howard Gardner's five minds for the future—disciplined, synthesizing, creating, respectful, and ethical minds—can be reimagined to support inclusive education at the school level in the age of artificial intelligence. It examines how AI-based tools, digital learning environments, and learner-centered classroom practices can promote equity, accessibility, participation, and meaningful learning among diverse school students. A quantitative research design was used, and data were collected from a sample of 400 school students studying in Private and Public schools in the 9th class through a structured questionnaire. The collected data were analyzed using descriptive and inferential statistical techniques, including frequency, percentage, mean, and standard deviation, to interpret students' responses and identify general trends. The findings suggest that inclusive education in the AI era requires more than access to digital tools; it requires teacher guidance, responsible technology use, cultural sensitivity, and equal learning opportunities. The study concludes that Gardner's five minds provide a useful framework for building inclusive and future-ready school education where AI supports student diversity, creativity, and meaningful participation rather than replacing human values and teacher judgment.

Keywords: Five minds for the future, inclusive education, artificial intelligence, school education, digital equity, future-ready learning.

Introduction

The characteristics of the modern school are students with various abilities and different languages, cultures, socio-economic backgrounds, learning rates and emotions in the classroom, which makes inclusive education one of the most important concerns of the present day in the field of education. Inclusion is not a matter of just opening the door to the diverse for admission to the same school; it's about making the school free of barriers to participation and allowing every learner to find a place where he or she can make a meaningful contribution. The Salamanca Statement highlighted the need to include all children in school regardless of their physical, intellectual, social, emotional, linguistic or other needs (UNESCO, 1994). More recently, UNESCO's Global Education Monitoring Report called for all of the types of exclusion associated with disability, poverty, gender, language, ethnicity, migration and other social differences to be included in the definition of inclusion (UNESCO, 2020). In this perspective, inclusive education is not only an educational task, but also a social justice call to

action. It encourages schools to go beyond the standard teaching mode and use flexible teaching methods, giving full play to learner differences.

AI is rapidly evolving and has new implications and challenges for inclusive education. AI-powered tools can be used to facilitate personalized learning, translation, speech-to-text assistance, adaptive feedback, digital assessment, and access to learning materials for any student who might otherwise face challenges in the academic or communication setting. While AI can help in the fields of teaching, learning and assessment, UNESCO does have concerns about privacy concerns, biases, inequitable access, and reliance on technology (Miao & Holmes, 2023). In the same way, OECD (2023) exclaims that the design of digital education ecosystems needs to be done carefully and ensure that technology doesn't aggravate the existing inequalities. They are particularly relevant at the school level where students' academic habits, social values, digital judgement and moral awareness are still maturing. AI in education isn't just a tech solution then. It needs to be linked with human guidance, ethical use, teacher responsibility, and class culture.

The framework for reconsidering education in this new reality, through his theory of the five minds for the future. According to Gardner (2006) there are five mind states that are required in the future societies: disciplined, synthesizing, creating, respectful, and ethical. The disciplined mind cultivates and grows in ability to learn and know. The synthesizing mind brings together information from various sources and makes sense out of them. The creating mind is able to produce new ideas and solve problems in new ways. The respectful mind values human difference, the ethical mind values responsibility, fairness and the common good. Gardner's framework predates the advent of generative AI, but it is even more relevant today in the digital era. While AI can offer information rapidly, students must possess the discipline to grasp knowledge at a deeper level, the creativity to synthesize complex information, the respect to understand and interact with diverse people, and the ethics to responsibly interact with technology.

The inclusive education approach to reimagining the five minds enables schools to cater for academic and human aspects of learning. The disciplined mind can help support inclusion by assisting students to build strong foundations through structured, accessible, and differentiated instruction. This can be done through using AI tools to tailor content to varying learning levels, but teacher involvement is key to students not just absorbing answers, but grasping the meaning behind them. This is equally important for the synthesizing mind, as students are exposed to vast quantities of information, including AI-generated content, in the digital world. They must be able to compare, assess and synthesize information from multiple sources in a meaningful and accurate manner. The creating mind helps inclusive education because the learner is able to share his/her understanding in various ways: writing, illustration, presentation, digital media, or in group activities. This is in line with the principles of Universal Design for Learning (UDL) that promotes flexible ways to engage, represent, and express information to meet the needs of all learners in meaningful learning (CAST, 2018).

