

How AI Supports Knowledge Sharing and Management in Educational Institutions

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ARTICLE INFO			ABSTRACT
Article History:			<i>It investigates how the use of AI-based knowledge management and sharing systems may affect Pakistani students' academic outcomes and how well they learn. To do the study, researchers took a sample of 215 students who had enrolled through simple random sampling, both at public and private schools. A Likert-scale survey was used to study student views about AI in education. To look at the data, the study used various statistical tests, for instance, regression analysis, multiple regression, ANOVA and correlation analyses, in order to identify how the student learning outcomes are related to AI and knowledge management. When applying regression analysis, it was detected that using AI in knowledge management yields strong positive impacts on the knowledge sharing process ($\beta = 0.727$) and is highly statistically significant ($p\text{-value} < 0.001$). Furthermore, the model showed that 44.9% of variance is explained ($R^2 = 0.449$) and analysis of variance (ANOVA) confirmed the significance of the overall model with an F-value of 173.410 and a p-value below 0.001. the link between AI and Knowledge Management is very clear, highlighted by Knowledge Sharing (correlation of 0.670) and Learning Outcomes (correlation of 0.497). Sharing knowledge and using AI are strongly related to learning outcomes (at the 0.01 level); their correlation is 0.464. An analysis done after the study showed that AI tools performed differently at different schools and among students of different educations. AI helps students graduate better, study effectively and transfer knowledge, making it clear that AI is making a difference in education today.</i>
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Introduction

Artificial Intelligence (AI) simplifies the way education works by automating tasks, smart algorithms and making accurate predictions of student needs. Tools powered by AI such as virtual assistants, machine learning-based suggestions and automatic grading systems, have improved traditional education and made it more flexible and available to people. With AI, educational institutions can handle a lot of information, keep track of students' educational activities and provide custom-tailored classes to meet each student's needs. AI-generated insights help teachers notice where students are having difficulties and change their teaching to enhance and personalize how students learn.

AI also makes it easy for students, teachers and administrators to communicate and collaborate. With chatbots and virtual mentors, students receive instant academic help and feedback whenever they have questions. Because of cloud-based AI, learning with others no longer requires everyone's physical presence; people can communicate, exchange materials and share information in real time. AI also helps administrators distribute resources appropriately, oversee student progress and predict future academic outcomes, so the school makes data-driven decisions that boost its success. These changes make lessons more connected to students, where information is exchanged and updated right away. (Zamiri & Esmaeili, 2024).

Even with the benefits, facing data privacy issues, bias in algorithms and the digital divide are among the difficulties in adopting AI in schools. Even though AI lets more students learn, it still depends on the available internet, teachers' and students' technology skill level and AI capabilities. Using AI for assessment and grading raises ethical concerns because of the risk of biased computer learning affecting how fair and accurate the process is (Al-Sharafi et al., 2023; Afaq et al., 2022). For AI to reach its capability, institutions should set up a code of ethics, teach teachers how to use AI and ensure all users can benefit from AI-based tools. When these challenges are solved, AI has the ability to remake education so that it is more efficient, designed for everyone and provides a better learning experience.

Enhancing Knowledge Sharing through AI

Through high-level automation and advanced machine learning such platforms make it possible for students and educators to access knowledge in schools and universities more easily. Artificial intelligence technology sorts through a lot of study resources, enabling educators and students to get the information they need at any time. AI-powered recommendation engines look through users' actions, favorites and previous involvement in learning to offer them tailored materials, raising the chances of successful learning. Not only does it save students' time, but it makes sure they find important, fitting lesson resources for their goals (Majumder & Dey, 2022).

Besides, students can use intelligent tutoring systems, AI chatbots and virtual assistants, all day as online academic assistants that simplify the process of studying complicated subjects. Equipped with AI such resources answer child questions right away, help make difficult ideas simple and change teaching methods according to each student's result. (Al-Husseini et al., 2021). Altering their approach and behavior like instructors, these systems offer a lively and interactive method, so students use traditional classroom learning less often. Data shows that AI tutors can highly improve learning results by giving personalized support and following students' progress which promotes an adaptive, student-centered way of learning.

