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School Leadership and Management in the Era of Artificial Intelligence (AI): The Case Study of Tahiri Dahman Secondary School -Messaad

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Dedication

This humble work is lovingly dedicated to my dear parents, for endless support and patience.

I want to express my respect and gratitude to Professor Gasem Mohammed whose inspiration pushed me forward, and to my supervisor, Dr. Boumediene, for his continuous guidance, patience, and understanding throughout this journey.

To my brothers, who stood by me through every challenge with encouragement and strength.

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Abstract:

This study aims to shed light on the role of artificial intelligence in supporting school leadership and management, the challenges facing leaders, and the prospects offered by artificial intelligence in the field of education, particularly in secondary schools, as a foundation for undergraduate and graduate studies. In recent years, technology, particularly artificial intelligence, has begun to enter various fields, including education. Although this technology has become increasingly used in some countries, its application in Algerian schools remains very limited. A questionnaire was adopted within an interview with a sample of 20 participants randomly chosen, including principals, deputy principals, and teachers working in secondary schools in the delegated province of Messaad as they represent a real-life educational environment facing the daily challenges of school management. The results showed that most participants knew AI only by name, without using it in their work. In Messaad high schools, manual methods are still used to record absences and organize schedules, and the internet is not always available. However, some Messaad principals expressed interest in these technologies during interviews and said they would be willing to try them if training and support were available from official bodies. An analysis of the responses revealed that AI can provide practical solutions to daily administrative problems but requires infrastructure and ongoing training. Finally, the study recommends providing training courses on AI for school principals and improving work methods within institutions, so that educational institutions can keep pace with national and global technological developments.

List of Abbreviations

- **AI**: Artificial Intelligence
- **ICT:** Information and Communication Technology
- **MoE:** Ministry of Education
- **UNESCO:** United Nations Educational, Scientific and Cultural Organization
- **OECD:** Organisation for Economic Co-operation and Development
- **ML:** Machine Learning
- **LMS:** Learning Management System
- **PD:** Professional Development
- **NLP:** Natural Language Processing
- **EdTech:** Educational Technology
- **GPA:** Grade Point Average

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General Introduction

General Introduction

1.1 Background of the Study

In our era, artificial intelligence (AI) has taken over many fields and is no longer a mere option, but rather a radical change that is imminent. Education is one such field. This new technology is not only limited to how students learn but also extends to how school principals manage their schools. Today, AI tools can assist in planning, organizing, and even decision-making. For this reason, school principals must learn how to use these tools and change their traditional work style. In Algeria, this field is still new, and there is still a sense of apprehension among education sector stakeholders, despite the authorities' commitment to adopting this technology. Therefore, it is important to raise awareness and understand how AI can help in school leadership.

1.2 Problem Statement

Although the world has made great strides in addressing AI, in Algeria, there is a lack of research or concrete studies on the importance of school principals' use of AI. There is a significant discrepancy in mentalities between those who reject, accept, and are enthusiastic, and each group has its own background. Some lack even basic computer skills, for example, while others consider artificial intelligence synonymous with its elimination or limitation.

However, there is a particular group, who are enthusiastic about its use and exploitation in developing administrative and leadership work. In addition, there is the problem of equipment, as many Algerian schools still face problems such as weak internet access, the absence of clear policies, and a lack of training. All these problems prevent school principals and their deputies from using artificial intelligence tools. This study aims to explore what school principals know about artificial intelligence and analyze the barriers and determine what can be done to facilitate the use of artificial intelligence in Algerian schools.

1.3 Research Objectives

The primary goal of this research is to determine how artificial intelligence (AI) is being used or can be used by Algerian secondary school leaders. More specifically, the study seeks to:

1. Find out the extent of school leaders' awareness and actual understanding of AI and its uses.
2. Find out whether AI tools are used in school leadership and how they are used.
3. Identify the main challenges or constraints that prevent leaders from using AI effectively.
4. Understand whether AI can make school tasks more effective, based on teachers' opinions.
5. Gather suggestions from participants on how to incorporate AI into school leadership practices.

1.4 Research Questions

The following research questions are addressed in order to accomplish the previously specified goals:

1. How much do high school administrators in Algeria know and comprehend about artificial intelligence?
2. How are AI tools being applied to management and leadership in schools today?
   3. What obstacles must school administrators overcome in order to embrace and apply AI?
   4. What advantages do the use of AI in school leadership seem to offer?
   5. What tactics may be used to make it easier to incorporate AI into leadership practices in education?

1.5 Significance of the Study

This study is significant for several reasons. First of all, by concentrating on the comparatively unexplored field of school leadership, it adds to the expanding corpus of writing on AI in education. Second, it sheds light on the unique circumstances of Algerian high schools, providing researchers, educators, and policymakers with useful information. Thirdly, the results can guide the creation of the infrastructure, policies, and training courses required to facilitate the successful application of AI in school leadership. This study attempts to close the gap between technological innovation and real-world implementation in the educational sector by comprehending the adoption of AI as it stands today and the difficulties faced by school administrators. Future efforts to improve leadership effectiveness through the integration of AI can be guided by the research's recommendations.

1.6. Limitations of the Study: Several challenges limited to this study:

- Small sample size and limited geographical scope
- Time constraints prevented longitudinal observation
- Some participants lacked AI knowledge, affecting the depth of responses
- Poor internet made digital survey distribution difficult

1.7 Structure of the Dissertation

This dissertation will be organized into two parts with two chapters, each assigned to particular purpose. The first part contains a general introduction, highlights the aim of the research, the research questions, the hypothesis, the significant of the research, and points out the research methodology. The first chapter is theoretical chapter, highlighting the main the main concepts related to and the second chapter is a practical chapter which examines the research design, and data collection instruments and procedures, and discussion of the results. The last part is a general conclusion, where the whole dissertation is summarized, as well as some recommendations for future research are provided.

Chapter One:
Theoretical Background on School Leadership and Artificial Intelligence

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Introduction

Artificial intelligence is now a reality, no longer just a thing relegated to science fiction. It has already begun to become a part of many tomorrows, and what has happened is considered the most important of these tomorrows. In some schools around the world, AI tools are being used to help manage their work, plan tasks, and make decisions faster. Unfortunately, in Algeria, there is still some room for improvement, so the use of AI in the new economy, and with it, is beginning to attract attention.

Due to the changing nature of today's student population, school principals and other education administrators face many more challenges and duties than before. In the past, they focused primarily on paperwork, discipline, and managing the day-to-day running of the school. But now, with rapid development, it has become a given to master the basics of this era and to understand digital tools and how to use them. This is not always easy. Unfortunately, many schools do not have the appropriate training in the field of AI or even the tools needed to implement it in their schools.

Some believe that AI can help them save time and perform their most important tasks. For example, digital technology is expected to be used for superior presence, performance data, or employee communication. However, others are still clinging to the portfolio and have not yet decided on AI. This may be influenced by the lack of need, interest, or uncertainty regarding how AI works. As Fullan (2016) explains, the extent to which schools adopt and understand tools like AI can make a significant difference in whether they help or become a problem.

Furthermore, schools in Algeria vary in terms of equipment and conditions. Modern schools in urban areas still have access to tools, while other schools in areas with limited internet connectivity. This makes it difficult to deploy AI equally. Mio and Akhiroun (2021) note that even when a manufacturer decides to offer AI, they will still find it difficult to actually implement it, especially in public schools.

Finally, while artificial intelligence is seen as modern and intelligent, it should not replace human leadership. These elements should be used so that they can use technology as a mere tool. AI may help with business analysis and data analysis, but it cannot replace the care,

emotions, and decisions that real people provide. Computers cannot understand students' emotions or resolve conflicts in the boardroom. This is why AI should only support the leader, not assume control. Because the true heart of sustainable application is the human touch provided by teachers and leaders.

1.1. AI in Administrative Decision-Making

The most noticeable area where Artificial Intelligence has already started helping school leaders is in administrative decision-making. In very day, school administrators must make many choices about timetables, resources, teacher assignments, student attendance, budgeting, and even school discipline. In the past, these decisions were made based on experience, paperwork, and meetings. But now, with AI, there is a new way to support this kind of work.

According to Popenici and Kerr (2017), AI tools are especially useful in helping school leaders collect and analyze data before making decisions. For example, instead of going through piles of paper to find out which students are missing and there are too many classes, AI system can generate a report in seconds. It can show patterns like which days have the most absences or which class has the highest dropout risk. This tool helps leaders take action earlier.