In an age driven by AI, the respectful and ethical minds are especially crucial as inclusion is not a technology issue. There is no substitute for empathy, cultural sensitivity, peer support, or teacher-student relationships with digital tools. The respectful mind fosters acceptance for ability, language, culture, gender and learning style differences among students. This is particularly important in an inclusive classroom where diversity is viewed as a strength, not a problem. The ethical mind further takes into account fairness, honesty, privacy and responsibility in the use of artificial intelligence, urging students and teachers to think about these aspects. UNICEF (2021) highlights the importance of AI systems that shape the lives of children also honoring children's rights, safety, privacy, and wellbeing. Human rights, fairness, transparency and human oversight are also key principles of AI use, according to UNESCO's

Recommendation on the Ethics of Artificial Intelligence, 2021 (UNESCO, 2021). It seems these principles indicate that it is not only about efficiency on education, but also about values and inclusive use of AI in education.

Such a framework becomes even more important at the secondary school level as students are preparing for further education, work, citizenship and participation in a digital society. The 9th grade is a critical age in which academic self-confidence, peer relationships, identity development and technology utilization have significant impact on future learning. Access to devices, internet facilities, teacher support, and digital literacy can vary between public schools and private schools, impacting students' interaction with AI-based learning. Therefore, the study of Gardner's five minds and inclusive education can shed light on the perception of students towards the discipline, synthesis, creativity, respect and ethics in classrooms that are supported by AI. It can also reveal if technology is perceived as a means of equitable participation or yet another way to educational inequity.

The current study is important because it bridges a humanistic educational theory with the reality of teaching and learning in the AI era. It affirms that future-ready learning should not be about teaching students to use digital tools, but also teaching them to think critically, responsibly, and respectfully, and to be active and engaged learners. The five minds of Gardner offer a solid conceptual framework for how inclusive education can be enhanced in the age of AI. With the support and encouragement of responsible technology use, teacher guidance, accessible learning environments, and equal opportunities, these five minds can help schools create academically capable, socially sensitive, creative and ethical learners.

Problem Statement

The goal of inclusive education at the school level is to allow pupils with special needs and backgrounds to participate, be accessible and learn meaningfully. But with the increasing adoption of AI in the field of education comes with both opportunities and concerns. AI can aid personalized learning, creativity, and access to information, but can also exacerbate digital inequality, digital exclusion, and ethical issues. Thus, the necessity arises to explore the potential reimagining of the five minds for the future in relation to inclusive, ethical and future-oriented education in an AI era.

Research Objectives

1. To examine the role of Gardner's five minds in promoting inclusive education at the school level.
2. To explore students' perceptions of AI-based tools in supporting accessibility, participation, and meaningful learning.
3. To identify how the disciplined, synthesizing, creating, respectful, and ethical minds contribute to inclusive classroom practices.
4. To analyze the importance of teacher guidance, responsible AI use, and equal learning opportunities in AI-supported education.
5. To suggest ways in which AI can be used to strengthen inclusive and future-ready school education.

Research Questions

- How can Gardner's five minds for the future support inclusive education at the school level?
- What are students' perceptions of AI-based tools in promoting accessibility and participation in learning?
- How do the disciplined, synthesizing, creating, respectful, and ethical minds relate to inclusive classroom practices?
- What role do teacher guidance and responsible AI use play in inclusive education?

- How can AI-supported learning environments promote equity, creativity, and meaningful participation among school students?