Also, using AI-based search engines and robot-operated repositories is changing how research and knowledge are managed in schools. With these technologies, educators and researchers have the ability to find desired research, reports and papers from huge data collections swiftly. (Al-Emran et

al., 2023). AI tools can highlight new trends in research articles, help with citation and find instances of plagiarism which reduces the burden of writing and publishing. Thus, AI ensures that vital information shared across the education system is valid and useful which helps make education better for students and teachers. (Okunlaya et al., 2022).

Optimizing Learning and Resource Management

Data analytics from machine learning is helping to modernize schools and track student success closely. With student engagement monitoring, seeing results from assessments and tracking communication in the system, AI enables schools to identify issues, predict student results and update how instruction is conducted. Because of predictive analytics, teachers are able to help students who are not performing up to par and boost the overall achievement rate. Given all this, AI analytics aid institutions in revising the curriculum so it addresses new student needs and trends in the field. (Thi Chung & Thi Tram Anh, 2022). Because of this, learning is more personally suited and accommodating to each learner's way and speed.

Apart from making the curriculum stronger, AI is useful in dealing with a lot of content in education. Because of information overload, it is too difficult for teachers and students in traditional systems to use good academic resources. AI handles the process by classifying, indexing and pulling up what users are looking for based on their interests and past actions. Using computerized LMS, sharing knowledge is more straightforward since learners have step-by-step course material, quizzes they can take and see their advancement immediately. Thanks to these computer-based options, learning materials are always relevant to students' goals and can be accessed which makes it simpler to learn effectively. (Jakobsone et al., 2017).

AI helps in creating a personal learning path by recommending classes or materials suitable for a student which improves how involved and engaged they are. These systems analyze how people have used them in the past, look at their actions and gain knowledge to suggest the best textbooks, videos, practice tasks and helpful resources. Creating differentiated learning pathways help students remain interested by working on their own schedule and repeating what they need more help with. (Binsaeed et al., 2023). By focusing on students, AI enhances their understanding and memory which leads to great grades and a more entertaining way to learn.

Facilitating Collaborative Learning and Communication

AI is changing team learning by making it easier for students, teachers and researchers to discuss and interact. With real-time chat, group document editing and smart content ideas, cloud-based AI platforms give students chances to learn and interact with their peers. Group projects are supported by these platforms which have options for schedules, progress and sending recommendations for helping teammates work better together (Kuleto et al., 2021). AI-based classrooms on the internet remove location restrictions, so students everywhere can take part in knowledge-sharing initiatives and improve diversity in education. Using AI, learning environments encourage students to think critically, solve problems and learn more actively.

AI also assists with several administrative jobs, taking some responsibilities off teachers and allowing them to focus more on individual teaching and support. With AI support, grading systems look at student assignments, judge how they did and give feedback straight away which saves time. (Odularu & Bokwe, 2025). Such software helps automate the review process, protects academic integrity and enables instructors to use their time more efficiently. AI feedback allows students to know promptly what they're good at and where they fall short, so they can always improve. Automating these routines frees up time for teachers, letting them focus on helping, guiding and teaching youngsters which in turn makes education more efficient and student-friendly (Peng et al., 2024).

AI also increases the effectiveness of schools and universities by using resources more productively and streamlining management. Smart scheduling software streamlines how classes are scheduled which instructors teach them and when exams are held, making the institution more efficient. Such chatbots handle questions from students relating to course materials, due dates and college policies. Because of these advances, education happens more efficiently, helping both students and teachers focus on learning without extra bureaucratic burden. Stronger AI will help support team learning activities and school administration, both improving school results and promoting a better learning atmosphere (Qahl & Yahya, 2024).

Data-Driven Decision-Making for Educational Institutions

AI is making a big impact on education by giving a clear view of student performance, the way students learn and the effectiveness of schools. Through analyzing data and looking for special patterns, AI can watch student participation, assess what students have learned and notice how much they take part in the process as it happens. Because of these insights, teachers are able to see where students are struggling and change their lesson plans accordingly. Through AI, dashboard administrators can check overall student performance by group and subjects, making choices based on real data. Institutions may develop proper interventions with the help of these analytical insights to promote students' learning. (Samoilenko & Nahar, 2013).