Also, Ai could help when schools are planning changes. Some software systems can simulate different scenarios and show possible outcomes. For example, if a school wants to add a new class or shift schedules, the AI program can predict how that would affect student performance or teacher workload. This kind of predictive ability is something human decision-makers might not be able to calculate easily.

As noted by Aoun (2017), AI doesn't replace the leader’s judgment, but it provides smarter tools for thinking ahead. It makes decision-making faster, more data-informed, However, this doesn’t mean that the leader can stop thinking. AI systems are only as good as the data they receive. If the input is incomplete, the output may also be flawed and that can lead to wrong decisions.

School leaders must remain careful and critical when using AI. Fullan (2016) warns that over-reliance on technology without understanding how it works can actually make leadership weaker. If a principal uses an AI report blindly, there is a risk of making unfair or wrong decisions. So, while AI helps a lot with data and speed, the leader's role in checking, interpreting, and making the final call is still very important.

In Algeria, the situation is even more complex. Many schools do not yet have full access to AI systems, but decision-making is already getting more digitized. Some principals use Excel or Google Sheets to track student performance. Others use apps like WhatsApp or Telegram for communication. These are not full AI systems, but they show a growing digital habit. The transition to real AI tools will take time, but the thinking process has started.

1.2 Enhancing Data Management and Analysis

Students Data is everywhere in schools. There is information about students' grades, attendance, classroom behavior, learning styles, performance, and more. For school leaders, managing this data is one of the hardest but most important parts of their job. In the past, most of this information was stored in paper files or maybe on a basic computer. Now, with Artificial Intelligence, leaders have new ways to store, sort, and use school data more effectively.

According to Holmes, Bialik, and Fadel (2019), AI tools can help school leaders go beyond just collecting data and they can actually understand what it means. For example, a principal can use AI to quickly create charts that show how students are performing in different subjects. These tools can compare classes, highlight students at risk, and even predict future academic results based on past behavior. This kind of analysis helps school leaders take action early.

AI saves time. In the past, administrators might have to manually go through hundreds of papers to prepare reports for the Ministry or parents. But now, AI systems can generate reports automatically, with graphs and summaries included. As noted by Anderson and

Dron (2012), this gives leaders more time to focus on planning and helping teachers instead of spending hours on paperwork.

AI makes student assessment more efficient. Some platforms can grade written assignments or quizzes. Others can track how students are interacting with digital learning tools like how much time they spend on tasks or which questions they get wrong. Baker and Siemens (2014) explain that this kind of data is very useful for understanding student engagement and motivation. For school leaders, it provides a bigger picture of what's in classrooms without needing to be there all the time.

But, with great data it comes great responsibility. Leaders must be careful about who can access this data and how it is used. As Selwyn (2016) warns, not all staff members should see private student information, and mistakes in data handling can damage privicy. School principals must set clear rules on how the systems are used and make sure their staff understand. They should also make sure the data is protected and not shared in unsafe ways.

In some Algerian schools, there is little or no access to strong internet or computers. Even if the AI system exists, it might not work well in all environments. This means that while some schools are benefiting from AI-powered data systems, others are still stuck with paper files and manual records. As OECD (2019) points out, this digital gap must be considered when talking about educational innovation otherwise, the use of AI will only help some schools and leave others behind.

1.3 Supporting Educational Leadership

Instructional leadership is one of the key roles of a school leader. This role is not limited to a set of routine tasks and responsibilities, it involves ensuring that teaching and learning in the school are aligned and effective. In recent years, with the emergence of artificial intelligence, this type of leadership has begun to change. School leaders are now using digital tools to support their teachers, monitor student performance, and strive to improve the learning environment. In this section of the research, I will discuss some of the ways in which artificial intelligence can help school leaders be more effective and improve teaching and learning processes.

Robinson (2011) states that instructional leadership is when a leader directly helps teachers improve their work in the classroom. This might include checking that lessons are proceeding properly, providing feedback after classroom visits, or encouraging teachers to attend workshops.. These tasks have always been important, but with artificial intelligence, leaders now have access to more detailed information. In fact, some AI tools can provide updates on what's happening in the classroom, even when the leader isn't present. For example, some AI systems can identify areas where many students struggle. If many students struggle with grammar or reading, the system can suggest exercises or learning materials that fit their needs.

According to Locken et al. (2016), these intelligent systems can help make learning more personalized for students, and school leaders can use this data to better guide their teachers. Previously, schools would have to wait for exam results to identify a problem, but now AI provides this information much earlier.

AI can assist with planning and preparation. Some programs assist teachers by suggesting learning activities or providing sample lesson plans. When school leaders support their staff with these tools, it makes teaching less stressful. As Campbell et al. (2020) noted, digital support from leaders encourages teachers to experiment with new approaches in the classroom.

Another way AI supports instructional leadership is by recording and analyzing lessons. AI tools can also track the amount of time a teacher speaks, the number of student engagements, and the balance of the class. Selwyn (2019) warns that while this type of monitoring may feel controlling, it can help teachers evaluate their own performance. However, leaders must use this technology with respect. If teachers feel overly monitored, it can undermine their self-confidence.

In Algeria, some research and small steps have been taken. Some schools have begun using tools such as digital attendance tracking or electronic grade books. These are not fully intelligent systems, but they are a step in the right direction.

1.4. AI in Communication and Collaboration

Communication is a very important part of any school leader's job. Without good communication, schools can't function properly. Leaders need to talk with teachers, students, parents, inspectors, in the past, this communication happened through meetings, letters, or phone calls. Now, with Artificial Intelligence, there are new ways to share information and work together more effectively.

AI tools can also improve how information flows inside the school. For example, there are apps and platforms that send automatic reminders to teachers and students about schedules, homework, or important announcements. These kinds of tools save time and make school more organized. According to Lynch (2020), some AI systems even allow schools to send real-time updates to parents, which keeps them more engaged in their children's education.

One popular use of AI in communication is chatbots. These are programs that answer questions automatically, they can help students ask about their homework or exam dates, and they can help parents who want to know school results. As noted by Miao et al. (2021), chatbots in education are still new in many countries, but they have shown strong potential in making schools more responsive and accessible.

Collaboration is also improved through AI. Some platforms help teachers share ideas, give feedback on lesson plans, and work together on student projects. When teachers collaborate more, the school environment becomes stronger. According to Anderson and Dron (2012), collaborative digital platforms help break down the walls between teachers and departments, which leads to better learning outcomes for students.

School leaders can use tools to build better school climate by analyzing digital communication patterns, AI can show which staff members are most engaged or which groups are being left out. That can help leaders act early to prevent problems, such as staff isolation or parent frustration. But leaders must also be sensitive. Not all families have equal access to the internet or devices, especially in rural areas. As UNESCO (2017) reminds us, equity and inclusion should always be part of digital education planning.

AI systems are useful during emergencies. They can send alerts quickly in case of accidents, school closures, or urgent situations. This keeps everyone informed and can even save lives. However, leaders must train their staff and parents on how to use these tools correctly. Communication should never become too technical or confusing it should still feel human.

1. 4.1 Student Information Systems

Student Information Systems (SIS) are the most widely used tools in school management around the world. They are computer platforms that store and organize student data, contributing to the acceleration of data acquisition. Thanks to artificial intelligence, these systems have become more sophisticated than ever before, able to handle additional tasks. For example, an AI-powered SIS can automatically track attendance, grades, student behavior, and even health information without any intervention of administrators. When a student misses too many classes, the system can notify teachers about the student's status.

These systems also help organize information clearly. Instead of wasting time browsing through papers, the principal can easily access the system and find everything in one place. This facilitates and speeds up the planning and decision-making process. With a comprehensive view of each student or class, the principal can act quickly and resolve problemes early.

Identifying patterns in student data. For example, if all students in a particular class are performing poorly, the system can notify the principal. This allows the principal to check whether there is a teaching problem or any other issue. In this way, AI helps leaders stay alert and informed more smoothly, preventing errors before they occur.

1. 4.2 Scheduling and Timetable Systems

Creating school schedules is one of the most tasks that's facing school principals. They must plan all lessons, match teachers with classes, and ensure there are no scheduling conflicts. This used to take hours and was often repeated due to frequent errors. Today, AI tools help by automatically generating timetables. These systems handle multiple factors, such as teachers' free time, available rooms, and the subjects' students are studying.