Literature Review

Gardner's Five Minds and Future-Ready Learning

The five minds for the future is a useful educational model developed by Howard Gardner for dealing with the needs of the complex, diverse, and changing societies of the future. Gardner (2006) has distinguished five kinds of mental development for the future, namely: the disciplined mind, the synthesizing mind, the creating mind, the respectful mind and the ethical mind. Disciplined mind means profound knowledge in key areas of learning, not just memorization. In school education, it is important that students not just gather knowledge and information, but also learn to think carefully about what they do and hear within subjects like science, language, mathematics, and social studies. The ability of the synthesizing mind is also relevant to the current era, as it enables students to process and comprehend vast amounts of information from textbooks, digital platforms, search engines, and AI tools. Gardner (2006) made the claim that learners need to be able to make choices, arrange and manipulate information in ways that make sense to them. In the era of AI, where information is readily available but often hard to assess for validity and significance, this skill is increasingly crucial. The creating mind is related to innovation, problem solving, and original thinking. Creativity is particularly important in inclusive classrooms as they are able to express their understanding in a variety of ways. Students can learn this in a variety of ways: writing, visual, verbal, digital or cooperative learning. Gardner's respectful and ethical minds are extended to education beyond the realm of academic success. The respectful mind fosters the respect of human differences, and the ethical mind fosters responsibility toward others and society (Gardner, 2006). Both these minds are essential to inclusive education, as the acceptance, dignity, fairness and shared responsibility are as important as access. So, Gardner's framework continues to be relevant in the context of education for the age of AI due to its focus on knowledge, creativity, diversity, and moral judgment.

Inclusive Education and Learner Diversity

The principles of inclusive education are rooted in the conviction that all learners should have access to quality education in the same setting, irrespective of their ability, gender, language, culture, disability, socioeconomic status or learning difference. The Salamanca Statement highlighted the need for regular schools to accept all children and cater to the varied needs of every child by adopting a child-centred approach to education (UNESCO, 1994). This shifted the perspective of inclusion from disability to educational equity. This has been reinforced in subsequent years by UNESCO's Global Education Monitoring Report which claimed that inclusion involves all learners who are excluded due to background or ability (UNESCO, 2020). This does not imply that inclusive education is just a matter of putting students in the same classroom. It calls on schools to identify and mitigate barriers to participation, achievement and belonging.

Ainscow (2020) stated that inclusion and equity are international educational issues and that school, community, policy and classroom culture need to be addressed. His work shows that inclusive education cannot be regarded as a fixed model, but rather as a process. Schools should regularly review who is excluded, why, and how teaching could be enhanced. This is particularly relevant to the disparities in resources, teacher training, class size, availability of technology and parental support that can impact students' learning experiences in public and private schools. Inclusive education is closely related to Universal Design for Learning. CAST (2018) suggested that teachers offer multiple ways to engage, represent, and act/ express. The following are guiding principles that can be used to structure lessons for flexibility with a variety of learners. Content can be delivered in multiple formats, such as text, audio, visual or

teacher explanation; and learning can be assessed in multiple ways, such as written work, discussion, presentations or digital tasks.

Respectful relationships between teachers and students, as well as among students, are also essential for inclusive education. Diversity should be seen as a strength rather than a weakness and should be embraced in the classroom setting. Students are more likely to become confident and feel a sense of social belonging when they learn in a context that allows participation, collaboration and respect. This is directly related to Gardner's respectful mind where students have to learn to interact with and live among those who think, speak, learn, and behave differently than they do. Also the ethical mind is important since inclusive schooling must be fair when assessing, disciplining, using technology and providing opportunities in the classroom. In this sense inclusive education is not just a pedagogical approach, it is also a moral stance towards educational justice (UNESCO, 2020).

Artificial Intelligence, Digital Equity, Inclusive Schooling

Inclusive education has seen new opportunities for the use of Artificial Intelligence, such as adaptive learning systems, translation tools, speech recognition, text-to-speech applications, automated feedback, learning analytics, and assistive technologies. Holmes et al., (2019) describe AI in education as a technology that can be used to support the teaching and learning process in the following ways: a) personalisation of instruction, b) detecting learning gaps and c) aiding teachers in educational decision making. The tools can enhance access to learning materials and offer alternative participation options for students with diverse needs. For instance, AI tools that assist with reading can benefit students who struggle with literacy, and AI translation tools can assist students with other language backgrounds. Likewise, speech-to-text and text-to-speech applications can be useful for students who have issues with hearing, sight or writing. The potential highlights the ways AI can be a valuable ally in inclusive education, when implemented thoughtfully and strategically.

There is, however, other literature that suggests that AI should not be seen as a panacea for educational inequality. Research in AI for education tends to be more about the technology than the pedagogical and ethical questions, according to Zawacki-Richter, Marín, Bond, and Gouverneur (2019). This is an important issue as technology can hinder inclusion where teachers are not part of the design and implementation of the technology. Limited or imbalanced data inputs can further perpetuate bias in AI systems. UNESCO's guidance on generative AI in education cautions schools against issues of privacy, safety, human agency, the role of the teacher, and the quality of the information generated by AI (Miao & Holmes, 2023). These concerns are particularly relevant for school students, who are still learning to think critically, to be digitally literate, and to make ethical decisions.