Also, AI helps to improve decision-making within organizations by using predictive tools. AI relies on past records to find out if and who might face academic difficulties. Therefore, teachers are able to implement prompt interventions such as unique learning plans, tutoring or support systems for students who are having difficulties. AI helps schools find out what leads to dropouts and supports their efforts to engage and retain students better. With predictive technology, AI enhances support for students so that they are helped early if challenges appear (Aljaaidis et al., 2020).

Besides helping students, AI analytics also help improve a college's effectiveness by automating processes like funding and operations. Reviewing patterns of student course registrations, faculty schedules and class availability using AI improves scheduling and allocation of resources. (Taherdoost & Madanchian, 2023). AI helps forecast the budget and plans finances to guarantee resources are used to update the learning environment. Because AI takes care of many routine duties, educational leaders have more time for significant tasks such as planning and setting policies. Improvements in AI will help institutions work more effectively and boost student results in school. (Vadari & Desik, 2021).

Research objective

- To analyze the effect of AI-based knowledge sharing on the academic performance of students.
- To examine the contribution of AI-based knowledge management towards enhancing learning efficiency in schools.
- To assess the correlation between AI-based learning technologies and student retention and engagement.

Problem Statement

Even though AI is helping schools organize and share knowledge, we do not yet know how effective it is at helping students with learning, teamwork and making decisions. Despite the fact that AI-based tools include automated support, personal learning experiences and evidence to inform, there isn't much research studying if they really change how students learn, teachers work and decisions are made at institutions. Not having standard models in using AI in education makes

some people worry about whether it is truly available, works well and can be used long-term. The study seeks to evaluate how AI is used in optimizing knowledge management, to fill in blanks left by past research and to recommend data-supported improvements for AI use in teaching.

Significant of study

This research is relevant since it presents facts about how AI helps manage and exchange knowledge among those at school. Examining how AI tools influence learning, collaboration and decision-making, the study gives useful information to teachers, school principals and officials responsible for education. Thanks to the findings, schools will be able to use AI more effectively to improve education, office work and the overall working of the institution. Moreover, this research increases what is known about AI in education which can shape further work in education technology.

Literature Review

AI has made a major impact on education by quickly evolving learning and methods for managing knowledge. The introduction of AI-based systems such as intelligent tutoring systems and recommendation systems has led to more opportunities for students to get the learning they require. It is noted in research that AI technology helps students adapt by giving them instant feedback and material that matches their needs. On top of that, AI chatbots and virtual assistants handle many administrative duties which gives teachers more opportunity to focus on connecting with students and planning courses. Even with these updates, researchers still think that empirical studies should be done to correctly assess how AI influences students' learning outcomes and the effects of adding AI-based methods to schools (Li et al., 2022).

Many researchers have looked into the impact of AI on schooling lately and their studies suggest AI in the classroom encourages students to cooperate and share their intelligence. AI assists students and teachers in having interactive chats, sharing files and data and completing projects. Studies indicate that machine learning helps schools by identifying learning patterns and providing advance warnings for students who may be struggling, so support can be given. Furthermore, AI plays a role in making grading fairer, getting rid of biases and increasing transparency when measuring students' academic performance. Still, others warn that relying too heavily on AI in education might lessen students' thinking and problem-solving skills which makes it important to use AI in a supportive, not just a replacing, way (Zawacki-Richter & Bozkurt, 2023)

With the use of AI-based analytics, it becomes easier for administrators to come up with data-backed plans for how to use resources and plan the academics of a school. The use of AI makes it easier for education institutions to examine a lot of data, project future enrollment and accurately measure student performance. According to findings, AI leads to more efficient institutions by handling ordinary activities like admitting students, scheduling processes and handling staff. (Bilquise & Shaalan, 2022). Besides, AI-driven analytics can improve early-warning systems by identifying students who might struggle and by coming up with suitable assistance plans for them. Privacy issues connected to AI data, ethics and discrimination are still major concerns that need to be addressed. Studies should continue to solve these difficulties and make better use of AI in schools.

