

Use of Artificial Intelligence in School Management: A Contemporary Need of School Education System in Punjab (Pakistan)

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Abstract

The school education system in the state of Punjab, Pakistan, is at a critical juncture, facing deep-rooted administrative inefficiencies and a reliance on outdated management practices that hinder progress. Such difficulties arise in the form of general administrative overload, the high likelihood of human error, and the significant lack of data-informed insights to serve policymakers and direct the provisions a student may need. This narrative review presents the hypothesis that the integration of Artificial Intelligence (AI) is not merely a technological advancement, but a modern-day requirement to reform the system. It makes a good argument to turn to AI as an underlying instrument that would solve the traditional problems of education quality, access, and equity. This article systematically discusses the revolutionary opportunities of AI in several areas of school administration. This involves the automation of tedious and complicated processes, such as staff schedules, exams and report cards, and the admissions process, which are the ever-present ills of the school directorate. In addition to the administrative layer's efficiency, the review focuses on AI's ability to transform the pedagogical core. AI can be used to develop dynamic, personalised learning pathways, which utilise AI-driven approaches that follow individual student pace and interests, as well as identify at-risk students early, allowing for early intervention to be implemented. One of them is the ability of AI to enable school principals and teachers to become proactive leaders rather than reactive managers by automating the massive task of routine administrative work. This shift enables them to devote more time to teacher mentorship, improving teaching practices, and closer interaction with the local population. Finally, this paper suggests that the strategic implementation of AI presents a feasible way forward in realising a more efficient, responsive, and equitable education system in Punjab, one that can empower students to meet the challenges of the 21st century.

Keywords: AI in Education, School Management System, Educational Technology, Personalised Learning AI, Data-Driven Decision Making.

Introduction

Artificial intelligence (AI) is becoming evident that it is a game changer in many sectors around the world, and education is no exception (Yryp, 2025). Global digitalisation underscores the need for educational institutions to adopt new technologies in their management and enhance operational efficiency (Butler et al., 2024). The traditional system of school management,

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particularly in Punjab, Pakistan, has significant issues that impede performance. Such issues include time-consuming administrative work, the risk of human error, and a lack of information regarding inputs, which hinders the ability to make informed decisions (Supadi, 2024).

Problem Statement

In the province of Punjab, Pakistan, the system of school education faces the problems of access, quality, and equity, which are further compounded by the disconnect between policies and actual practice (Hussain, 2015). These complex issues are not well handled using traditional management practices. The manual handling of staff data, staff management, and resource allocation may be ineffective and lead to potential errors that can impact the overall performance of the education system (Hussain, 2015). Additionally, the inability of school administrators to leverage the power of real-time data analytics restricts their capacity to identify areas for improvement and engage in evidence-based decision-making at the correct times (Hussain, 2015).

Scope of the Review

The reviewed topics cover many of the essential spheres of school administration, such as analysis of student performance, staff management, personalisation of learning, assessment procedures, student admissions, school safety, and data-informed decision-making (Sahito et al., 2024; Sun, 2024). AI tools can provide individualised learning routines and instantaneous feedback, which significantly enhances the learning attainment and engagement of students (Sahito et al., 2024). In the context of staff management, AI can help automate administrative work, schedule employees, and support their professional development (Trevisan et al., 2024; Supadi, 2024). With the help of AI, assessments can be improved by automating grading dynamics and providing performance analysis (Sun, 2024). Moreover, AI technologies can be instrumental in guarding schools and controlling applications by highly effective processing and examination of information (Stefania-Andreea, 2024; Supadi, 2024). Ultimately, it will demonstrate how data-informed decision-making, made possible with the help of AI, can revolutionise the process of school management in Punjab, making it more responsive, efficient, and productive (Bukhari et al., 2025; Sun, 2024).

The Role of AI in School Management: A Principal's Perspective

The implementation of AI in school management is a revolutionary tool that enables principals to rise beyond merely adopting possibly inefficient technologies; instead, it encourages specific, strategic decision-making in the administrative process (Saiqa et al., 2025; Wang, 2021; Supadi, 2024). AI can also be vital in solving these problems in Punjab, Pakistan, where the education system has faced difficulties with access, quality, and equity issues (Hussain, 2015).

Strategic Importance

The predictive analytics provided by AI allow principals to make informed decisions by enabling them to predict enrolment trends, examine student performance, and make the best decisions when allocating resources (Wang, 2021; Supadi, 2024; Luo et al., 2018). Such a transformation from intuition-grounded to evidence-based approaches prepares educational leaders to address issues before they occur and to relate the purpose of administration to the desired educational impacts in the future. Rational deployment of AI may result in better planning, standardised execution, Accountability, and academic development (Supadi, 2024; Lopez-Moranchel et al., 2021; Luo et al., 2018).

Efficiency and Resource Optimisation

Automated administrative work routines reduce resources and time (Feng & Li, 2024; Hosen et al., 2021; Siminto et al., 2023). Students can be tracked automatically, and report cards, exams, and administrative data can be prepared with the help of AI (Saiqa et al., 2025; Cai, 2024; Hosen et al., 2021). This automation minimises paper-based work and makes crucial data concerning the school's functioning available promptly, thereby avoiding congestion and enhancing the overall performance of the administrative system (Siminto et al., 2023; Zheng, 2023). This optimisation leads to the saving of both human and financial resources in a resource-limited setting such as Punjab, which improves the efficiency with which an institution operates (Hussain, 2015).

Enhanced Educational Leadership

Automation powered by AI gives principals more time to address the essential aspects of education leadership (Wang, 2021; Lopez-Moranchel et al., 2021). The ability to handle mundane management requirements via intuitive systems allows principals to focus on their role as coaches, overseeing teaching quality and interacting with parents and stakeholders (Saiqa et al., 2025; Wang, 2021). AI also aids in tracking classroom sessions with the help of analytics-based tools, gauging teaching quality, and providing measurable insights to intervene where necessary and focus action there (Supadi, 2024; Lopez-Moranchel et al., 2021). This shift to a more structured approach represents a significant change in the range of duties that principals have to undertake and also signifies a shift in how leaders impact the learning climate (Lopez-Moranchel et al., 2021; Luo et al., 2018; Wollsheid et al., 2024).

Data-Driven Decision Making

The capability of AI to give data-driven advice is another critical feature of educational planning (Supadi, 2024; Luo et al., 2018; Siminto et al., 2023). Conventional approaches to decision-making heavily depend on anecdotal evidence, whereas AI solutions compile vast datasets of functional and scholarly knowledge, providing concrete means of administration to administrators (Wang, 2021; Widodo et al., 2023). Predictive models can identify at-risk students, enabling timely interventions and improving resource allocation through the use of analytic data on staffing, budget utilisation, and classroom needs (Melo et al., 2022; Zhao et al., 2023; Feng, 2021). The potential to employ accurate evidence-based strategies in the educational context of Punjab makes it possible to plan work precisely and follow its implementation systematically, which is likely to increase Accountability and academic development (Bukhari et al., 2025; Wang, 2021). The use of AI in school management, therefore, exemplifies one of the modern demands of the school education regime in the Indian state of Punjab, Pakistan, which has an opportunity to enhance its strategy and improve educational outcomes through a strategic perspective (Wang, 2021; Buhlar et al., 2025; Hosen et al., 2021).

Key Applications of AI in School Management

Student Performance Analysis

Artificial intelligence (AI) is gaining increasing awareness of its ability to transform the tasks of managing schools and improving the entire educational system, particularly in areas such as Punjab, Pakistan (Bit et al., 2024; Orynassar et al., 2024). School management in the era of AI encompasses various domains, offering data-driven solutions and personalised methods to enhance student performance and administrative efficiency (Li, 2025; Bit et al., 2024; Kotomen, 2024).

Early Identification of Weak Students

With the help of AI systems, educators can recognise students with low performance or difficulties in particular disciplines and assist them (Li, 2025; Ahmed, 2024). Through constant data monitoring, AI algorithms have the potential to identify signs of trouble in schools early, enabling teachers to provide targeted learning support with specific assistance and materials in advance (Li, 2025; Ahmed, 2024). Such intervention will help avoid lags in student performance and enhance their overall academic achievements (Sahito et al., 2024; Hasan & Rahman, 2024).

Performance Trends Recognition

The analytical ability of AI covers noticing the trends in performance over time (Kolemen, 2024). Predominant trends in the overall performance of students in a specific subject or grade can be identified by analysing historical data with the help of AI, which is also a significant benefit, as it provides information about the effectiveness of teaching and curriculum patterns (Zhang et al., 2024). This trend analysis can help schools make data-driven decisions to maximise their educational systems and outcomes (Bit et al., 2024; Kölemen, 2024). The scheme in Figure 8, provided by Zhang et al. (2024), presents all the relationships and tendencies of educational concepts over the years, with student performance analysis being a crucial one according to this research (Zhang et al., 2024).

Individual Reports

The assistance of AI can create personalised reports using which students can have a more elaborate description based on factors such as their learning speed, subject-wise learning, participation, and learning interests (Li, 2025; Ellikkal & Rajamohan, 2024). The personalised reports also provide an overall perspective on each student's academic progression, which helps teachers adjust their teaching strategies to meet specific needs (Arya & Verma, 2024; Iman et al., 2024). Educators will know how to support every individual student, recognising their strengths and weaknesses, and customise the learning experience accordingly to engage and help students succeed to the fullest (Pardosi et al., 2024; Hasan & Rahman, 2024).