Digital equity is another key issue. Access to devices and Internet, digital skills, and teacher support are essential for AI-supported learning to foster inclusion. AI has the potential of exacerbating privilege and disadvantage if some students are using advanced digital tools while others are using basic tools. OECD (2023) highlighted that while technology is important, the key factor of a good system of digital education is infrastructure, teacher capacity, governance and inclusive policy. UNICEF (2021) also highlighted that the use of AI systems by or for children must safeguard children's rights, privacy, safety, development and wellbeing. The principles demonstrate the importance of maintaining a human-centered and child-centered approach to AI in education.

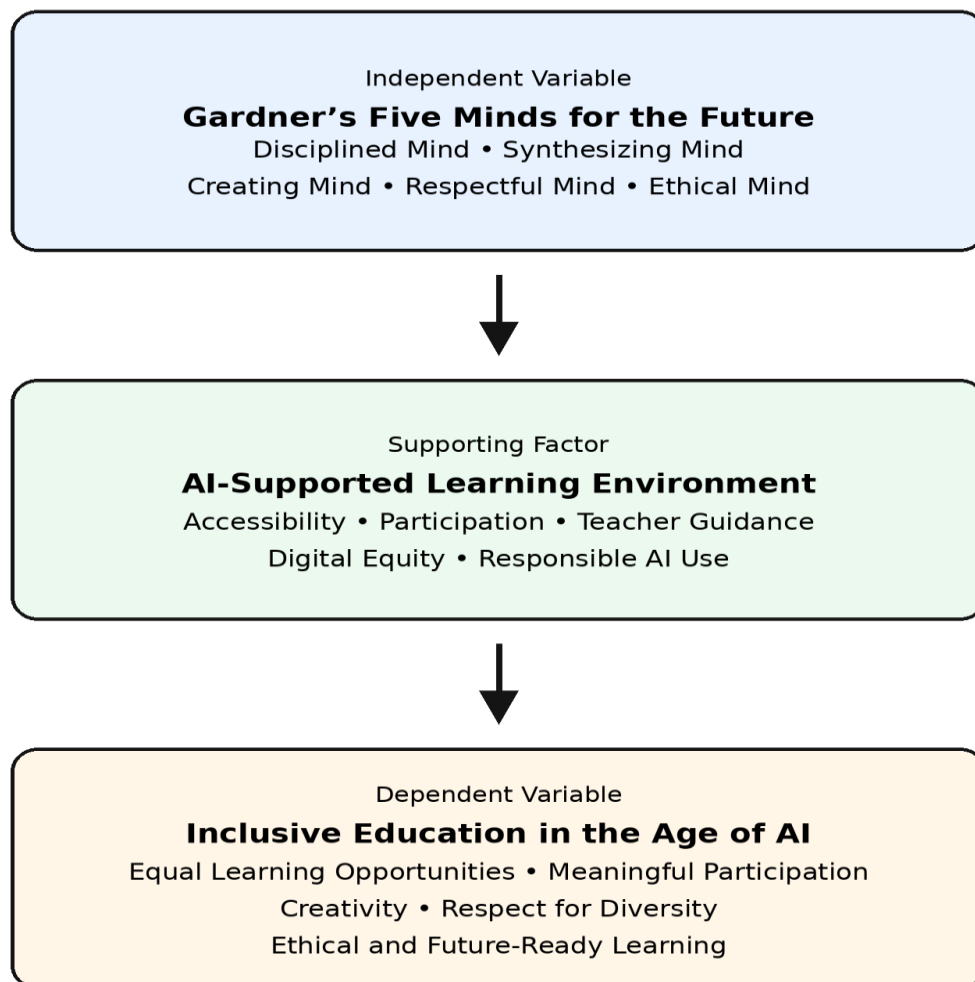
Theoretical Framework

The Five Minds for the Future theory is used as a basis for this study. Future education should focus on building student's five capacities according to Gardner (2006): the disciplined mind, the synthesizing mind, the creating mind, the respectful mind, and the ethical mind. This theory has relevance in the present study because with the advent of Artificial Intelligence, inclusive

education is not just about having access to technology but a much more complex endeavor. The students should possess a knowledge of the subject, organization of the digital information, creativity and respect for diversity, and responsible use of AI.