AI-Driven Knowledge Management and Academic Performance

Machine learning algorithms used in these systems are crucial for arranging, storing and AI-driven educational platforms now have the ability to observe students' behavior, their approach to learning and their academic performance on computers. With AI, students get instant advice to guide them along paths made for their specific needs. However, ITS makes a big difference by

supplying interactive, intelligent help programs that work as if giving a personalized tutorial to people one-on-one. (Bucea-Manea-Țoniș et al., 2022) Emphasize that these systems play a role in changing the approach to student development whenever quick, individualized support is needed on difficult subjects. Language processing tools combined with AI help to present education to an audience of learners from different backgrounds by overcoming language challenges. If AI is used together with AI, it helps others spread knowledge and supports students with necessary and good-quality material that improves their ability to understand and remember what they are taught (Seonghee & Boryung, 2008).

Besides providing materials, Artificial intelligence in education helps by giving detailed feedback for student improvement. Automated grading makes evaluation of student work more accurate and balanced which helps instructors manage documents easily. Unlike ordinary grading, AI-driven feedback looks at the way students respond, finds where their weaknesses are and proposes specific resources to aid their progress (Senthilkumar et al., 2024) Underline that these technologies change the lessons being taught immediately based on a student's performance, addressing confusion and building on strengths. In addition, predictive analytics allow schools to identify at-risk students right away which helps prevent them from failing academically. While qualitative research reveals AI poses threats to education, studies that use numbers and statistics are required to know exactly how students' achievements are influenced and changed. Researchers should focus on how to bring AI into teaching to support and guide the evolution of education. (Fauzi et al., 2019).

AI-Powered Collaboration and Knowledge Sharing

AI allows teachers to customize the learning process for each student which helps students get individual help that suits their needs. Smart tutoring systems collect information about how students perform and act, providing specific support and information to help each person move ahead at their own speed. According to (Bencsik, 2021), Learners benefit from these AI-guided tools because of the better interaction they produce through adaptability to various needs, enhanced understanding and more involvement. AI enables platforms to offer multi-language services which allows students with varied backgrounds to work together easily. This results in more people sharing their thoughts which helps everyone learn better whether studying through the Internet or in person.

AI goes beyond student collaboration by allowing educators and schools to share their knowledge more easily by automating many of their processes. AI tools for content curation tease apart and arrange learning materials, so that instructors can access and share useful teaching materials in a simple way. They help faculty members to cooperate by allowing them to research jointly, exchange their skills and gain experience across different departments. Furthermore, automated insights from AI help institutions discover knowledge areas that need more attention and reveal future education trends which guides them in making data-focused decisions about learning and teaching strategies. Though AI is very useful in sharing knowledge, addressing data, security and technology issues is necessary to achieve its full impact in education. (Saide & Sheng, 2021).

Being able to give instant and specific guidance is a major way AI helps in collaborative learning. With AI assistance, student answers are checked as soon as they are submitted and this enables them to clarify their understanding of hard concepts. Feeding back results from assessments in real time means students can concentrate on their weaknesses early on. But even with such benefits, there are still problems like differences in technology, teachers not understanding AI deeply and students having varying levels of interest that stop AI from being completely part of group projects. If schools do not have sufficient access to AI-based learning platforms, they may not use them well which can result in different levels of schooling for students. (Kucharska & Rebelo,

2022). Also, people who have not interacted much with AI tools could require extra training to use them in the best way. With AI advancing, people want to conduct studies that prove it helps students increase their knowledge and collaborate well. (Haider et al., 2022).

AI and Data-Driven Decision-Making in Educational Institutions

Decision-making at learning institutions has improved following the use of AI-based analytics which give reliable information on various performance areas. They check a lot of historical data on students to show what students learn best, who needs help and the best ways to provide it (Asbari et al., 2023). The insights produced by AI support keeping students in the programs, help develop fitting curriculums and guide how studies are organized after reviewing real-time data. Furthermore, AI-assisted LMS allow teachers to see how students are advancing, check how their teaching works and change their approach using statistical data. Introducing AI into decision-making allows institutions to become more proactive, basis their actions on evidence and improve how they help students and manage the institution.