Efficient Sharing of Data in Parent Meetings

AI-supported graphs, reports, and charts result in a transparent exchange of information with the parents during parent meetings (Li, 2025; Zi, 2024). The visual representation of students' data is more convenient, as parents may gain a better understanding of their child's performance level and identify aspects that require special attention (Li, 2025; Zi, 2024). The openness of information exchange establishes cooperation between parents and teachers, creating an encouraging ecosystem that fosters student achievement (Ellikkal & Rajamohan, 2024).

Student Performance Analysis

The ability to interpret digital data regarding results, attendance, test scores, class participation, learning pace, and behaviour can provide a comprehensive picture of student performance (Nithiyanandam et al., 2022). Analysis of large volumes of information enables AI algorithms to detect trends and relationships that would not otherwise be discovered by standard analytics, providing educators with actionable insights to enhance teaching practices and student interventions (Bit et al., 2024; Yin, 2024). Its application has been improving the performance of personalised learning and the interventions that teachers provide, as it enables the examination of individual student performance (Iman et al., 2024; Swapna et al., 2024). Learning management

systems (LMS) with AI and models of instructor evaluation can serve as examples of other AI-based tools that can be deployed to analyse student performance (Kolemen, 2024; Nithiyanandam et al., 2022). Data algorithms built into these tools will evaluate the degree of attention from students and present data charts graphically, indicating the extent of their understanding (Nithiyanandam et al., 2022). Their usage can also include curriculum mapping and the generation of tailored content, ensuring that learning objectives are met and content is organised according to its priority (Boubker, 2023).

Table 1: Tools for Student Performance Analysis

Purpose	Tool Name
Generating student performance graphs and reports	Power BI / Google Data Studio
Analyzing performance from LMS data	Edmodo Analytics
Monitoring each student's learning progress	Schoology / Class Dojo
Recommending content based on student learning pace	Knewton / Sown to Grow

Staff Management and Timetabling

Scheduling Automation

Artificial intelligence (AI) is gaining a reputation as something that can transform school management, especially in terms of staff management and schedule formation (Ballado et al., 2025; Adams & Thompson, 2025; Sari-hutami, 2024; Susilo & Aritonang, 2023). Automation backed by AI will help to automate complex administrative processes, streamline teacher schedules, and allocate resources most efficiently, addressing some of the acute areas of need in the modern school education system (Susilo & Aritonang, 2023; Sari-hutami, 2024). Artificial intelligence streamlines the complex task of organising teachers into time slots, allocating classes and subjects to them, displaying holidays, and managing other administrative tasks (Sari, 2024; Ballado et al., 2025; Susilo & Aritonang, 2023). With the aid of algorithms and machine learning, AI systems can analyse vast datasets and generate schedules that align with institutional standards and individual preferences (Assen, 2024; Huong et al., 2021). This automation reduces the burden on administrative staff who would otherwise handle much of the manual work, leading to fewer errors and increased efficiency. The incorporation of AI into schedule distribution enables dynamic reassessments, allowing for the proper adaptation of resources and ensuring that the schedule can keep pace with the school's dynamic demands and requirements (Sari-hutami, 2024).

Timetables Generated by AI

AI can be successfully applied to automatically generate a balanced timetable that considers different factors, including teacher availability, subjects, classroom capacity, and class sizes (Al-Amoush, 2011; Sari-hutami, 2024). Such systems employ optimisation algorithms to devise schedules that minimise conflicts and maximise resource utilisation (Salem & Hassine, 2015; Al-Hilali, 2019). AI can accommodate sophisticated constraints and preferences in a way that produces efficient and fair timetables. It is most useful in larger schools with numerous teachers and classes, as manually creating a timetable is both time- and energy-consuming (Sari, 2024).

Avoiding Overloading

AI will also be relevant in avoiding the overloading of teachers due to the analysis of teaching duties and workload (Ballado et al., 2025; Adams & Thompson, 2025). By tracking the number of classes, the subjects covered, and the required preparation, AI systems can identify imbalance

opportunities within the schedule and propose changes better to distribute the effort (Sari-hutami, 2024). This active response will also help to prevent teacher overload, promoting their well-being and ensuring the quality of teaching (Yokota, 2024; Argyropoulou, 2020). Workload management through AI may address efficiency issues, leading to higher satisfaction levels among teachers and decreased burnout, thereby establishing a more comprehensive and practical teaching environment (May et al., 2024; Goldenthal et al., 2024).

Streamlined Classrooms and Resources

AI improves the streamlining of classrooms, laboratories, and computer labs through the scheduling of resources based on availability and demand (Sari-hutami et al., 2023). To determine usage patterns over time and assess allocated resources for the future, AI algorithms are beneficial. This AI algorithm can also easily analyse historical and real-time information (Saheb et al., 2022; Huang et al., 2024). The outcome of such an optimisation is the reduction of idle periods and increased turnover of available facilities, which results in cost savings and operational efficiencies (Susilo & Aritonang, 2023). AI will also be able to handle the distribution of tools in a way that ensures the necessary equipment and materials are available at the right time and in the right place (Lestari et al., 2024).

Emergency Rescheduling

AI systems, in the situation of a teacher's absence, will be able to suggest alternatives and reschedule in real-time (Sari-Hutami, 2024; Ballado et al., 2025). Considering the availability and expertise of substitutes, the level of subject knowledge, and qualifications, the AI will automatically find an adequate replacement, adjusting the schedule to minimise inconvenience as much as possible (Adams & Thompson, 2025). The presence of this type of rapid response will ensure the smooth flow of teaching with minimal interference for students (Duelks et al., 2023; Yeigh et al., 2020). Emergency rescheduling with AI can also be used to update relevant parties, such as students and parents, ensuring everyone is prepared (Ipek & Karaman, 2021).

Leave and Training Management

The management of teacher leave, annual leave, medical leave, and training leave becomes an easy task with the AI system; therefore, it aids in the creation of sub plans (Sari-Hutami, 2024; Adams & Thompson, 2025). This can be achieved by informing the AI of leaves, dispensations, and identifying when there will be a staff shortage due to protocols that connect the AI with HR systems and calendars (Deepa et al., 2024). The algorithms will be able to suggest successful substitute teachers by considering their availability and qualifications; therefore, locating good substitute teachers is easy (Squires et al., 2024).

Moreover, AI can utilise historical data to forecast future staffing requirements, enabling proactive forecasting and staff allocation (Huong et al., 2021). Under this comprehensive leave and training management system, schools will have sufficient staffing levels and reduced disruption to their educational programs (Ballado et al., 2025). Notwithstanding the numerous advantages of AI in school management, it is essential to acknowledge that some limitations and shortcomings may arise (Assen, 2024). These include the necessity of proper and safe data, the factor of potential algorithm bias, and human supervision (Kim, 2024). To improve the state of school education systems, it is crucial to address these challenges and deploy AI in an ethical and meaningful way that maximises its potential (Goldenthal et al., 2024).

Table 2: Tools for Staff Management and Timetabling

Usage	Tool / Software
Automatic and detailed timetable creation	aSc TimeTables
Scheduling, attendance, teacher management	Teachmint
Classes, holidays, substitute management	EduPage
Timetable planning for complex school systems	Timetabler Software
Complete HR scheduling system	EdAdmin / Fedena

Personalised Learning

Concept of Personalised Learning

Individualised learning focuses on the customisation of educational activities to the individual specifications of a student, namely pace, preferences, talents, and needs (Alarcon & Shene, 2021; Boubker, 2024). This strategy is differentiated from conventional, universal approaches, in which students are seen as having various ways of learning and thus require individualised instruction (Tabora et al., 2024). The aim is to create an atmosphere in which learning becomes more engaging, effective, and relevant to each student (Sodervik et al., 2021; Sahito et al., 2024). Such personalisation is achieved with the aid of data and technology, which adjust the learning content, methods, and pace to suit the learner (Zhao, 2024; Sahito et al., 2024). Personalised learning aims to help every student unlock their maximum potential and develop a lifelong passion for learning (Alarcon & Shene, 2021; Boubker, 2023).

Creation of Learning Profiles

The AI systems are triple-A in creating a comprehensive learning profile of students based on numerous data points (Rasheed et al., 2023; Yang, 2021). These data samples comprise the performance of students during assignments and quizzes, the extent of their engagement in classroom exercises, observed behavioural patterns, and general academic tasks (Alarcon & Shene, 2021). By answering these questions, AI algorithms can determine personal characteristics and weaknesses, identifying favourable and concerning areas in learning and other skills. This enables them to allocate more attention accordingly, thereby improving those shortcomings (Sodervik et al., 2021; Sahito et al., 2024). Teachers can use these profiles to make informed decisions on how best to meet the needs of their students; this can be achieved by adapting their instruction and offering targeted interventions (Lazonder et al., 2020; Alarcon & Shene, 2021). The development of elaborate learning profiles is crucial in implementing effective personalised learning measures (Boubker, 2023).

Providing Content Based on Learning Pace

The possession of personalised learning entails many positive outcomes of AI, including the delivery of content at an individual pace (Tabora et al., 2024). AI systems can adjust the level of material complexity to make it simpler or more complicated in real-time, based on the student's understanding (Alarcon & Shene, 2021). The implication of content acceleration in AI is that it will enable fast learners to progress to higher levels of learning (Sodervik et al., 2021; Sahito et al., 2024). Conversely, AI can also provide additional resources to students who need more time to learn the material, offering them explanations and assignments to reinforce their knowledge (Lazonder et al., 2020; Alarcon & Shene, 2021). This dynamic action helps visualise how to involve all students most effectively, enabling them to learn at their own pace with optimal outcomes (Boubker, 2023).