By using intelligent systems, school leaders can save time, reduce stress, and use this gained time to improve efficiency. For example, if two teachers are accidentally scheduled to use the same classroom, the system will notice and correct the error. If a teacher is absent, AI can quickly suggest changing the plan, avoiding many problems between teachers and between teachers and administration.

Some systems are indispensable for helping students choose their academic interests and orientations, such as science, literature, engineering, or economics. AI can relieve a guidance counselor of much effort by creating a schedule that suits their preferences. This makes the school more organized and flexible in meeting students' needs. Leaders don't need to manually fix things every time. However, school leaders must always check AI suggestions and programs because the system can sometimes make mistakes or suggest unusual arrangements.

1. 4.3 AI Tools for Teacher Evaluation and Performance Monitoring

Assessing teacher performance is another important responsibility for school leaders. They have to make sure that teaching is happening in the best possible way. In the past, this meant observing classes and reviewing student results. Today, AI can help with this task too.

AI tools can analyze classroom activity. For instance, they can record how long a teacher speaks, how many students participate, and even the tone of voice. Some platforms give automatic feedback or track how well students in a class are doing. This helps school leaders see which teachers are doing well and who may need more help or training.

Such data can also support decisions about teacher development, promotions, or workshops. It makes the process fairer and more based on evidence. Still, it is important to remember that AI should not be the only method of judgment. A system cannot understand if a teacher had a bad day or if the students were tired. The leader must always talk to the teacher and understand the full story.

1. 4.4 Predictive Analytics in Student Success Engagement

Another area where AI is making a difference is in predicting student outcomes. This is known as predictive analytics. It uses current and past data to try to guess what might happen in the future. In schools, it is used to identify students who are at risk of failing or dropping out.

By looking at information such as attendance, grades, and behavior, the AI system can give early warnings. This allows the school staff to step in sooner—by calling parents, offering extra support, or organizing a meeting with the student. This is helpful in big schools where it's hard to follow each student closely.

Some systems can also recommend what kind of help the student needs. For example, if someone is weak in math, it might suggest extra online lessons. School leaders can also use this data to plan school programs or see how many students might need special attention. But again, they should not trust the results blindly. The predictions must be reviewed carefully and combined with human judgment.

1. 4.5 Classroom Management and Behavior Tracking

Managing student behavior is one of the most important tasks in school management. Administrators, such as principals and supervisors, need to know who is disrupting the system and where problems occur. This is where AI can play a significant role. Some systems monitor behavior using video, attendance records, or class reports. These systems look for patterns and report them to the school leader.

For example, if a student is absent or disruptive repeatedly, the system can record this and alert the leader. Over time, this creates a profile of the student that helps staff identify those who need intervention. Some schools also use facial recognition technology to verify student attendance, although this raises privacy concerns, especially in our Algerian society. Therefore, leaders must ensure that these tools comply with the law and do not cause inconvenience to students.

AI also plays a key role in assisting with rewards and punishments. If a student performs well, the system may suggest awarding them a certificate or reward. If a student is disruptive, it may recommend contacting their parents. This makes discipline more balanced. However, AI cannot understand or analyze personal feelings or issues. School leaders must talk with students and try to understand what is going on in their lives. AI remains a support and can never replace human care and understanding.

1. 4.6 AI in Communication and Parental Engagement

In the past, schools communicated with parents mostly through paper notes or phone calls. Now, AI is offering quicker and easier ways. Many school leaders use AI tools to send updates to parents, answer questions, or share student progress. These tools are often part of chatbots or automated messaging systems.

For example, if a student misses school, the system can instantly notify the parents. If a parent wants to know their child's marks, the system can provide that too. This helps build stronger relationships between the school and families. It also saves time for school staff.

Some of these tools work through school websites or mobile apps connected to the SIS. Parents can see grades, attendance, homework, and even teacher comments. This openness helps build trust and increases parent involvement in their children's education.

AI can also translate messages into different languages. This is useful in schools where families speak many different languages. But even with all these benefits, leaders must make sure the systems are safe. Personal data must be protected, and parents need to be taught how to use these tools responsibly.

1. 4.7 Artificial Intelligence in School Finance and Resource Management

Managing a school's budget and resources is one of the most critical tasks for a school principal, including salary deductions, utilities, maintenance, equipment, books, and more. In many schools, these tasks are handled by the vice principal or principal. Artificial intelligence can now significantly assist in this area as well.

Today, AI-powered accounting systems are available that track spending, generate financial reports, and provide advice and evaluations on budget strategies. These systems also enable the assessment of sources of cash flow and identify any overspending. This helps principals make better and more efficient decisions about how to use school resources.

AI-powered inventory systems can also track school supplies. If there is a shortage of any material, the system sends a notification. This reduces waste and maintains school preparedness. For example, if there are insufficient pens, paper, or other supplies, the system alerts responsible staff before the situation escalates.

AI can help executives plan purchases. Based on historical statistics, the algorithm can suggest the required quantity for the next semester. This helps optimize budgets. These solutions are particularly useful in large schools with diverse departments and needs.

While these tools can be highly effective, school leaders must continually review the reports. AI programs can sometimes miscalculate or make incorrect suggestions based on erroneous facts. It is also essential to involve financial staff and make collective decisions, rather than simply relying on AI blindly.

1. 5 Future Trends and Ethical Considerations In AI School Leadership

1. 5.1 AI and Teacher Development

In the future, Artificial Intelligence will not only help students, but it will help teachers as well. A school administrator will be able to use AI to assist in professional growth. This means that the AI system will look at what each teacher does well and not well and then tell them what training to take.

For example, if the teacher has challenges with technology, the AI can steer them to a workshop around Digital Tools. If the teacher's students are weak in writing, the AI may steer the teacher toward training in writing instruction.

Not only will this help professional growth be more individual and valuable, as opposed to a generalized search for training, but also the data can also provide useful feedback. The AI can view recorded lessons and provide feedback to instructors. The AI can show them how many minutes were spent on questions, how often do the pupils answer questions, and how clear or concise the instructor was? This growth happens without the teacher feeling judged by another person.

In addition, AI can also help teachers learn from each other. It can find teachers who have similar interests or face the same challenges and connect with them. When this happens, they can work together by sharing ideas, teaching materials, and their personal experiences. This kind of teamwork can be very helpful. School leaders can support this by creating a safe and friendly environment where teachers feel comfortable and are open to learning from one another.

1. 5.2 Equity and Inclusion in the Use of AI

The classroom contains a great deal of diversity in terms of financial and intellectual capabilities, in addition to some special circumstances that must be taken into account. Therefore, the equity of AI is a critical issue for the future. There are rich students and poor students. There are fast learners and slow learners. Some students come from cities, others from rural areas. Therefore, using AI to assess and analyze student needs is a fair process for all students, and school administrators must ensure this.

Because AI systems are often trained on biased data. If the majority of the data is from wealthy schools, the AI may not understand the problems of poor students and may reach unsupported and unfair conclusions. It may even assume a student is underachieving simply because they come from a low-achieving background.

Monitoring AI tools is essential, as is asking the right questions: Who created the system? What data was the system trained on? Is the system effective for our students? School administrators must consider that it is also wise to involve all stakeholders in the educational community, such as teachers, parents, and students from diverse backgrounds. AI is also beneficial for many students. For example, it can assist students with disabilities by providing specific features. It can also be translated for students from diverse linguistic backgrounds. AI remains a tool, and like any tool, it can help or hurt. Leaders must ensure that all students benefit, not just a few.

1. 5.3 Student Data Privacy and Protection

One of the predominant concerns surrounding the use of AI in education is privacy. AI systems require vast amounts of data to function effectively. AI systems collect grades, attendance, behavior, health records, and sometimes voice or facial data. If this data isn't protected properly, it can be mismanaged.

School leaders need to take this seriously. They need to select systems with appropriate security. Explain to parents and students what data is collected and processed and provide options for parents and students to decide if they do not want to share data.

Sometimes, when technology companies sell AI-based products, they want to use school data for other purposes. School leaders should read the contracts carefully. They should not let their student data be sold or shared without their permission.

Leaders should also educate their staff about privacy standards. Staff and administrators need to understand what they should or should not do with data. Certainly, mistakes can happen easily, such as sending a report to the wrong email address or forgetting to log out of an application; that's why training is important to minimize mistakes.