This study examines the disciplined mind as it relates to students' academic understanding that is achieved through structured learning. The synthesizing mind is a description of how students integrate material from various digital and classroom sources. The creating mind is nurtured and facilitated for innovation and problem solving with AI-enabled and learner-centered activities. The respectful mind is concerned with accepting students of varying ability, culture and learning styles. The ethical mind addresses responsible, fair and human-centric use of AI within inclusive classrooms. Gardner's theory thus serves as a proper basis for exploring the potential of AI-based education to facilitate equity, participation, creativity and meaningful learning in diverse school students.

Conceptual Framework



Research Methodology

The study used a quantitative research design to examine how Gardner's five minds for the future can support inclusive education in the age of artificial intelligence. The population of the study consisted of 9th-class students studying in public and private schools. A sample of

400 students was selected for data collection. A structured questionnaire was used as the main research instrument to collect students' responses regarding disciplined, synthesizing, creating, respectful, and ethical minds, along with their views about AI-supported inclusive learning. Urdu translation of the questionnaire was also done. The questionnaire was based on a Likert scale to measure students' level of agreement. The collected data were analyzed through descriptive statistical techniques such as frequency, percentage, mean, and standard deviation. These methods helped identify students' general perceptions, response patterns, and trends related to inclusive education and AI-supported learning. All the ethical concerns were considered.

Results and Findings

Table 1

Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	205	51.25
	Female	195	48.75
School Type	Public	210	52.50
	Private	190	47.50
Class Level	9th Class	400	100.00
Total		400	100.00

The demographic information of the respondents is illustrated in table 1. Total number of students in the sample were 400 from 9th class. From these students, 205 students were males which accounted for 51.25% of the sample and 195 students were females accounting for 48.75% of the sample. This indicates that the data is fairly evenly split between males and females with slightly more male students. In terms of school type, 210 students (52.50%) were from public schools, and 190 students (47.50%) were from private schools. This means that the study had representative samples of public and private school students.

Table 2

Reliability Analysis of the Research Instrument

Scale	Number of Items	Cronbach's Alpha
Disciplined Mind	5	.82
Synthesizing Mind	5	.84
Creating Mind	5	.86
Respectful Mind	5	.81
Ethical Mind	5	.83
AI-Supported Inclusive Education	10	.88
Total Questionnaire	35	.91

The operation of the research instrument was carried out with the reliability analysis using alpha values as shown in Table 2. The internal consistency (alpha) values for all subscales ranged from above .70, the minimum criterion for acceptable internal consistency. The scale with reliability value of .82, which is the disciplined mind scale, was made from the synthesis of mind, with a reliability value of .84; creating mind, with a reliability value of .86; respectful

mind, with a reliability value of .81; and ethical mind, with a reliability value of .83. The AI-assisted inclusive education scale and the overall questionnaire had a Cronbach's alpha of .88 and .91, respectively. The findings indicated that the questionnaire was reliable and appropriate for the students' perception of the five minds and AI assisted inclusive education.

Table 3

Descriptive Statistics for Gardner's Five Minds

Variable	N	Mean	Standard Deviation
Disciplined Mind	400	3.82	0.61
Synthesizing Mind	400	3.76	0.64
Creating Mind	400	3.89	0.59
Respectful Mind	400	4.05	0.55
Ethical Mind	400	3.97	0.58
Total Five Minds	400	3.90	0.49

Note. Responses were measured on a five-point Likert scale where 1 = Strongly Disagree and 5 = Strongly Agree.

The descriptive statistics for Gardner's five minds are shown in Table 3. The mean values of all five dimensions were higher than the neutral point of the five-point Likert scale, meaning that the students had positive perceptions of these educational qualities in general. The highest score was for respectful mind ($M = 4.05$, $SD = 0.55$), indicating that there was a strong value placed on respect for diversity, cooperation and acceptance of others by students. Students were also very aware of the importance of fairness and responsible behaviour with a high mean score ($M = 3.97$, $SD = 0.58$) for ethical mind. The overall mean score for the five minds was 3.90 which shows that the five minds were perceived as relevant for inclusive and future-ready education.