Suggesting Activities Based on Interest

The AI algorithms can also make learning more enjoyable and interesting as the interests of the students can be scanned, and the students may receive recommendations on learning activities and topics based on those interests (Alarcon & Shene, 2021). With the help of AI, it is possible to study students' preferences and choices, their level of engagement with different subjects, and identify patterns that suggest other activities of interest to them (Soddervik et al., 2021; Sahito et al., 2024). For example, when a student is interested in science and technology, the system suggests student projects that focus on science, programs, and simulations utilising virtual reality, which match these sciences and the student's interests (Guo et al., 2020). Besides motivating students, such personalisation enables the establishment of a more meaningful connection with the material, making the experience more valuable (Lazonder et al., 2020; Alarcón & Shene, 2021).

Automated Feedback and Advice

One of the primary features of a personalised education generated by AI is commentary and feedback on student success (Su et al., 2024; Saddingerning et al., 2021). These mechanisms have the potential to evaluate tasks in the shortest time, outlining mistakes and offering specific advice regarding them (Alarcon & Shene, 2021). This instant formative assessment enables students to realise what they have done wrong and rectify it in the moment, meaning that what they learn and achieve is sustainable (Sodervik et al., 2021; Sahito et al., 2024). Additionally, AI can provide each student with personalised learning tips, time management strategies, and ways to utilise materials, empowering them to take control of their learning and performance (Lazonder et al., 2020; Alarcon & Shene, 2021). The mention of all the opportunities and advantages of AI's evolution in learning highlights the possibility of providing timely and relevant feedback (Boubker, 2023).

Assisting Teacher Guidance

AI can provide teachers with daily reports indicating which students require support, allowing for individualised attention for each learner (Lazonder et al., 2020; Alarcon & Shene, 2021). The first benefit of AI for teachers is that it analyses their students' performance data and identifies patterns indicating that a student is struggling with a particular concept or skill, which informs the teacher (Alarcon & Shene, 2021). This helps ensure that teachers are vigilant in assisting struggling learners at the required time and giving them special attention (SReeking et al., 2021; Sahito et al., 2024). Consequently, a teacher informed that a particular group of students has a problem with math can implement changes in their lesson plans to provide more instruction and training to that group regarding the issue (Lazonder et al., 2020; Alarcon & Shene, 2021). Personalised attention can significantly improve student performance and create a better learning environment (Boubker, 2023).

Table 3: Tools for Personalized Learning

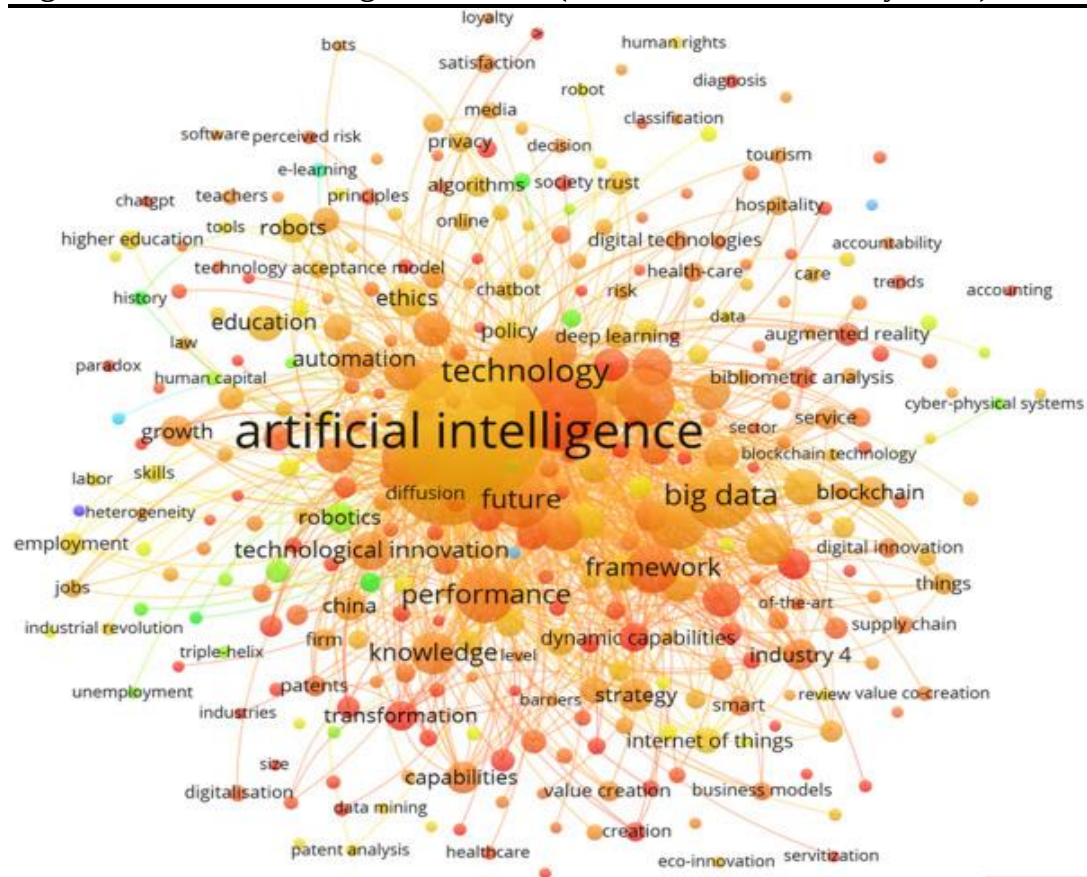
Usage	Tool / Platform
AI determines path-based learning for each child	Khan Academy
Provides automated explanations by taking a screenshot of the question	Socratic by Google
Creates personalized learning plans for children based on learning data	Century Tech
Interactive and automated teaching, especially in Math and Reading	Edmentum / DreamBox
Can provide immediate and simple explanations for individual questions	ChatGPT

AI has become a growing trend in managing schools and educational activities that focus on individualised learning processes (Umatgerieva et al., 2024; Zhao, 2024; Sahito et al., 2024). Personalised learning is the process of offering individualized learning activities to every student, tailored to their pace, interests, abilities, and needs (Alarcon & Shene, 2021; Boubker, 2023). AIs are also unequivocally valuable in ensuring this is achieved through the in-depth profiling of each student by analysing various data points, including assignments, quizzes, levels of participation, behaviour, and educational outcomes, among others (Rasheed et al., 2023; Yang, 2021). These profiles ensure that the AI provides content tailored to the student's learning speed, allowing it to cater to both slow and fast learners at their respective paces (Tabora et al., 2024).

AI algorithms also contribute to pseudo-individualisation, as they can track students' interests, recommend relevant learning activities, and identify interests that students might have (Alarcon & Shene, 2021). Such practices not only enhance student engagement but also contribute to a better understanding of learning material (Soddervik et al., 2021; Sahito et al., 2024). In addition, AI serves as a vehicle for automated feedback and suggestions about student performance, enabling the analysis of failures and the immediate identification of ways to improve performance, which facilitates continuous learning and improvement (Su et al., 2023). Daily reports that AI provides to teachers, highlighting students who need help in certain areas, enable them to offer personal attention, which means that educators can provide the necessary guidance and support to those students most in need (Lazonder et al., 2020; Alarcon & Shene, 2021). The integration of AI into personalised learning thus transforms the future of education by providing personalised, interactive, and supportive learning conditions (Boubker, 2023). Possible advantages of AI in school management and personalised learning include a personalised educational experience, data-driven decisions, and increased student engagement (Zhao, 2024; Sahito et al., 2024). By developing comprehensive learning profiles, presenting content at appropriate levels, proposing suitable activities, providing automated feedback, and offering teacher mentorship, AI is transforming the face of education and enabling students to achieve their best (Alarcon & Shene, 2021; Boubker, 2023). As AI technology advances, its use in school education systems is expected to increase further, thereby achieving even greater results in providing quality and accessible education to all students (Tabora et al., 2024).