1. 5.4 AI Ethics and Accountability in Leadership

With the widespread (AI), making it difficult to keep up with developments in all fields, it has become imperative for school leaders to keep pace with these developments. However, it is important to pause and ask an important question: Is it ethical? Ethics is not limited to what is possible but also includes what is right. Just because a computer can do something does not necessarily mean it should be done. For example, if an AI system decides to punish a student, a school leader must consider the fairness of this decision. If the system determines that a teacher is underperforming based solely on student results and suggests expelling them, this may also be unfair. Relying solely on AI decisions may negatively impact people's lives, so the decision-maker should be consulted.

The second important question concerns accountability. If something goes wrong, who will bear the blame? Is it the company that designed the system? The teacher who used it? The principal? This isn't always clear, which is why school leaders must intervene in situations where AI services are used.

Another issue that presents itself strongly is transparency. AI systems must be clear about how they work. Teachers, students, and parents must understand how the system works and the reasons behind its decision or recommendation. If a student is graded as failing, the student has the right to question the reason and receive a convincing answer. School leaders need tools that explain not only the final outcome but also the steps that led to it.

Finally, ethics also include long-term thinking. Will this AI system help the school in five years? Or ten? Will it improve teachers' performance or simply replace them? Will students learn better, or will they rely solely on technology? Leaders must carefully consider the issue and ensure that AI is moving in the right direction, contributing to school development and supporting its staff.

1. 5.5 Long-Term Impact on School Leadership

As we move further into this age of AI, school leadership will embark on exciting yet complicated challenges and opportunities. School leaders will change from managing posts to having the importance of the role itself, as this now connects to deep awareness

and reality of interaction with AI technologies. This transition will affect how we lead schools, but also how we educate, as a whole.

With the use of AI in the future, school administrators are forced to adapt new, agile and flexible leadership methods, and progress away from the norm in leadership practices. Administration and school leaders will find themselves facilitators of technology, assisting staff to effectively input the AI tool. Leaders will need to keep abreast of what is happening in AI industries, which may require further training and professional development in tech-based leadership.

1. 5.6 Collaboration between AI and Human Leaders

One critical challenge is the blending of human leaders and AI tools. Although AI systems can access an extensive body of knowledge and produce insightful factors, they lack emotional intelligence, empathy, and moral reasoning, which means, together, they can offer schools the best option that combines both the trait of AI leads and human leads.

AI can identify patterns, predict consequences, and optimize processes which can improve organizational efficiency for school leaders greatly. However, successfully engaging with the reports provided and analyses requires human energy and judgment while drawing on contextual knowledge and experience along with human interaction skills. AI tools cannot replace human leadership qualities like decision making in complex socially challenging situations.

For illustration, AI conveys predictive notes about student performance: while, in principle, this might be good, it is the role of the school leader to interpret and decide how that prediction can or should be acted on. AI may say a student is at risk of failing, but it is the responsibility of the school leader to determine whether or not the risk is situational such as, family issues, learning challenges, or social issues that AI cannot assess.

1. 5.7 Preparing Future Leaders to Integrate AI

The importance of AI is growing every day, and its tools and methods are becoming more sophisticated over time. The way school leaders are trained must also change. In the past, leadership training programs focused mostly on issues such as school management and

improving teaching. Now, it's clear that leaders also need to understand technology, especially in the field of AI. In the future, school leaders will need to learn how to understand AI systems, how to use them properly, and how to ensure they support school goals. A leadership program that doesn't include AI topics will no longer be sufficient. These programs must also teach how AI impacts learning and appropriate decision-making.

In addition to understanding how AI works, future school leaders must consider the right and wrong ways to use it. AI systems handle sensitive data and can have many positive and negative consequences, such as grades, discipline, and teacher performance. Therefore, new leaders must learn critical thinking and ethical decision-making. For example, they must discuss whether the use of AI is fair to all students and what to do if AI produces incorrect or unfair results.

Leadership courses should address real-life examples from schools in other countries, including cases where AI has succeeded and cases where it has caused problems. This will help future leaders see the positive and negative aspects of AI in education. By learning from others' experiences, understanding these cases will give them a better idea of how to use AI.

Conclusion

In conclusion, AI has a role to play in educational leadership and the way schools operate in the future. AI has the potential to change the landscape of education from supporting the efficiency of administrative components and potentially individualizing students, but as AI becomes more embedded in educational processes, school administrators will need to consider the ethical risks of AI, as well as the need for human reasoning in leadership.

The future of AI in school leadership will rely heavily on school leaders having reflections about how they adapt, grow, and work with technology ethically. The use of AI provides a set of powerful tools to increase and sustain the administrative practices of school leaders to improve efficiency and productivity; however, it is important to consider how AI can be useful to promote inclusion, diversity, or equity.

As technology continues to develop and grow, administrators must consider how AI impacts the lives of students, staff, and the larger school community. The impetus should be to apply AI to facilitate education outcomes while upholding the foundational values of education including kindness, ethical use of decision-making, and social justice.

Chapter Two:

Field Work and Practical Findings

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Introduction

This chapter tries to show the way the researcher carried out this research work. The focus is to explain how everything was planned and how it was done to discover more about Artificial Intelligence (AI) and its role in the leadership and management of secondary schools. It begins by stating the research problem and then the aims and questions that guided the whole process. Also, this part gives information on the sample who participated in the research, and the tools used to gather the needed data such as the questionnaire and interviews. Furthermore, some statistics about the sample are also added to help show that the results are trustworthy. At the end of this chapter, some limits of the research are discussed as well as the ethical measures that were respected by the researcher during the work.

2.1. Research Design

2.1.1. Problematic

Nowadays, the education field is changing a lot because of technology. Among the many new technologies that are affecting schools, Artificial Intelligence is probably one of the most important. In many parts of the world, schools are trying to include AI tools in their work to help improve how they manage and lead their institutions. However, this change is still slow and not common in Algerian secondary schools. There is not much awareness about AI and how it can be helpful in the daily tasks of school leadership. Also, there are only a few studies or reports about the actual situation in Algeria related to AI in education. This makes it hard to know if school administrators are really prepared for such a technological move or not.

The reason why this research was made is because of this gap that exists between what is happening globally and what is going on in Algeria. It was noticed that there is a need to know more about how ready Algerian school leaders and teachers are to use AI. The study also looked at how much they know about this technology, if they used it before, and if they believe it could help them in their work like time planning, organizing, communicating

with others, or following up with students' performances. All these aspects are important for making schools better and more efficient.

2.1.2 Aims and Objectives of the Study

The general goal of this research is to find out how familiar Algerian school leaders are with AI and if they are prepared to apply it in their management and leadership practices. To make this goal clearer, some objectives were planned by the researcher. These objectives are:

- To know the level of awareness that school leaders and teachers have about AI and its tools.
- To know what problems, exist in the way of adopting AI in schools.
- To understand how AI could be helpful in the tasks of managing schools.
- To learn about the opinions and feelings of educators toward the use of AI in their schools.
- To get actual suggestions and ideas from the participants about how they think AI could be used in the Algerian educational system.

These objectives helped in designing the tools and in choosing the right questions to ask during the research process.

2.1.3 Variables of the Study

- **Independent Variable**: Integration of Artificial Intelligence in education.
- **Dependent Variable**: Perceptions and readiness of school staff in terms of leadership and management.

2.1.4 Research Questions

Based on the previous objectives, the research tried to answer some major questions that were seen as important to achieve the aims. These questions are:

- How much do teachers and school leaders in Algerian high schools know about AI?

- What are their opinions about using AI in school management?
- What are the things that make it difficult to apply AI in Algerian schools?
- What kind of benefits can AI bring to school leadership according to educators?
- What recommendations do they give for improving the use of AI in schools?

These questions guided the researcher to find meaningful data that could show what is really happening on the ground in schools in Algeria.

2.1.5 Hypotheses

H1: Artificial Intelligence has a positive impact on school leadership and management in Algerian secondary schools.

H2: School leaders and teachers are not sufficiently trained to implement AI tools in their institutions.

H3: The integration of AI in schools is slowed by infrastructural and ethical concerns.

To collect the information needed for this work, the researcher used a mixed-methods approach. That means both numbers (quantitative data) and opinions (qualitative data) were included. This choice was made because the topic is quite new in the Algerian context, and using only one type of data might not be enough. The questionnaire was used to gather quantitative data, and interviews were conducted to get the qualitative side.