Table 4

Descriptive Statistics for AI-Supported Inclusive Education

Variable	N	Mean	Standard Deviation
Accessibility of Learning	400	3.91	0.60
Classroom Participation	400	3.84	0.63
Digital Equity	400	3.68	0.70
Teacher Guidance	400	4.02	0.56
Responsible AI Use	400	3.95	0.59
Total AI-Supported Inclusive Education	400	3.88	0.51

The views of students on inclusive education supported by AI are summarized in Table 4. The results reveal that the role of teachers earned the highest mean score ($M = 4.02$, $SD = 0.56$), suggesting that students believe the role of teachers is very important in the AI-supported

learning environment. Responsible AI use earned a high mean score ($M = 3.95$, $SD = 0.59$), indicating that students understood the importance of using AI responsibly and judiciously. Accessibility of learning had a mean score of 3.91 indicating that students felt that AI tools can enhance accessibility to learning materials. The lowest mean score ($M = 3.68$, $SD = 0.70$) was for Digital equity, indicating that not having access to digital tools and resources equally may be a concern. In general, there is a positive perception of AI-supported inclusive education, with a mean score of 3.88.

Table 5

Level of Students' Perceptions Toward AI-Supported Inclusive Education

Level	Score Range	Frequency	Percentage
Low	1.00–2.33	34	8.50
Moderate	2.34–3.67	126	31.50
High	3.68–5.00	240	60.00
Total		400	100.00

Table 5 presents the students' perceptions of their level of support for inclusive education with the support of AI. Out of 400 students, 60.00% of them showed high level of perception and 31.50% of them showed moderate level of perception. A low level of perception was reported by 34 students or 8.50%. The results indicate that most students were positive about inclusive education with the aid of AI. The majority of students were in the positive category, suggesting that overall students felt that AI, if used appropriately, can be helpful in making education accessible, participatory and meaningful.

Table 6

Pearson Correlation Between Five Minds and AI-Supported Inclusive Education

Variable	1	2	3	4	5	6
1. Disciplined Mind	—					
2. Synthesizing Mind	.52**	—				
3. Creating Mind	.49**	.57**	—			
4. Respectful Mind	.45**	.50**	.54**	—		
5. Ethical Mind	.47**	.53**	.56**	.59**	—	
6. AI-Supported Inclusive Education	.58**	.61**	.64**	.60**	.63**	—

Note. $p < .01$.

Table 6 shows the Pearson correlation between Gardner's 5 minds and AI-supported inclusive education. The findings indicate that there were positive and statistically significant relationships of all the five minds with AI supported inclusive education at .01 level particularly. Creating mind and AI supported inclusive education had the highest correlation ($r = .64$), followed by ethical mind ($r = .63$), synthesizing mind ($r = .61$), respectful mind ($r = .60$), and disciplined mind ($r = .58$). These findings indicate that students with higher scores in disciplined thinking, synthesizing, creating, respectful and ethical thinking also had higher

positive perception of inclusive education supported by AI. The results suggest that Gardner's five minds are connected meaningfully in the context of inclusive learning in the era of AI.

Table 7

Independent Samples t-Test for AI-Supported Inclusive Education by School Type

School Type	N	Mean	Standard Deviation	t	df	p
Public	210	3.79	0.54	-3.12	398	.002
Private	190	3.97	0.48			

The results of the independent samples t-test to compare students' perceptions of inclusive education supported by AI from public and private schools are shown in Table 7. Students in private schools scored a mean score of 3.97 while students in public schools scored a mean score of 3.79. The t-value was found to be -3.12 with a p-value of .002, which was statistically significant, meaning there was a difference in the two groups. This finding indicates that there was a slightly more positive perception of AI supported inclusive education among the students in the private schools than in the public schools. The gap could come from public school students having less access to digital tools, the internet, classroom technology, or AI learning resources.