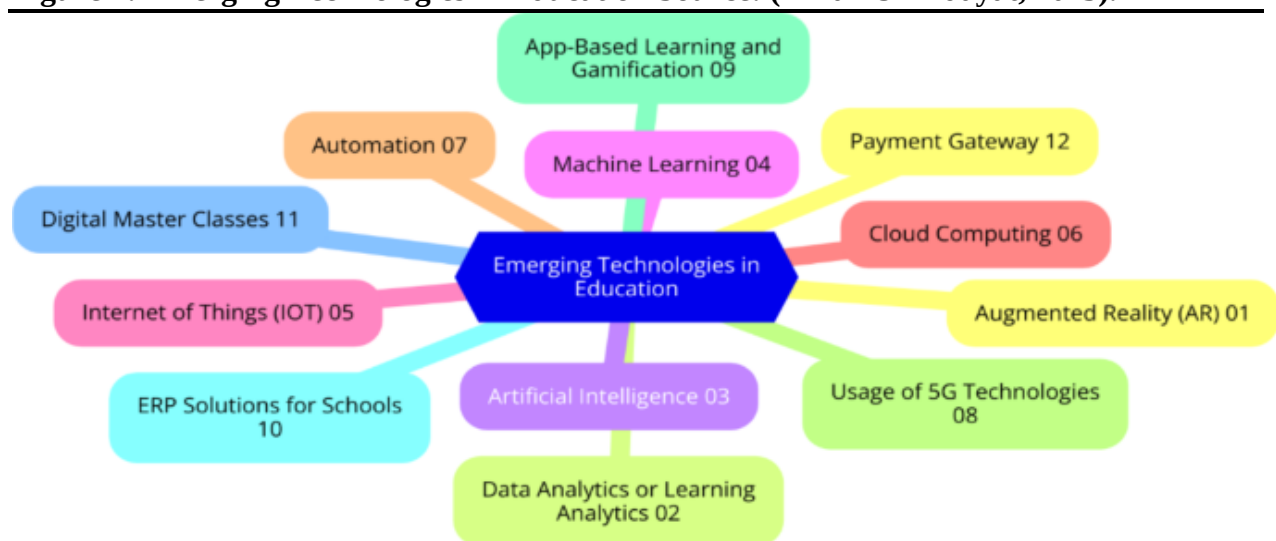
The following figure locates the concept of artificial intelligence at the centre stage, presenting the relationship of different areas of technology with artificial intelligence (Andersen & Makransky, 2020):

Figure 1: Artificial Intelligence Source: (Andersen & Makransky, 2021)



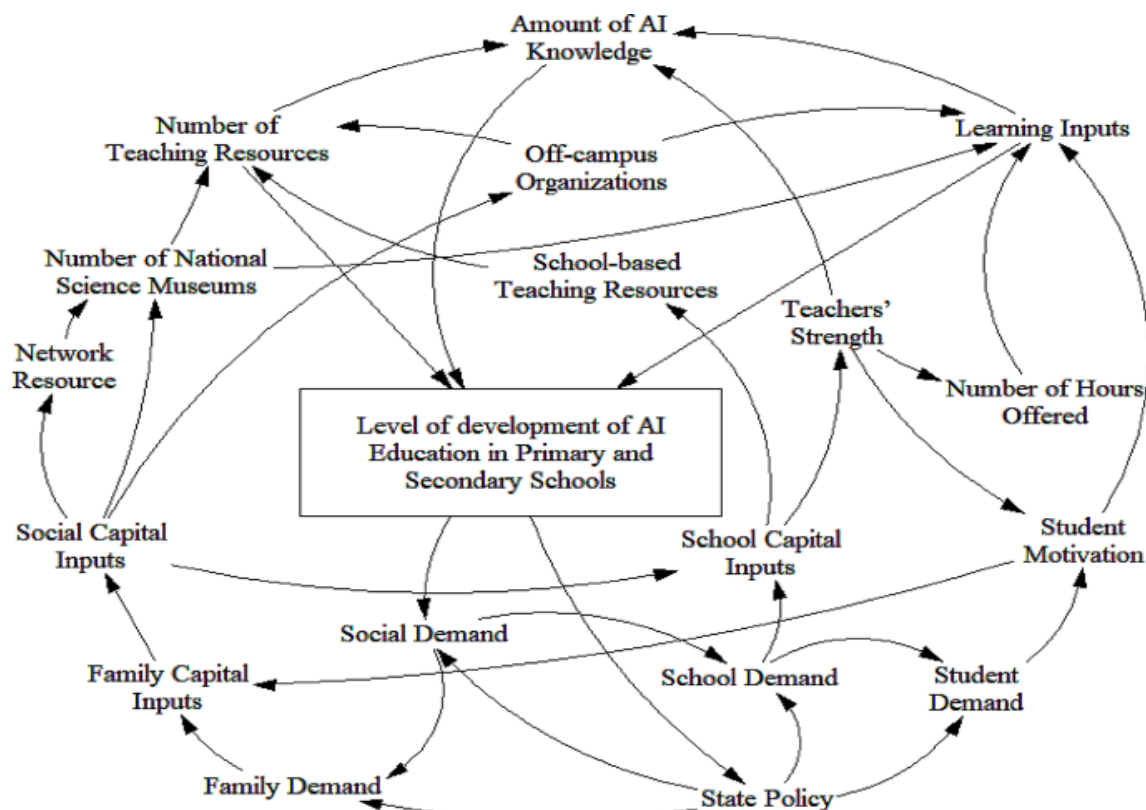
Following is a mind-map of emerging technologies in education (Alifah & Hidayat, 2025):

Figure 2: Emerging Technologies in Education Source: (Alifah & Hidayat, 2025).

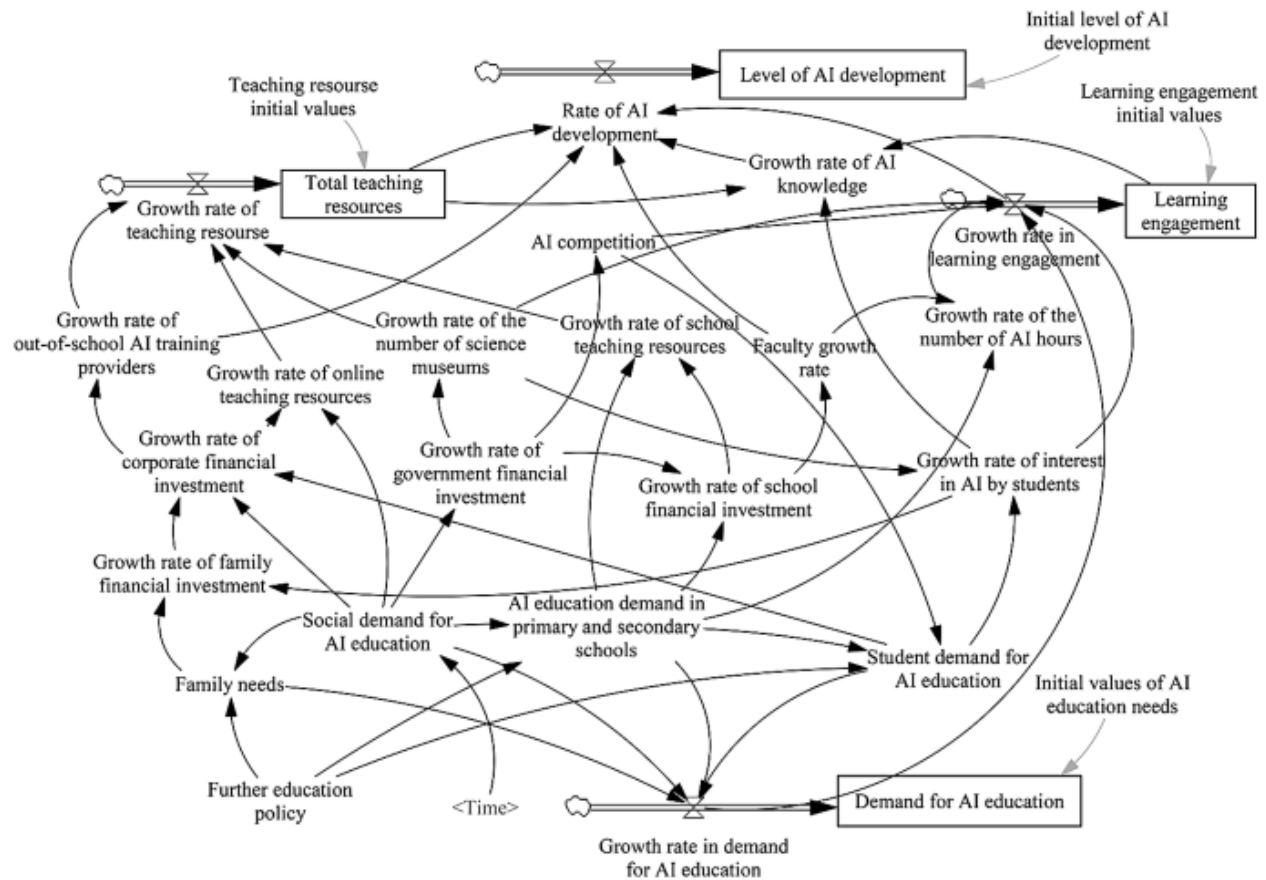


Following diagram illustrates a complex web of factors influencing the level of development of AI education in primary and secondary schools (Annuš & Kmet', 2024):

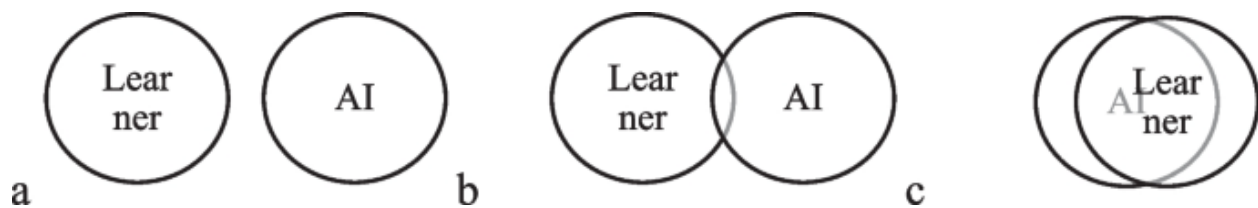
Figure 3: AI Education Dynamics Model Source: (Annuš & Kmet', 2024).