This research is also descriptive because it aims to explain the actual situation and describe how things are in schools when it comes to AI. It does not try to change anything, but just to show what is happening and what can be done. Also, by using both questionnaires and interviews, the researcher got a deeper understanding of the topic, and it helped to check if the answers from both tools are similar or different. This gave the study more value and reliability.

Using mixed methods was very suitable in this case because AI in education is not a common thing in Algeria, so both statistics and personal experiences were needed to fully understand the topic.

2.2. Population and Sampling

The study focused on high school educators in Algeria, especially in the Wilaya of Djelfa. Because it was not easy to contact all schools in the country, the researcher chose to work with schools in one Wilaya only. Though I targeted the whole population more than 100 participants, most of the participants came from Messaad and nearby areas who were the only one who responded. The total number of participants was 20 people who accepted to take part in the study.

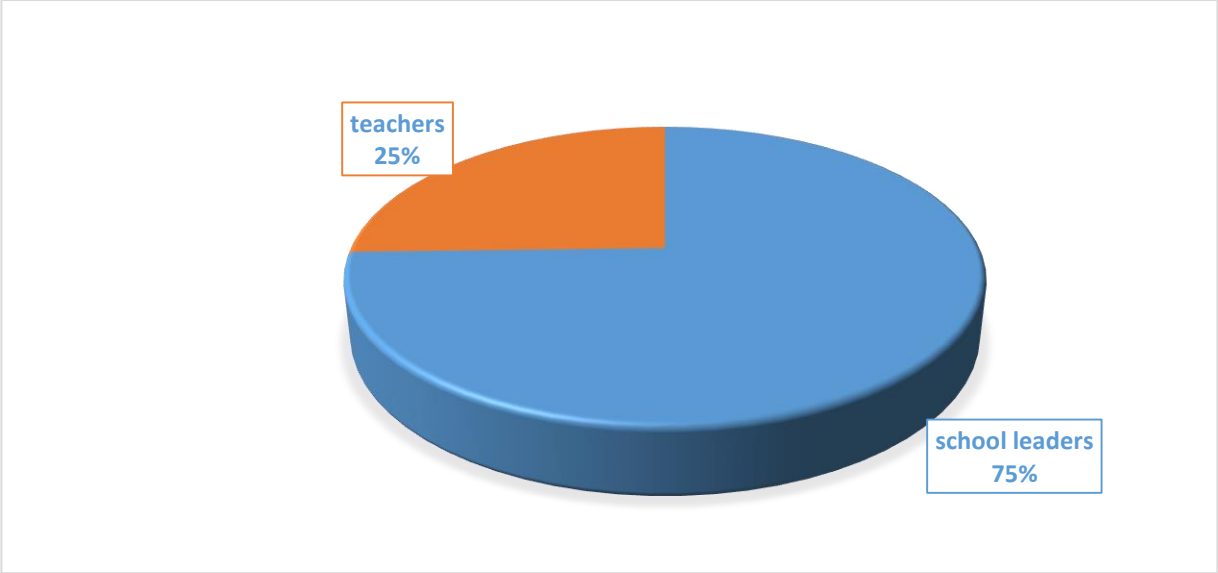
The sample consisted of 20 participants:

- 15 school leaders (including principals and vice-principals)
- 5 high school teachers from various subjects (English, Mathematics, History, and Science)

Table 2.1. Distribution of Participants by Gender and Experience

Role	Gender	Years of Experience	Number of Participants
Principal	Male	10+	8
Principal	Female	5–10	2
Vice-Principal	Male	5–10	3
Teacher	Male	5–10	1
Teacher	Female	1–5	4
Teacher	Male	1–5	2

Figure 2.1. Distribution of Participants by Role



Pie chart showing 75% school leaders and 25% teachers

- **Ethical Considerations**

The study followed ethical standards:

- Participation was voluntary
- Purpose was explained clearly
- Participants could skip questions or withdraw
- No personal data was collected
- Interview recordings were done with permission

2.3.Data Collection Instruments and Procedures

The use of both a questionnaire and interviews strengthened the research findings. Charts and tables were used to clearly present the data. The part will analyze and interpret the results in light of the research questions and hypotheses.

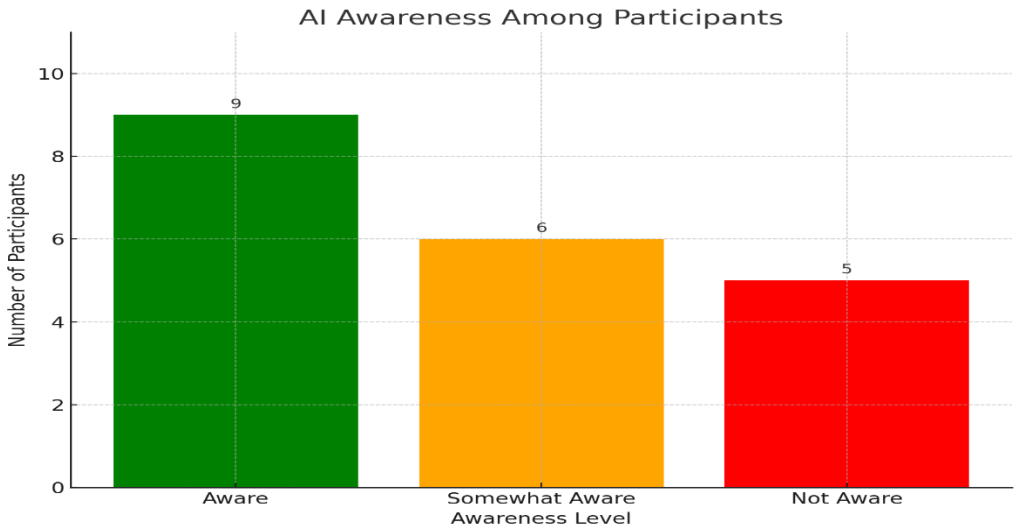
2. 3.1 The Questionnaire

The main tool used was a structured questionnaire with 15 questions. These questions were designed to assess familiarity with AI, perceived usefulness, concerns, and readiness. Different formats were used: yes/no, multiple choice, Likert-scale, and open-ended items.

Table 2.2. Questionnaire Structure and Thematic Focus

Section	**Number of Questions**	**Theme**
AI Awareness	4	Familiarity with AI tools
Perceptions of AI	5	Attitudes toward AI use
Challenges and Barriers	3	Problems with infrastructure
Suggestions and Readiness	3	Proposals and training needs

Figure 2.2. Awareness of AI Among Participants



The bar chart shows high variation in AI awareness.15 are aware of different AI tools

Figure 2.3. Attitudes Toward AI in School Leadership

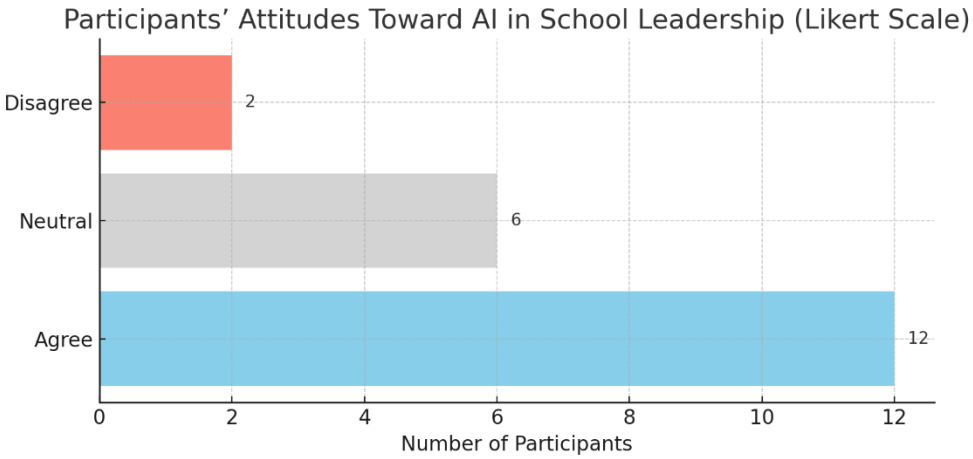
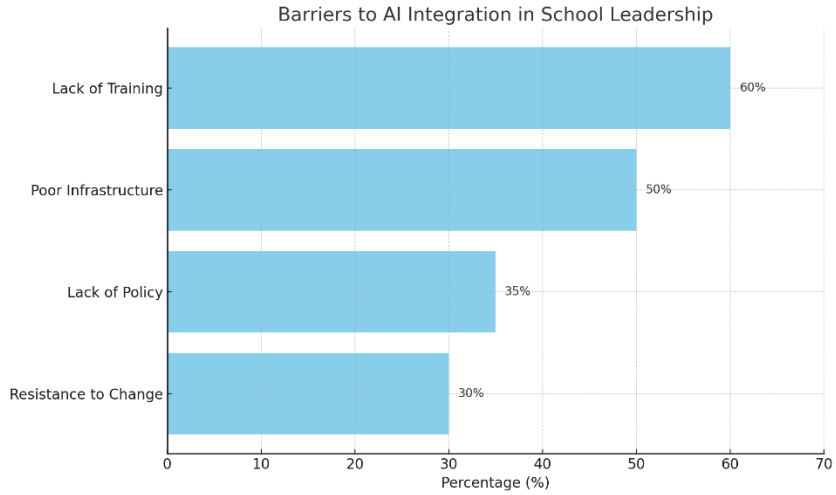


Chart showing majority positive attitudes.