AI is not limited to supporting students; it also streamlines administrative work which improves how resources are used and how schools are run. People can use AI to automatically handle admissions, timetables and forecast future enrollment. AI-driven data tools assist with managing faculty by checking their teaching skills, workload and ways to advance their careers. Improved technology allows institutions to make better choices, making sure their strategies and policies meet the new demands of education. Even so, despite all the good AI provides, major concerns regarding data confidentiality, unfairness in algorithms and decision-making transparency exist. To make sure AI is properly and safely used in higher education, addressing these issues is required (Manville et al., 2019).

AI helps managers and administration create the most efficient and productive operations. By using AI, institutions can automate busy tasks such as grading, planning timetables and assigning resources which improves productivity while saving people time. Better algorithms assist with workforce planning, future finances and infrastructure development based on reviewing institutional data. Even so, there are concerns about privacy with data, ethics in AI and possible bias in the algorithms used. Ensuring AI systems are transparent, fair and accountable allows institutions to prevent unwanted discrimination in managing admissions and grades. (Cabrera & Cabrera, 2005). Because AI is playing a bigger role in education planning, it is very important to increase the amount of research and data about its future reliability, accuracy and overall effect on schools. Handling these obstacles will be necessary for making the most of decisions based on AI in education. (Kwok et al., 2024).

Methodology

Research Design

The research design used was quantitative in approach since the purpose was to examine the effects of AI in knowledge sharing and management in academic institutions.

Population

There were students and learners from all regions of Pakistan in the study, so the samples covered a wide range of educational backgrounds.

Sampling Technique and Sample Size

A simple way to choose participants was used so that all students had an equal chance to participate. The group consisted of 215 participants, this number being adequate for using statistical techniques.

Data Collection

A questionnaire that uses a Likert scale was sent out to people for them to complete themselves. Students' views on using AI in sharing and managing knowledge in education were evaluated through the questionnaire. The Likert scale survey was designed to get agreement levels, allowing researchers to work with figures.

Ethical Considerations

Taking ethics into account kept the study honest and the info safe for respondents. Participants were informed what the study was about and gave their consent before their data was collected. Ensuring anonymity and confidential data was maintained in the process of the research work.

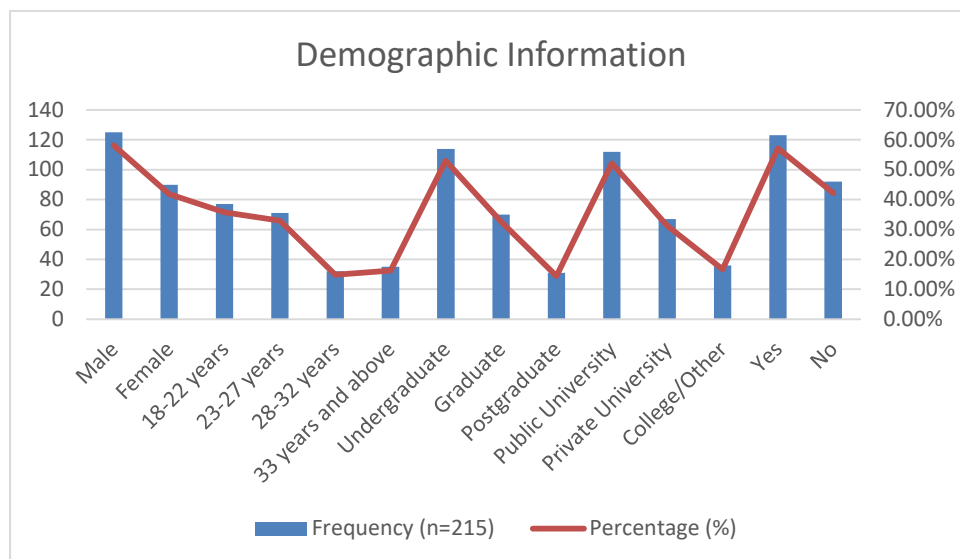
Data Analysis

The findings were evaluated with various tests using regression analysis, multiple regression and ANOVA statistics to understand AI in knowledge management. The purpose of the tests was to check if AI-related tools are useful in improving how students exchange their knowledge and how effective the learners are. Experts said the research would add evidence to the influence of AI in education systems and inform future steps.