Following is a causal-loop diagram that models the factors influencing AI education (Annuš & Kmet', 2024):

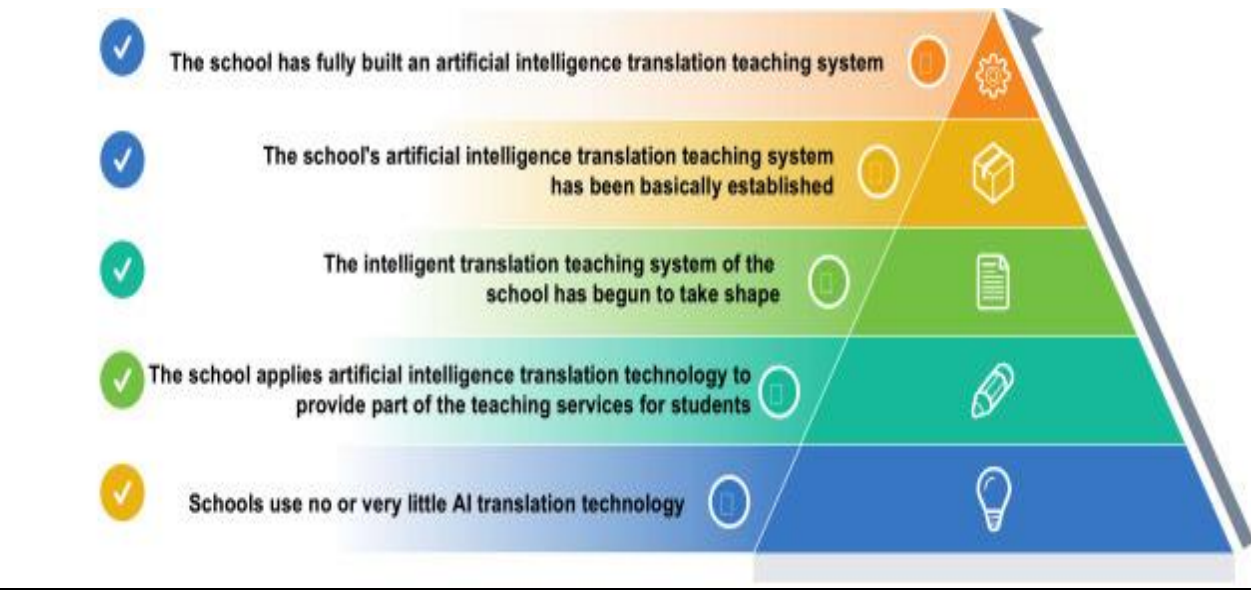
Figure 4: Causal-loop Diagram of AI Education Source: (Annuš & Kmet', 2024).

Following diagram shows the relationships between learners and AI in education (Huang et al., 2024):

Figure 5: Learners-AI Interaction Source: (Huang et al., 2024).

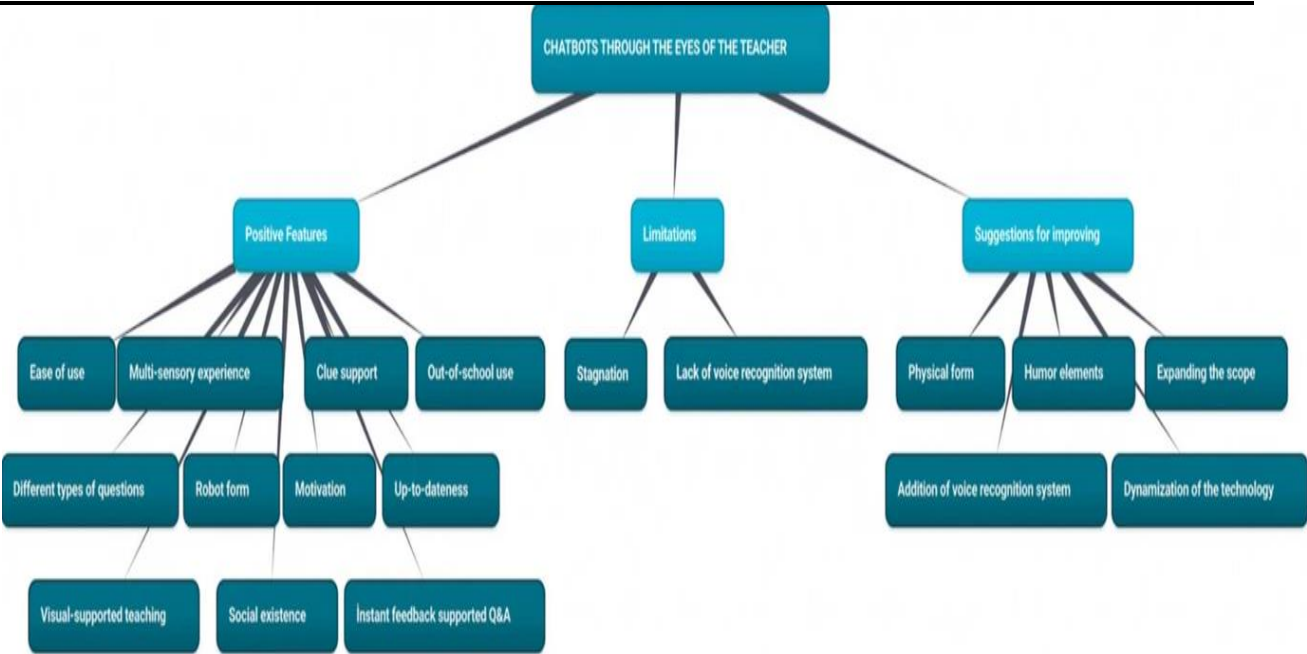
Following pyramid illustrates the stages of AI translation technology adoption in schools (Keding, 2020):

Figure 6: AI Translation Teaching System Source: (Keding, 2021).



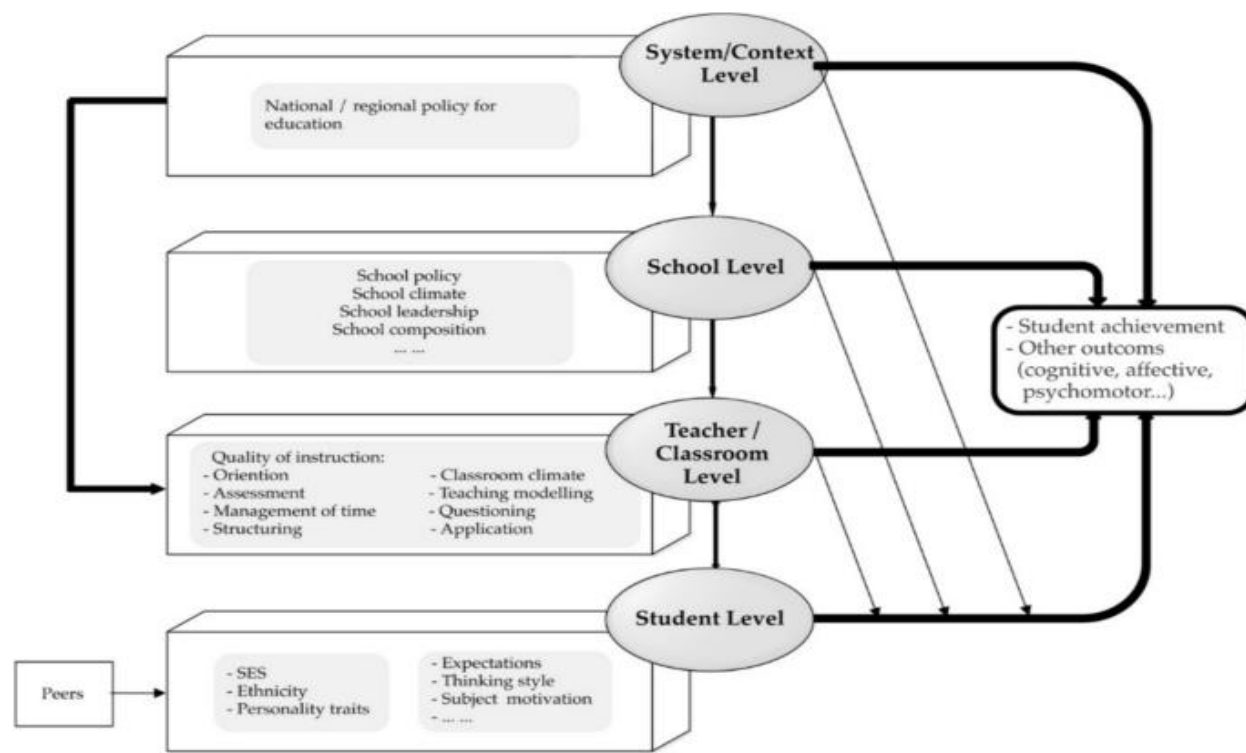
Following mind-map shows teachers' perspectives on chatbots (Yuxiu, 2024):

Figure 7: Chatbots Through the Eyes of the Teachers Source: (Yuxiu, 2024).