Table 8

Regression Analysis Predicting AI-Supported Inclusive Education from Gardner's Five Minds

Predictor	B	SE B	β	t	p
Constant	0.87	0.21	—	4.14	.001
Disciplined Mind	0.18	0.05	.21	3.60	.001
Synthesizing Mind	0.20	0.05	.24	4.00	.001
Creating Mind	0.23	0.06	.27	3.83	.001
Respectful Mind	0.16	0.05	.19	3.20	.002
Ethical Mind	0.19	0.05	.23	3.80	.001

Note. $R = .72$, $R^2 = .52$, Adjusted $R^2 = .51$, $F(5, 394) = 85.34$, $p < .001$. The model explains 52% of the variance in AI-supported inclusive education.

The regression analysis predicting AI supported inclusive education with Gardner's five minds is presented in table 8. All five predictors were positively and statistically significant for the AI supported inclusive education. The strongest predictor was the creating mind ($\beta = .27$), followed by the synthesizing mind ($\beta = .24$), ethical mind ($\beta = .23$), disciplined mind ($\beta = .21$), and the respectful mind ($\beta = .19$). It was found that the R^2 value for the model was .52, indicating that the model accounts for 52% of the variance in AI-supported inclusive education. This indicates that Gardner's five minds have a strong combined effect on students' perceptions of inclusive education in the age of AI. The results indicated that creativity, synthesis, ethics, discipline and respect are crucial elements to build the inclusive and future ready AI-supported classroom.

Discussion

The findings indicate that Gardner's five minds provide a useful framework to consider inclusive education in the era of artificial intelligence. All the five minds had a high overall

mean score indicating students' general awareness of disciplined learning, information synthesis, creativity, respect and ethical behavior as an integral part of modern learning. This is in line with Gardner's (2006) view that future education should not only be concerned with the transmission of information, but should also equip students with the ability to think critically, synthesize information, generate new ideas, respect human differences, and act responsibly. In the era of AI-aided learning, these skills are even more crucial, as students are now surrounded by vast quantities of digital data and are expected to harness it effectively, not just for its content, but for its meaning. As verified by Harvard Business School Press in 2006, Gardner's framework is a real work.

Students valued acceptance, cooperation and respect for diversity well as evidenced by the strong mean score for the respectful mind. This finding is in line with the main objective of inclusive education, that is "all learners accepted and supported, irrespective of ability, background, language, gender or learning difference. UNESCO (2020) states that "inclusion in education means addressing the needs of all learners who might be out of school due to background or ability. The present findings are thus in line with the existing international experience of inclusion as a strategy to minimise barriers and maximise participation for all learners. Respect is still crucial in the AI-supported classroom as technology is not the key to inclusion! Students will also need to appreciate various learning styles, social identities and the needs of individuals.

The findings also indicate that the teachers' guidance scored amongst the highest means for AI supported inclusive education. The key is that this is a significant discovery, as it implies that students do not consider AI to be a substitute for teachers. Rather, they seem to understand that teachers will continue to play a vital role with regard to both content and emotional support, guiding responsible technology utilization, and promoting equitable participation. The findings align with UNESCO's recommendations on generative AI in education, which highlight the importance of the human-centered approach and the use of AI to benefit and empower learners, teachers and researchers (Omar J. Alkhatib, et al.,2026; Miao & Holmes, 2023). While AI can offer rapid feedback, translation, summarisation and adaptive learning assistance, teachers remain integral to assessing accuracy, clarifying context, safeguarding students from inappropriate use and linking learning to human values.

The descriptive findings for AI-supported inclusive education showed that the students, in general, perceived AI as useful for accessibility, active involvement in class and meaningful learning. This aligns with the concept that AI can assist diverse learners in accessing information and how they convey their understanding. For instance, text-to-speech, speech-to-text, translation, adaptive practice, and digital feedback can assist learners with language, literacy, communication or learning barriers. The relatively lower mean score for digital equity, however, indicates that students might still be cognizant of the disparities in access to devices, Internet facilities, and learning support. This is a crucial matter as AI can only enhance inclusion if all students have equal opportunities to access it. If students do not have equal access, AI can exacerbate inequities in education.

The correlation results indicate that there is a positive correlation between all five minds and AI-assisted inclusive education, with all correlations being significant. Students who were more positive about AI-supported inclusive learning also exhibited more positive responding on the following capacities: disciplined, synthesizing, creating, respectful, and ethical. The greatest correlation was between creating mind and AI supported inclusive education. This implies that creativity is a significant factor in assisting students' productive use of AI. While AI can aid brainstorming, writing, visual design, problem-solving, and project-based learning, students must also display creativity and critical thinking when utilizing the AI tools. The connection of the ethical mind and AI for inclusive education is also significant. It reveals that

responsible use of technology, fairness, privacy and honesty are significant issues in AI classrooms.