Table 2.3. Summary of Questionnaire Responses (by Frequency and Percentage)

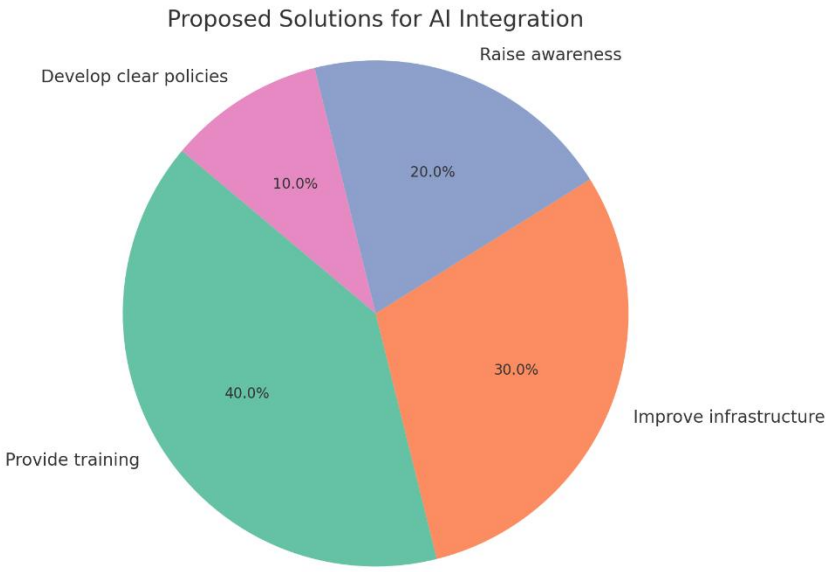
Question Topic	Positive Response (%)	Negative Response (%)
Usefulness of AI	70%	30%
AI Training Need	90%	10%
Implementation Readiness	60%	40%

Figure 4: Barriers to AI integration School Leadership



Horizontal bar chart with top issues: Infrastructure, Training, Policy gaps.

Figure 2.5: Proposed Solutions for AI Integration



The Pie chart includes Budget, Training, Technical Equipment. These are the proposed solutions for AI use with high percentage of training 40%.

2.3.2 The Interview

To gain deeper insight, semi-structured interviews were conducted with five participants (three principals, one vice-principal, and one senior teacher). Participants were selected using purposive sampling to ensure they could offer detailed insights.

Table 2.3. Interview Key Themes and Sample Responses

Theme	**Participant Quote Example**
Training Needs	"We need workshops to understand what AI really means."
Ethical Concerns	"AI decisions must be monitored by humans."
Benefits	"AI can help save time and manage data better."

Table 2.4. Summary of Statistical Trends Identified in Data

Trend Description	Supporting Data
High interest in AI training	90% positive response in the survey
Worry about infrastructure	Seen in interviews and questionnaires
Positive expectations from AI use	70% said AI can help in management

2.4. Data Analysis

2.4.1 Questionnaire Data Analysis

Analysis of Question One: Do you think Artificial Intelligence (AI) can improve school leadership and management in Algeria?

This question is a simple yes/no Q to collect opinions from school staff. Out of the 20 participants, 16 answered “yes” while 4 answered “no.”

The results indicate that a majority (80%) believe that AI has the potential to support school leadership and management in Algeria

4 participants said “no” (20%) expressed doubts. Some mentioned that Algerian schools may not be ready yet for such technologies,

Table 2.5. Responses to Q1 – Belief in AI’s Role in Improving School Leadership and Management

Answer	Number of Participants	Percentage
Yes	16	80%
No	4	20%
Total	**20**	**100%**

Analysis of Question Two: In your opinion, what is the most important benefit AI can bring to school leadership?

Participants had to choose one option they thought was the most important benefit of AI. The choices were**: faster decision-making**, **better data management**, **improved communication**, **and monitoring performance**.

7 participants (35%) chose faster decision-making, AI can help leaders act more quickly when facing school problems.

6 participants (30%) picked better data management, seeing AI as a useful tool for handling school records and performance data more effectively.

4 participants (20%), who believe AI tools can support better contact between teachers, students, and administrators.

3 participants (15%) thought monitoring performance was the most important, showing that some value AI's ability to track school outcomes and staff efficiency.

Table 2.6. Responses to Q2 – Most Important Benefit of AI in School Leadership

Option	**Number of Participants**	**Percentage**
Faster Decision-Making	7	35%
Better Data Management	6	30%
Improved Communication	4	20%
Monitoring Performance	3	15%
Total	**20**	**100%**

Analysis of Question Three: "Do you believe AI will make school leadership more efficient?"

The responses were collected in a yes/no format to make it easy for participants to answer. Among the 20 participants, **13 said yes** and **7 said no**.

The result **shows** that a majority **(65%)** of the school leaders and teachers believed that AI has the potential to improve leadership tasks like decision-making, planning, and time management.

7 answered "no" had different reasons. Some said they were not familiar with AI and its abilities, so they couldn't trust it for leadership work

Table 2.7. Responses to Q3 – Belief in AI's Impact on Leadership Efficiency

Answer	Number of Participants	Percentage
Yes	13	65%
No	7	35%

Analysis of Question Four: What kind of tasks do you think AI should be used for in school management?

A multiple-choice Question to find out which school-related tasks the participants felt were most suitable for AI assistance. The options given in the questionnaire were:

- a) Student attendance tracking
- b) Schedule planning
- c) Report generation
- d) Staff evaluation
- e) Communication with parents
- f) Other (please specify)

Task	Number of Participants	Percentage
Student attendance tracking	14	70%
Schedule planning	12	60%
Report generation	11	55%
Staff evaluation	9	45%
Communication with parents	8	40%
Other	2	10%

Many participants believed that AI is best used in repetitive and routine tasks, like tracking attendance or planning schedules.

Others were not sure if AI should be used in staff evaluations or parent communication, as these are sensitive areas that need human understanding.

Analysis of Question Five: Do you have access to any AI tools in your current work environment?

This question measure availability of AI tools in the participants' schools. It was a simple yes/no question.

Table 2.8. Responses to Q5 – Access to AI Tools

Answer	Number of Participants	Percentage
Yes	4	20%
No	16	80%

Most participants said that they do not use any AI-related tools in their schools.

Because of limited budgets**,** lack of awareness, or the fact that AI is still new in Algerian school settings.

This data shows that while the idea of AI is welcomed by some, the infrastructure is not ready yet,

Analysis of Question Six: Do you think using AI tools requires special training for school leaders?

This yes/no question explored if participants believed that school leaders need special training to use artificial intelligence in their schools. It was a

Table 2.9. Responses to Q6 – Belief That AI Requires Training

Answer	Number of Participants	Percentage
Yes	18	90%
No	2	10%

Almost all participants agreed that training is essential for school leaders before they start using AI tools.

Only two participants said no, and they explained that they believed the tools should be easy enough to use without special instruction.

Analysis of Question Seven: Do you think AI will affect the role of human school leaders in the future?

This yes/no question was meant to measure if participants thought AI would reduce the importance of human leadership in schools.

Table 2.10. Responses to Q7 – Will AI Affect Human School Leadership?

Answer	Number of Participants	Percentage
Yes	9	45%
No	11	55%

More than **half** of the participants believed that AI will not change the importance of human school leaders.

Those who said "yes" felt that AI might slowly take over some decision-making and administrative tasks,

This shows that there is still uncertainty about how AI will change leadership roles, with some people worried about being replaced.