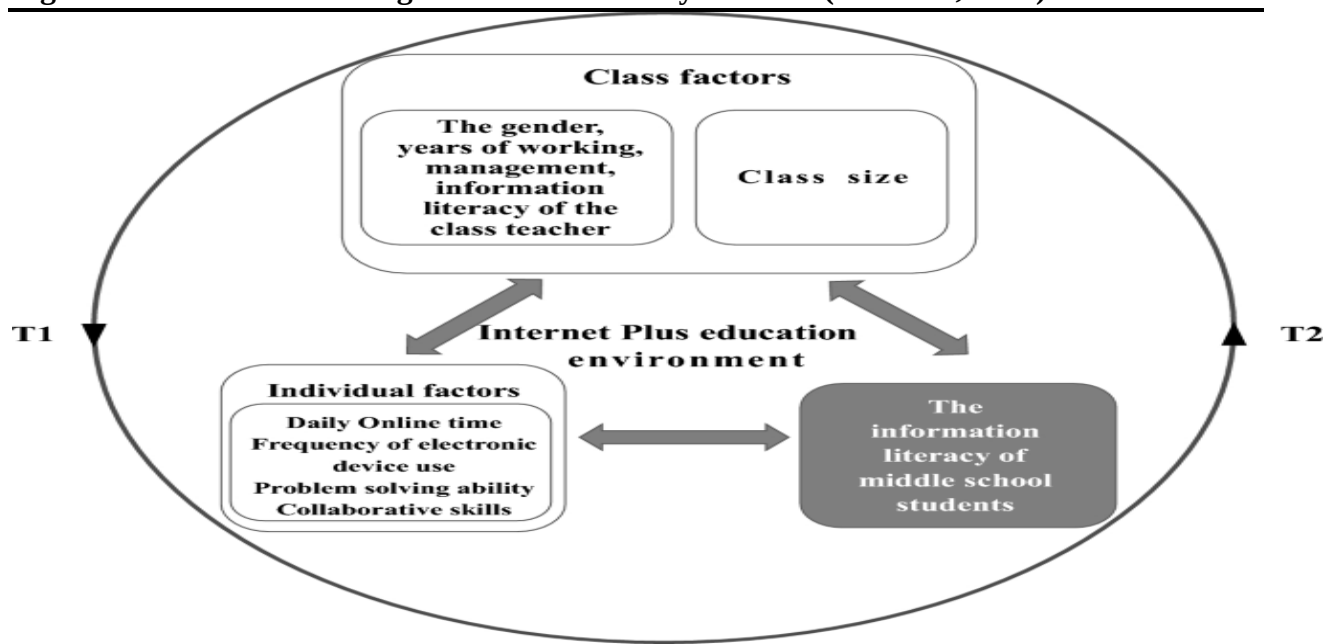
Here is a hierarchical diagram that illustrates the factors influencing student outcomes (Triansyah et al., 2023):

Figure 8: Factors Influencing Student Outcomes Source: (Triansyah et al., 2023).



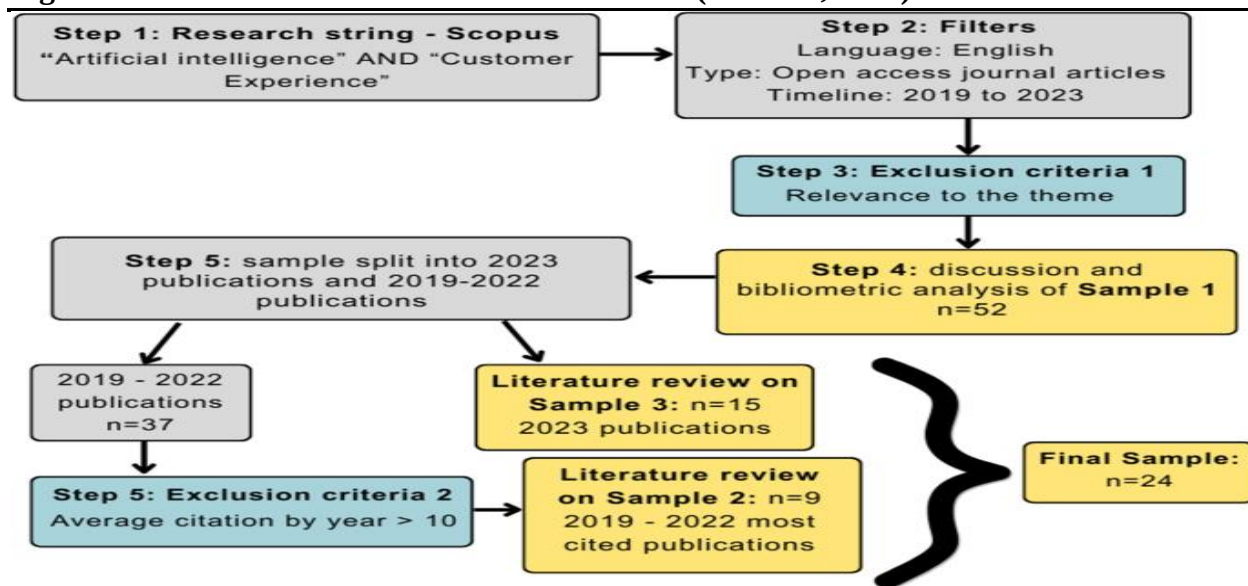
The following model explores the factors influencing middle school students' information literacy (Liu et al., 2024):

Figure 9: Factors Influencing information literacy Source: (Liu et al., 2024).



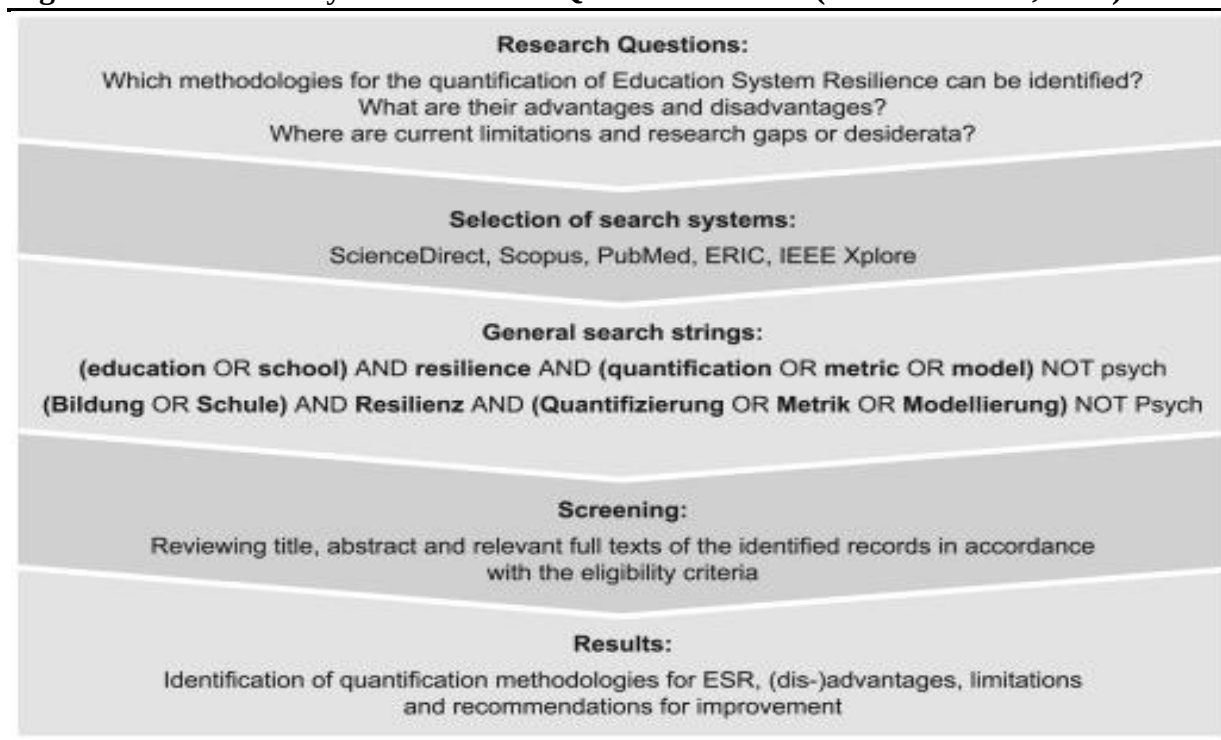
Following flowchart illustrates the process of literature review related to AI and customer experience (Yu et al., 2024):

Figure 10: Literature Review Flow Chart Source: (Yu et al., 2024)



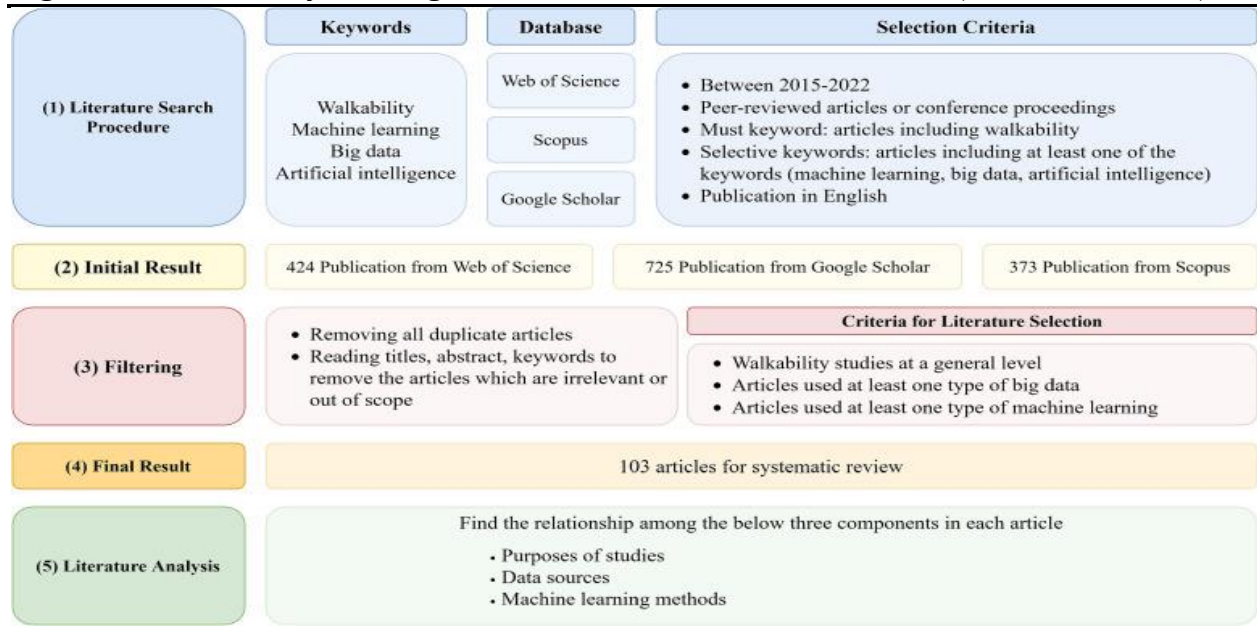
Following figure shows the research questions of education system resilience (Peruchini et al., 2024):

Figure 11: Education System Resilience Questions Source: (Peruchini et al., 2024).