The regression analysis also revealed that the five minds of Gardner were collectively able to explain AI-supported inclusive education. The model accounted for a large amount of the variance, indicating the interrelatedness of these five dimensions and that they are not isolated from inclusive learning. The predicting mind was the weakest, whereas the creating mind had the highest percentage, followed by the synthesizing mind, the ethical mind, the disciplined mind, and the respectful mind. The discovery suggests more than just access to AI tools, future-ready inclusive classrooms should nurture students' creativity, organization, ethical awareness, and respect for others. This interpretation is confirmed by the systematic review conducted by Zawacki-Richter et al. (2019) that indicated that technical perspectives have been more frequently investigated in the field of AI in education, while pedagogical and educator perspectives deserve more attention.

Conclusion

Based on the above findings, Gardner's five minds can be used as an effective framework for inclusive education in the era of AI. The results indicate that disciplined learning, information synthesis, creativity, respect, and ethical thinking are crucial elements of a meaningful, fair and future-oriented education supported by AI. AI can help to achieve accessibility and participation, but teacher guidance, responsible usage, and equal digital opportunities are necessary.

Recommendations

- Teachers should use AI tools to support inclusive learning, not to replace classroom guidance.
- Schools should provide equal access to digital devices, internet, and AI-based learning resources.
- Students should be trained to use AI responsibly, ethically, and critically.
- Classroom activities should promote creativity, collaboration, respect, and participation among all learners.
- Teacher training programs should include practical use of AI for inclusive education.

Limitations of the Study

The study was limited to 9th-class students only, so the findings may not represent students from other grade levels. The sample included only public and private school students, which may limit generalization to other educational settings. The study used a quantitative questionnaire, so students' deeper personal experiences were not explored in detail. The research also focused on students' perceptions, not direct classroom observation of AI use. Finally, the study was conducted at one point in time, so it did not measure long-term changes in inclusive education practices.

References

- Ainscow, M. (2020). Inclusion and equity in education: Making sense of global challenges. *Prospects*, 49, 123–134. <https://doi.org/10.1007/s11125-020-09506-w>
- CAST. (2018). *Universal Design for Learning guidelines version 2.2*. CAST. <https://udlguidelines.cast.org/>
- Gardner, H. (2006). *Five minds for the future*. Harvard Business School Press. Google Books verifies the bibliographic details: Howard Gardner, Harvard Business School Press, 2006.
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.

- Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research*. UNESCO.
- Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research*. UNESCO.
- OECD. (2023). *OECD digital education outlook 2023: Towards an effective digital education ecosystem*. OECD Publishing. <https://doi.org/10.1787/c74f03de-en>
- Omar J. Alkhatib, Kanwal Iqbal, Tayyaba Mumtaz, Muhammad Latif, Imad Ali, & Ajab Khan. (2026). Towards Intelligent Smart Education Systems: An AI-Powered Framework Integrating Advanced Information Technologies, Data-Driven Intelligence, and Visual Learning Analytics for Next-Generation Teaching and Learning Experiences. *Journal for Current Sign*, 4(1), 834–860. Retrieved from <https://currentsignreview.com/index.php/JCS/article/view/585>
- UNESCO. (1994). *The Salamanca Statement and Framework for Action on Special Needs Education*. UNESCO.
- UNESCO. (1994). *The Salamanca Statement and Framework for Action on Special Needs Education*. UNESCO.
- UNESCO. (2020). *Global education monitoring report 2020: Inclusion and education: All means all*. UNESCO.
- UNESCO. (2020). *Global education monitoring report 2020: Inclusion and education: All means all*. UNESCO.
- UNESCO. (2021). *Recommendation on the ethics of artificial intelligence*. UNESCO.
- UNICEF. (2021). *Policy guidance on AI for children*. UNICEF Office of Global Insight and Policy.
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education: Where are the educators? *International Journal of Educational Technology in Higher Education*, 16, Article 39. doi:10.1186/s41239-019-0171-0