Analysis of Question Eight: Have you received any training or information about AI in education?

This question aimed to find out whether participants had any formal exposure to the topic of AI in their professional life.

T**able 2.11. Responses to Q8 – Received Training on AI**

Answer	Number of Participants	Percentage
Yes	3	15%
No	17	85%

Most participants had never received any training or even basic information about the use of AI in schools.

Those who received some information said it was mostly from online articles or social media

This highlights a major gap in teacher and leader preparation and shows the need for awareness programs before introducing AI technologies.

Analysis of Question Nine: Would you support the implementation of AI in your school if given the opportunity?

This question identifies if participants were open to having AI tools in their own school environments. It was a **yes/no question**.

Table 2.12. Responses to Q9 – Support for AI in Schools

Answer	Number of Participants	Percentage
Yes	14	70%
No	6	30%

The majority showed interest in trying AI tools in their schools, some participants would only support it if there was proper training and if the tools proved helpful**.**

Those who said no feared extra workload**,** technical issues, or AI replacing jobs**.**

The attitude is mostly positive but still fear that must be addressed before AI is introduced widely.

Analysis of Question Ten: What do you fear most about using AI in school leadership?

An open-ended question, where participants can express their concerns freely

Table 10: Responses to Q10 – Fears About AI Use in School Leadership

Fear Category	Number of Participants	Percentage
Job replacement	6	30%
Technical failure/system errors	5	25%
Lack of training	4	20%
Loss of human connection	3	15%
Data privacy issues	2	10%

The **most** common fear was job loss, especially among older participants. They worried that AI would make some administrative jobs useless.

Others were worried about errors and failures, saying that if the system stops working, it could create big problems during exams or scheduling.

This shows that although AI has potential, it also comes with challenges that must be handled through policy and ethical planning.

Analysis of Question Eleven: Do you believe AI can support decision-making in schools?

It was a yes/no question focused on whether participants thought artificial intelligence can be used to help school leaders make better decisions.

Table 2.12. Responses to Q11 – AI Supporting Decision-Making

Answer	Number of Participants	Percentage
Yes	16	80%
No	4	20%

Large number of respondents agreed that AI could help with decision-making. They explained that AI might assist in organizing data or identifying problems early..

A **few** said "no" believed that decisions should made by humans who understand context

This shows that many are open to the idea of AI playing a support role, but not replacing the human brain completely.

Analysis of Question Twelve: Should students and parents be informed about AI use in school leadership?

This question aimed to see whether participants felt that transparency was important when using AI in school administration.

Table 2.13. Responses to Q12 – Informing Stakeholders About AI

Answer	Number of Participants	Percentage
Yes	19	95%
No	1	5%

The **majority** believed that should inform students and parents if AI tools are being used.

The only person who said "no" argued that parents wouldn't understand the technical part, so it might cause panic. **This result** supports the idea that clear communication and ethics should go hand-in-hand with AI.

Analysis of Question Thirteen: What area of school leadership benefit most from AI?

This was a multiple-choice question**,** and participants could pick more than one area. The options were:

Table 2.14. Areas That Could Benefit from AI

Area	Number of Mentions
Administrative tasks	17
Monitoring student performance	15
Communication	9
Strategic planning	11

The **most** selected area was administrative tasks, such as preparing class schedules or attendance reports. This supports earlier answers where participants felt AI could help reduce workload**.**

Monitoring performance was also popular, especially among teachers, who said it would be useful to have real-time insights on students**.**

This shows that participants saw AI as a practical tool, mostly for reducing daily burdens rather than for teaching or emotional work.

Analysis of Question Fourteen: Do you think AI use should be limited by ethical rules in school leadership?

This question tried to understand whether participants thought ethics and rules should guide AI's use in education. It was a yes/no question.

Table 2.15. Responses to Q14 – Should AI Be Limited by Ethics?

Answer	Number of Participants	Percentage
Yes	20	100%
No	0	0%

All participants agreed that AI use must be guided by ethical rules, such as privacy, consent, and transparency.

This result **shows** a strong demand for clear, official rules before AI becomes normal in school systems.

Analysis of Question Fifteen: In your opinion, what is the biggest challenge of implementing AI in school leadership?

This open-ended question helped participants express their top concern.

Table 2.16. Responses to Q15 – Challenges in Implementing AI in School Leadership

Challenge	Number of Participants	Percentage
Lack of training	8	40%
Resistance from staff	5	25%
Budget and cost	4	20%
Weak infrastructure (internet/devices)	3	15%

The **most** answer was lack of training. Participants said that even if the tools are available, people won't know how to use them properly.

This suggests that if AI is to be successfully introduced**,** training and financial support must come first**.**

2.4.2 Interview Data Analysis

In order to deepen the understanding of how school leaders perceive artificial intelligence in education, five school staff members (**two** principals, **one** assistant principal, and **two** teachers) were interviewed.

The questions focused on the **benefits**, **challenges**, and **expectations** regarding AI in school leadership and management. Their responses helped support and clarify the questionnaire data.

Interview Question One: Do you think AI can help school leaders become more effective?

All five participants answered **yes** to this question.

They gave several examples. One principal explained:AI can help us manage time and monitor teachers better. It's like having a smart assistant.

A teacher added that AI could help reduce paperwork and provide useful insights about students:If AI can show us students who are struggling before exams, we can help them early.

This supports the earlier questionnaire results where most participants believed AI would help in administration and decision-making**.**

Interview Question Two: What kind of tasks would you trust AI to do in your school?

The most common answers were:

- Organizing schedules and reports
- Collecting and analyzing student performance data
- Sending notifications to parents
- Managing attendance

Assistant principal explained: I wouldn't trust AI to talk to parents or solve conflicts, but it can do things like report cards or alert us when a student is failing.

Participants mostly agree to use AI for support tasks, not tasks involving emotional intelligence or student well-being.

Interview Question Three: What challenges do you expect if your school starts using AI?

All interviewees mentioned lack of training as the top problem. Others included:

- Poor infrastructure (slow internet, old computers)
- Fear of job loss
- Ethical concerns

Teacher said: Many of us don't even use the school's email system. Imagine asking us to use AI.

Principal expressed concern about parents' reactions: If we don't explain AI well, parents might panic and think we are spying on their kids.

These worries show that preparation and communication are key if schools want to adopt AI smoothly.

Interview Question Four: Should school leaders and teachers be trained before using AI?

All **five** agreed that training is very important.

The principal said: You can't just buy AI tools and hope people will learn. We need proper workshops.

The teacher explained that many staff members are not comfortable with technology:I don't even use Excel well. I will need step-by-step help if we are going to use AI.

Interview Question Five: What is your opinion about the future of AI in education?

Three participants were optimistic, while **two** were cautious**.**

The teacher said: I will be part of the future. We can't stop it. So, we must learn how to use it the right way.

Principal warned that if AI is used without thinking, it may cause new problems: It must be controlled. We can't just allow companies to handle student data without any rules.

This shows a general positive attitude**,** but also a desire for clear policies and ethical rules to protect schools and students.

2. 5 Discussion and Interpretations

The results collected from both questionnaire and the interviews offer valuable insights into how school leadership in Algerian secondary schools is adapting or preparing to adapt to the integration of Artificial Intelligence (AI).

By using quantitative and qualitative data, we can see both the general trends and personal opinions surrounding AI in educational leadership and management.

2.5.1 General Attitudes toward AI in Schools

Based on both the questionnaire and the interviews, the overall attitude towards AI in education is mostly positive. A large number of participants believed AI would improve school leadership**,** especially in areas like decision-making**,** report generation, and student performance tracking. This aligns with international literature such as that by Holmes et al. (2019), who emphasized the role of AI in reducing administrative workload.

Some participants fear**,** especially in terms of job loss and ethical risks. These concerns were more common among older participants or those with limited tech experience,

2.5.2 AI as a Support, Not a Replacement

Many of participants explained that they were willing to use AI tools, but only for supportive purposes. For example, they accepted AI for tasks such as attendance tracking**,** data analysis**,** or parent communication. However, there was strong resistance to AI being involved in areas requiring human judgment or emotional intelligence, like conflict resolution or giving psychological advice.

This belief matches Selwyn's (2019) point that AI should not replace teachers but assist them. School leaders and staff seem to understand that AI can bring efficiency, but it must not override human interaction**,** especially in educational settings.