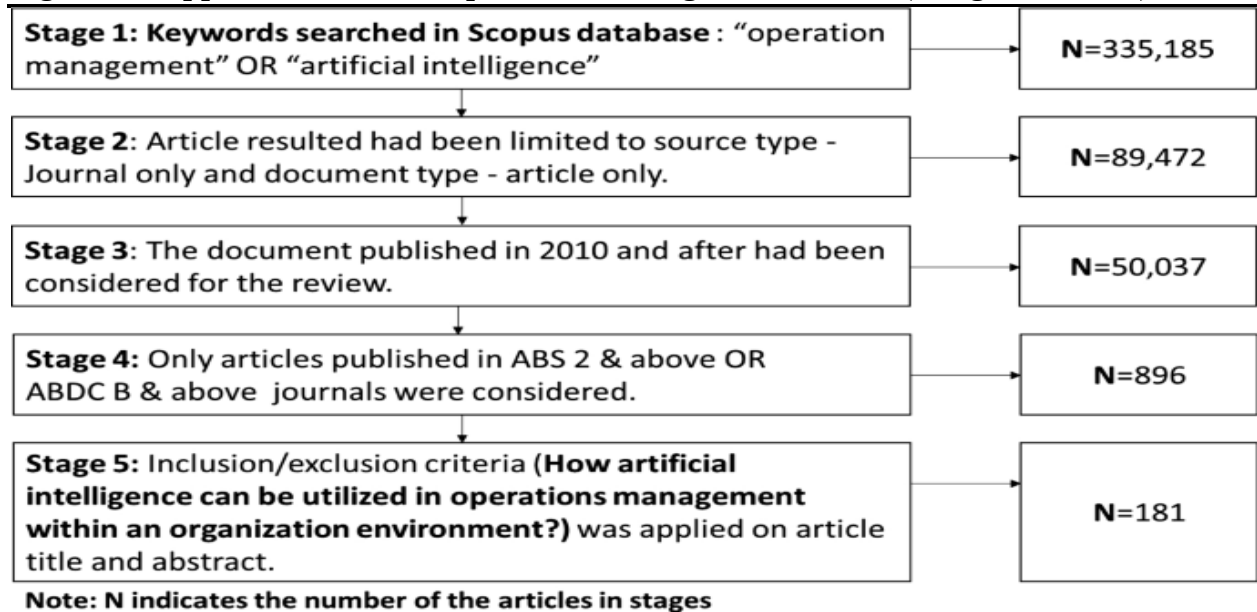
The following flowchart illustrates the process of conducting a literature review centered on walkability, machine learning, big data, and AI (Dülks et al., 2023):

Figure 12: Walkability, MI, Big Data and Literature Review Source: (Dülks et al., 2023).

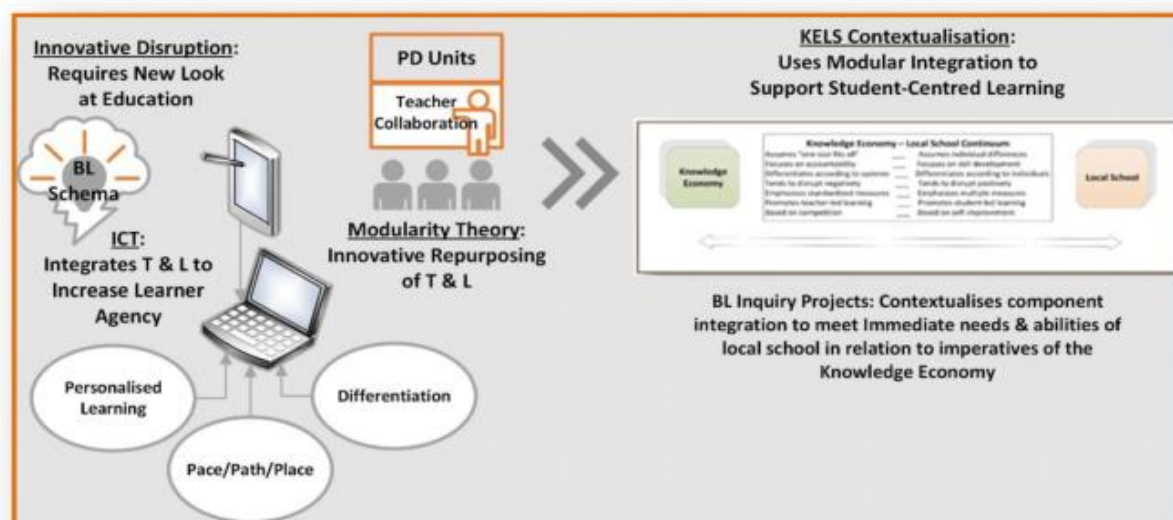


The following flowchart illustrates the multi-stage process of selecting articles for a research review on the application of AI in operations management (Yang et al., 2024):

Figure 13: Application of AI in Operations Management Source: (Yang et al., 2024).



Following figure is a visual representation of concepts related to educational innovation, focusing on blended-learning (Yeigh et al., 2020).

Figure 14: Educational Innovation Source: (Yeigh et al., 2020).

Exam Paper and Report Preparation

Automation of Task: Artificial intelligence (AI) gains a reputation as the technology that can immensely transform multiple areas of school management, especially regarding the production of exam papers and reports (Ballado et al., 2025). The requirement for an effective and efficient school education system, particularly in the Punjab region of Pakistan, has increased the necessity to incorporate AI to make all tasks manageable and improve the quality of educational products (Hussain, 2015). The problems of upgrading quality and automating the process of creating exam papers, homework, questions, and report cards will be resolved by using AI tools, as they will require less human input from educators and will be consistent and precise (Ballado et al., 2025; Wang et al., 2024).

Automatic Generation of Questions: AI is able to auto-generate any kind of question, such as multiple-choice questions (MCQs) and fill-in-the-blank questions, given lesson content (Wang et al., 2024). This feature helps teachers create broad and expansive assessments that support various learning objectives and levels of expediency. The beneficial use of curriculum analysis and learning materials allows AI algorithms to specify key concepts to determine appropriate questions that can assess the knowledge base and content understanding of the students (Bakti et al., 2023; Prayoga et al., 2025). Saving time is not the only positive effect that AI involvement in question generation can have, as the questions will also be relevant and aligned with the appropriate learning outcomes (Wang et al., 2024).

Instant Exam Paper Formatting: The use of ICT would help in the development of exam papers, the structure of the paper, the distribution of marks, and the orientation of the exam paper. Such tools will help to organize the structure and organization of exam tasks better and make evaluations more readable. Automatic formatting allows more time to focus on the content and quality of the questions rather than administrative matters (Erol & Erol, 2024). AI's ability to automatically format exam papers help maintain a consistent and professional appearance across all assessments (Adams & Thompson, 2025).

Creation of Marking Criteria and Assessment Rubrics: AI can be an instrumental element when it comes to teachers creating clear evaluation rubrics to evaluate students in a transparent way

(Ballado et al., 2025). The data on student performance can be analyzed, patterns may be found, and AI algorithms may suggest whether various assessment criteria are effective. This data can be utilized in the development of rubrics that are informative enough to assess student achievement appropriately and provide meaningful feedback (Mapula, 2025). With the assistance of AI in rubric development, bias and objectivity can be achieved in the evaluation, where fairer and more consistent assessment scores will be attained (Ballado et al., 2025; Maia et al., 2023).

Automated Report Card Comments: AI can also write individual, targeted narrative comments in report cards, relying on data indicating student performance (Ballado et al., 2025). Such remarks are a rich source of feedback about the weak and strong areas of a student, completing the image of a student scholar in an academic year better than letter grades alone. AI can make teachers more effective in communication with students and parents, as it allows them to adjust comments to particular needs, thus generating a collaborative-based approach to the learning process (Bakti et al., 2023; Mapula, 2025). The automatic generation of report card remarks saves teachers time and allows every student to receive constructive and individual feedback (Ballado et al., 2025).

Performance-Based Suggestions: Analyzing performance, AI provides recommendations and instructions on the topics that a child needs to address (Iman et al., 2025). AI can recognize which areas students need improvement in and recommend certain resources and procedures to overcome them. Such individualization of the teaching process contributes to the fact that students can concentrate their energy on those areas where they struggle the most, resulting in better grades (Maia et al., 2023; Karan & Angadi, 2024). The inevitable suggestions based on AI can also guide teachers on how to instruct students by taking into consideration the different needs of these students (Iman et al., 2025; Mapula, 2025). The fact that AI can generate performance-based suggestions makes the learning process more efficient and leads to student success (Iman et al., 2025; Maia et al., 2023).