Table 1: Demographic Information of Respondents

Demographic Variable	Categories	Frequency (n=215)	Percentage (%)
Gender	Male	125	58.1%
	Female	90	41.9%
Age Group	18-22 years	77	35.8%
	23-27 years	71	33.0%
	28-32 years	32	14.9%
	33 years and above	35	16.3%
Education Level	Undergraduate	114	53.0%
	Graduate	70	32.6%
	Postgraduate	31	14.4%
Institution Type	Public University	112	52.1%
	Private University	67	31.2%
	College/Other	36	16.7%
Familiarity with AI Tools	Yes	123	57.2%
	No	92	42.2%

Figure 1:



The highest number of respondents (N=215) were men (58.1%) and the next largest group was women (41.9%). Most participants were 18 to 22 years old (35.8%). The next largest group was between 23 and 27 (33.0%) and there were fewer in the 28 to 32 years group (14.9%) and 33 or older group (16.3%). A majority (53.0%) were undergraduates, followed by graduate students (32.6%) and postgraduate students (14.4%). About 52.1% of the participants studied in public universities, 31.2% in private universities and the rest at colleges or different institutions. An interesting fact is that 57.2% of respondents knew about AI and almost half, 42.2%, did not.

Table 2: To examine the impact of AI-driven knowledge sharing on students' academic performance.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.670 ^a	.449	.446	4.05228

a. Predictors: (Constant), AI and Knowledge Management

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2847.548	1	2847.548	173.410	.000 ^b
	Residual	3497.661	213	16.421		
	Total	6345.209	214			

a. Dependent Variable: AI and Knowledge Sharing

b. Predictors: (Constant), AI and Knowledge Management

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.105	.444		13.764	.000
	AI and Knowledge Management	.727	.055	.670	13.169	.000

a. Dependent Variable: AI and Knowledge Sharing

Figure 2:



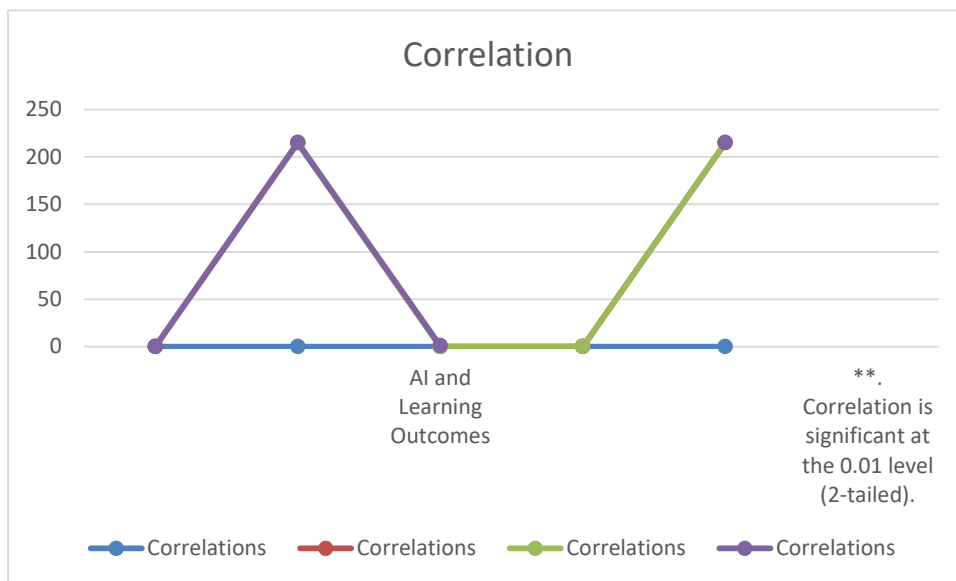
The researchers are investigating the impact of knowledge sharing using AI on how well the students do. R-value is 0.670, meaning there is a strong link between applying AI to knowledge management and sharing knowledge among people. The knowledge management based on AI explains about 44.9% of the variation in knowledge sharing. Additional evidence is found in the ANOVA results, showing statistically that AI-based knowledge management influences sharing knowledge ($F = 173.410$, $p < 0.001$). Seeing from the coefficients table, there is a strong and meaningful connection between AI and knowledge management ($\beta = 0.727$, $p < 0.001$) with knowledge sharing, as one unit of AI properties leads to an increase in knowledge sharing by 0.727 units. Usually, research finds that using AI tools is very important for students to share and apply new knowledge.