The possibility of integrating AI into the school management process, especially report and exam paper writing, is highly promising, as, in terms of efficiency, fairness, and individualization of education, AI will automatically improve the educational environment (Ballado et al., 2025). With the automation of activities like question writing, formatting of exam papers, and the creation of rubrics and report card comments, artificial intelligence will give teachers more time to work with students on a more meaningful interactive level and improve the quality of their teaching (Wang et al., 2024; Mapula, 2025). Moreover, AI's capacity to interpret information about student performance and provide individual feedback and recommendations will lead to increased engagement and performance (Iman et al., 2025; Maia et al., 2023). Future trends in the use of AI in school management will definitely contribute to increasing its role in the field of education, thereby significantly changing it in regions such as Punjab, Pakistan (Bukhari et al., 2025; Ballado et al., 2025).

Table 3: Tools for Exam Paper and Report Preparation

Usage	Tool / Software
Automated questions, MCQs, summary generation	Quillionz
Help in writing questions, rubrics, explanations, and comments	ChatGPT
Full paper, assignments, worksheets preparation	TeacherMatic
Online exam taking and instant results	Formative / ZipGrade
Automating report card comments and performance	Google Sheets + GPT Plug-in

Admission and Registration Process Automation

Improving Efficiency: Artificial intelligence (AI) is transforming school administration systems by making the processes of admission and registration easier and faster, considering the modern-day requirements of school education systems, especially in areas such as Punjab, Pakistan (Wang et al., 2024). AI transitions the old, and in some cases cumbersome, admission and registration systems to automated, transparent, and easy-to-use processes that are highly efficient (Ballado et al., 2025). The AI online form systems will automatically extract the mandatory information needed by parents and will save it in a digitalized form, such that human intervention will no longer be needed, as manual transfer of data will not be required, and the chances of developing errors or faults will also be reduced (Mapula, 2025).

Instant Guidance with AI Chatbots: AI chatbots can be used to answer admission-related questions from parents in a manner that is very effective, real-time, and available 24/7, promoting communication and customer support (Ballado et al., 2025). These chatbots would be capable of covering a broad scope of questions, from simple information about the school to inquiries about the admission process itself, as well as providing immediate assistance and saving administrative personnel on staff (Mapula, 2025). The idea of categorizing admission forms according to differentiating parameters and automatically producing merit/waiting lists with the help of AI would make it possible to automate the procedure of scouring the applications (Adams & Thompson, 2025). Through data processing on any scale, including but not limited to academic performance, club activities, and similar elements, AI systems are capable of prioritizing applicants and composing lists that summarize their strengths and prospects (Prayoga et al., 2024).

Automated Confirmation Messages and Fee Dashboard: AI will prompt auto-confirmation messages, fee structures, and future plans through email, SMS, or even WhatsApp, which means that parents will never fall out of the loop during the entire admission procedure (Ballado et al., 2025). Such automated messages eliminate the necessity of manual follow-up and contribute to a flawless and time-saving experience for parents (Mapula, 2025). A complete digital registration record is produced because AI-based Student Information Systems (SIS) store all student records automatically (Wang et al., 2024). This allows for the storage of a large scope of data, such as demographics, academic history, attendance records, and other necessary data of the student, thus creating a centralized and easily accessible storage place for student data (Iman et al., 2025).

Complete Digital Registration Record: Not only is the admission and registration protocol more effective when using AI, but it is also less cluttered and more transparent (Ballado et al., 2025). In addition, the AI-based systems may be used to generate quality insights into student demographics and enrollment patterns so that school administrators can make more informed decisions related to the allocation of resources and the development of programs (Adams & Thompson, 2025). One of the factors that make the implementation of AI-based management in schools successful is that it will only be enhanced over time as AI-based technology is further developed (Hussain, 2015).

Table 4: Tools for Admission and Registration Automation

Usage	Tool / Software
Admission management, priority list, interview planning	SchoolMint
Registration, admission, fees, and complete student data	OpenEMIS / Fedena
AI chatbot for parent guidance	Tars / ManyChat Chatbot
Automated forms and data processing for low-budget schools	Google Forms + App Script
Automating emails, data entry, and records	Power Automate / Zapier

Security and Attendance AI System

Enhanced Security and Management: Artificial intelligence (AI) is already gaining popularity as a method of improving security and attendance management in schools (Sribhuvaneshwari, 2025). Such an AI-based system streamlines and increases the security and attendance efficiency of students, teachers, and staff, providing the principal with a full range of control (Pathania et al., 2024; Preeti et al., 2024). These systems are an up-to-date replacement for the outdated, often inefficient methods of school environment control (Dolai et al., 2024; S. & Y., 2025).

Facial Recognition Attendance: This is because the AI cameras and software that record attendance based on facial recognition are collected automatically (Tolulope et al., 2024; Khadiri & Krishantoro, 2025). Computer vision and deep learning allow identification and verification of people, making the process of attendance quick and minimizing the possibility of failure or fraud, such as proxy attendance (Tolulope et al., 2024). Facial recognition is a fast and precise way of monitoring the people on school premises, which increases overall accountability (Chapke & Kapde, 2025; Sharmila et al., 2024).

Real-time Entry/Exit Monitoring: Real-time monitoring of entry and exit is one more advantage of the implementation of AI in the field of school security, as it is possible to monitor all the entrances and exits in real time and easily track unauthorized entry and exit, as well as all the other anomalies that can occur on the school premises (Huang et al., 2024; Cai et al., 2025). Coupled with the use of cameras and sensors, the information is processed using AI algorithms that detect anomalies in entry and alert the corresponding members of staff (Alfrieht et al., 2024; Woźniak & Hoala, 2024). The environment would then be secure, as the information is being tracked and time can be saved in the event of such threats (Sribhuvaneshwari, 2025).

Visitor Management System: Visitor management systems with the aid of AI are also being rolled out to manage and verify guests of a given company (Khadiri & Krishantoro, 2025; Preeti et al., 2024). The systems can typically capture the images of visiting persons and scan their passports to ensure the correct people with the right permits are granted entrance into the school (Shaheer et al., 2024). Such prioritized verification, which is automated, ensures that schools are able to improve security and have all the student history on the visitors to the school (Chandana & Banada, 2025; Kumar et al., 2024).

Emergency Response and Alerts: This is possible because AI can be deployed to send an autoreply to parents and school administration in case of emergencies or any other suspicious activity (Cai et al., 2024). These alerts can also provide life-saving details within a few seconds, as each of the stakeholders will be notified and will be in a position to make the right decisions (Yuxiu, 2024). With the possibility of programming emergency notifications, schools will have more obligations to attend to the uncertainties of future events with greater concern for the welfare of students and staff in mind (Sribhuvaneshwari, 2025).

CCTV Analysis and AI Integration: To monitor the suspicious behavior of people using AI, CCTV is very useful for this purpose, especially in educational institutes. (Khadiri & Krishantoro, 2025; Yan & Qi, 2024). By combining AI with the current CCTV system, schools will be able to identify and reduce the scope of threats to their security (Luo et al., 2024). This feature boosts surveillance operations and helps create a safer school climate because interventions can occur in cases of suspicious behavior in a timely manner (Alfrieht et al., 2024; Joraviya et al., 2024).

Table 5: Tools for Security and Attendance AI System

Purpose	Tool / System
Facial recognition for attendance, student control	FaceTag / FaceGraph
Attendance, teacher, and payroll	TimeTrack / MyClassAttendance
Visitor logging, badges, and alerts	VisitorTrack / iLobby
CCTV analysis and AI security alarms	Eagle Eye / BriefCam
Automated school attendance system	WhatsApp API + Google Sheets

Conclusion

The use of Artificial Intelligence in school management is a critical and essential step that the education system in Punjab, Pakistan, needs to take. This review has demonstrated that AI is more than just an automated tool; it is a strategic tool that can address long-standing issues of inefficiency, quality, and inequity that have hindered educational development in the region. By automating multifaceted and time-intensive administrative tasks, such as timetabling, admissions, and attendance tracking, AI enables school heads to focus on managing day-to-day crises and evolve into true instructional and strategic visionaries. Such a transition frees up and enables principals and teachers to devote their precious time and knowledge to the real task of improving the quality of teaching, staff mentoring, and developing meaningful communication with students and parents.

The purposes of AI touch directly on the essence of the educational mission. AI also allows the discovery of new trends in the learning process by analyzing data in a sophisticated way, offering students an individualized form of learning on a scale that was never possible before by adapting and responding to their respective needs, paces, and areas of interests, and thus encouraging better involvement in the learning process and with better results. Additionally, its forecasting capacity will enable the early detection of students at risk, paving the way for timely and targeted intervention. The trend toward data-driven decision-making, enabled by AI analytics, holds the potential to be more efficient, for school functions to be more transparent, for resources to be allocated more efficiently, and for more effective strategic planning.

However, the road to effective integration is not free of various challenges. The rollout of this kind of technology will entail significant investments in digital infrastructure, intensive training of teachers and administrators to develop literacy in AI, and the establishment of prominent ethical standards to address issues of data privacy and bias in algorithms. Policymakers, educational leaders, and communities must collaborate to create an enabling environment that facilitates this technological transformation. Despite these obstacles, the possible advantages are irrefutable. The adoption of school management AI is a crucial step that can transform the education sector into an intelligent, sustainable, fair, and efficient system, ultimately empowering the next generation of Punjabi students to thrive in an era of rapid technological progress.

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