Table 3: To analyze the role of AI-based knowledge management in improving learning efficiency in educational institutions.

Correlations		AI and Knowledge Sharing	AI and Knowledge Management	AI and Learning Outcomes
AI and Knowledge Sharing	Pearson Correlation	1	.670**	.464**
	Sig. (2-tailed)		.000	.000
	N	215	215	215
AI and Knowledge Management	Pearson Correlation	.670**	1	.497**
	Sig. (2-tailed)	.000		.000
	N	215	215	215
AI and Learning Outcomes	Pearson Correlation	.464**	.497**	1
	Sig. (2-tailed)	.000	.000	
	N	215	215	215

** . Correlation is significant at the 0.01 level (2-tailed).

Figure 3:



The purpose of correlation analysis is to understand how using AI in knowledge management improves learning at schools and colleges. AI and Knowledge Management are strongly and positively correlated ($r = 0.497$, $p < 0.001$) which means that using AI greatly improves how knowledge is managed in the classroom. Besides, AI and Knowledge Sharing is positively correlated with AI and Learning Outcomes ($r = 0.464$, $p < 0.001$), indicating that good knowledge-sharing helps students achieve better results. The highest correlation is seen between AI and Knowledge Sharing ($r = 0.670$, $p < 0.001$) and between AI and Knowledge Management ($r = 0.670$, $p < 0.001$), meaning that using AI tools for knowledge management supports sharing of knowledge among people. The general outcome is that AI-supported knowledge management greatly improves both the way students learn and how knowledge is exchanged, making it highly important in schools.

Discussion

To learn if AI helps knowledge sharing and management raise academic performance and learning efficiency, a quantitative study design was chosen. The data were captured from 215 students in Pakistan by using a self-report Likert scale questionnaire to guarantee diversity among the respondents. Tests using regression analysis, multiple regression and ANOVA were run to examine the effect of using AI on knowledge management success. The study found that when AI is used for knowledge management, knowledge sharing improves substantially ($\beta = 0.727$, $p < 0.001$) which leads to better learning performances ($r = 0.497$, $p < 0.001$). Besides, AI-powered technology supports better learning efficiency which further proves its usefulness in improving how we learn (Nugroho, 2018). These findings point to the value of AI in schools because they show how these systems encourage students to cooperate, use different resources and take an active role.

Recommendations

1. Using AI platforms, schools can make it easier for students to get access to the study materials they need in an organized way.
2. Programs and workshops should be arranged by institutions to improve how students and teachers use AI tools to aid in their learning.

3. Artificial intelligence should be relied on to track student achievements, identify missing knowledge and advise them which can boost their grades.
4. Using AI in conversations and projects in a group is important to help students collaborate, participate and exchange ideas with the class instructor.
5. Admin Functions are being "improved" and streamlined when schools and universities introduce artificial intelligence (AI) support such as virtual assistants, chatbots and intelligent platforms for learning.
6. More studies need to be done to discover new ways AI is being applied in education so knowledge management and learning can be improved regularly.

Future Implications

Researchers state that using AI for knowledge sharing and management will help improve current AI-based education solutions. With the progress of AI, future research should look at ways to provide more personalized learning, adjust testing and improve tutoring support. Educational institutions can use AI to set up chatbots or virtual assistants that offer students instant help, so they depend less on traditional teaching ways. As a result, early identification of students at risk is possible using predictive analytics which allows for timely support to improve their ability to remember things and succeed. Ethical plans and rules for appropriately using AI in education should be a top priority for policy and education leaders. Researchers in the future can examine the lasting effects of AI on thinking abilities, creativity and student involvement, so that AI is used to help, not replace, human teachers. Because of developments in technology, increasing use of AI in education will greatly influence the future of learning, collecting knowledge and the success of institutions.

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