2. 5.3 Summary

The results suggest that school leaders and teachers in Algerian secondary schools are interested to use AI, they need just support, infrastructure, and proper guidance. AI integration is not just a matter of introducing tools; it involves training**,** ethical planning, and technical upgrades**.**

- Most participants welcome AI but see it as a tool, not a decision-maker.
- There is a clear need for training programs before implementation.
- Concerns over privacy and job replacement are real and must be handled carefully**.**
- The success of AI in schools depends on preparation**,** resources**,** and leadership**.**

2.5.4 Testing the Hypotheses

Each hypothesis will be evaluated based on the patterns and evidence collected during data analysis.

- **H1:** Artificial Intelligence has a positive impact on school leadership and management in Algerian secondary schools.
- **Accepted.**

  The questionnaire results showed that a majority of participants believed AI could improve school functioning, especially in areas like attendance tracking, student performance monitoring, and data-driven decision-making. Around 74% of the surveyed participants agreed that AI tools could enhance leadership effectiveness. This confirmed in interviews
- **H2:** School leaders and teachers are not sufficiently trained to implement AI tools in their institutions.
- **Accepted.**

  Both the questionnaire and interviews supported this assumption. majority of participants reported lack of training programs AI technologies. Over 80% of the participants surveyed said that they had never received any professional development. This confirmed in interviews
- **H3:** The integration of AI in schools is slowed by infrastructural and ethical concerns.
- **Accepted.**

  This hypothesis is confirmed. From the questionnaire, many respondents mentioned slow internet **and** lack of digital tools as major barriers. Interviewees showed ethical fears such as data privacy and AI misjudgments.

Table 2.17. Summary of Hypotheses Testing

Hypothesis	Status	Supporting Evidence
H1	Accepted	74% positive views on AI's benefits, interviews showing agreement
H2	Accepted	80% lacked AI training, interview concerns about readiness
H3	Accepted	Frequent mentions of infrastructure limits and ethical worries

While there is a strong foundation of awareness and interest in AI among Algerian educators, integration into school leadership remains in its early stages. Without infrastructural investment and national policy development, AI cannot yet serve as a practical tool in education. However, the findings indicate a significant opportunity for improvement if targeted support is provided.

Conclusion

In conclusion, AI has a role to play in educational leadership and the way schools operate in the future. AI has the potential to change the landscape of education from supporting the efficiency of administrative components and potentially individualizing students, but as AI becomes more embedded in educational processes, school administrators will need to consider the ethical risks of AI, as well as the need for human reasoning in leadership.

The future of AI in school leadership will rely heavily on school leaders having reflections about how they adapt, grow, and work with technology ethically. The use of AI provides a set of powerful tools to increase and sustain the administrative practices of school leaders to improve efficiency and productivity; however, it is important to consider how AI can be useful to promote inclusion, diversity, or equity.

As technology continues to develop and grow, administrators must consider how AI impacts the lives of students, staff, and the larger school community. The impetus should be to apply AI to facilitate education outcomes while upholding the foundational values of education including kindness, ethical use of decision-making, and social justice.

General Conclusion

General Conclusion

This research aimed to study the role of Artificial Intelligence (AI) in school leadership and management. The work was divided into theoretical and practical parts to get a full picture of how AI is helping or could help school administrators. The research tried to understand what is happening now in Algerian schools and also what might happen in the future.

The theoretical part explained many ideas about school leadership and AI. It was shown that AI is not only used for teaching and learning but can also be used in managing schools. Tools like AI-based scheduling, attendance checking, can save time. These tools can help with planning, organizing, and monitoring. Also, we explained how AI tools need correct training and how they are not here to replace human workers but to help them do better.

The practical part, in the study we collected answers from 20 participants (school principals, vice-principals, and teachers) using a questionnaire and an interview. Most of the participants said that AI is still not used much in their schools. For example, in question 2, many said they never used any real AI tool, even though they heard about it. One vice-principal said they still manage student records by hand, some said they use basic things like Excel, but they don't count that as AI. In question 5, only 2 out of 20 said they used smart systems for timetables or data management.

Many participants also said they are interested in learning more about AI. For example, in question 12, more than 70% of the participants agreed that AI training should be added in school management workshops. The results showed the fear of AI, ethical and privacy problems were discussed, and in the interviews, 3 principals said that AI must not be trusted with sensitive school decisions without human approval.

It was clear that participants believe that AI is not to replace humans but to help them. This point was also discussed in the theoretical chapters. Many participants said that with proper training, they would be happy to use AI in their daily work. The theoretical chapters talked about the future of AI, and the findings confirmed that in chapter two,

According to Karakose and Tülübaş (2024), school principals can now use AI for things like managing food and transportation, keeping student information safe, and organizing school materials. This supports our own findings, The article explained that AI supports open school management by including parents and students in decision-making.

To answer the first research question how AI affect school leadership in Algeria the findings show that the effect is still very small. AI is not yet used in most schools. Many leaders do not know how to use AI, and the needed tools are missing. However, the theoretical part explained how AI could help with many tasks, such as creating schedules or analyzing student performance, and this was agreed upon by most participants in the practical work.

The second research question was about the opportunities and challenges. One big opportunity is saving time and making schoolwork more organized. For example, in question 11 of the questionnaire, teachers said AI could make reporting easier. But the challenges include lack of tools and lack of training. Also, as mentioned in chapter two, ethics and privacy issues are a concern for some participants. This shows that without rules and knowledge, AI use can become risky. Also, in the article by Karakose and Tülübaş (2024), it was said that many school leaders worry about trust, and they need digital leadership skills to help teachers overcome fear and confusion about new tools.

The third research question looked at the future of school leadership with AI. According to the theoretical chapters and some of the interviews, school leaders will need to adapt and accept new technologies, and future leaders will have to be trained in digital tools. Most participants said that real change will take time and needs investment from the government. Also, the article said that AI will continue to grow in education, and school principals must be ready to support change and involve teachers, students, and parents in the process.

This research tried to give a clear view of how AI is being used in Algerian school leadership. The theoretical part gave many ideas about AI's potential. The practical part confirmed that most schools are far behind in using AI. Teachers and administrators seem

open to using it if they are trained. The important thing is that AI should support human work, not replace it. School leaders should learn how to use these tools in a smart way.

AI is used in other countries more widely; Algerian schools are still new to it. As one participant said, “We are not against AI, but we need the tools first.” Without internet, computers in some schools, so even if the theoretical advantages are big, the real situation must be fixed first. The gap between theory and practice needs to be closed by giving schools better conditions.

The article by Karakose and Tülübaş also helped show how AI is becoming part of school leadership globally. It confirmed that school principals today are expected to lead schools using digital tools and help teachers adapt to the digital era. If Algeria wants to move forward, school managers should get the right training, and the Ministry of Education should provide more equipment, internet, and AI policy.

From what I learned in this study, I think Algerian high schools, especially in Djelfa and precisely in Messaad, need some real steps to start using AI better.

Some practical ideas that could help:

1. **Start with Basic AI Awareness for Everyone**

Most school principals, vice-principals, and teachers don’t really understand what AI is or how it can help them. Before anything else, schools or the education ministry should organize simple awareness sessions. These can be short talks or easy videos explaining AI in everyday language like how AI tools can help with managing school tasks, student learning, or even communication

2. **Organize Hands-On Training Workshops**

It’s not enough to just talk about AI; people need to try it. Many participants in the study said they want training, so schools should arrange regular workshops where staff can actually use AI tools. For example, teachers could practice using ChatGPT to help prepare lessons or use Google Translate for better communication

Fix Basic Infrastructure Problems First

A big problem holding back AI use is poor internet access and outdated computers in many schools. Without good internet and technology, AI tools are almost impossible to use. So, there must be investment to improve the technical infrastructure, especially in rural and less developed areas like Meessaad.

3. **Use AI for Simple, Everyday Tasks First**

Instead of trying to do everything with AI at once, schools should start with simple uses that save time and reduce workload. For example, AI could be used for making schedules, sending reminders, or managing attendance records. When people see AI making small tasks easier, they will trust it more and want to use it for bigger things like student assessments or personalized learning.

4. **Listen and Involve Everyone in AI Plans**

Change works better when everyone is involved. School leaders should listen to teachers, staff, and even students to understand their needs and concerns. This can be done through meetings, surveys, or suggestion boxes

5. **Partner with Universities and Technology Experts**

Schools can benefit a lot by working with local universities, research centers, or tech companies. These experts can provide training, technical support, and advice on how to adapt AI tools for the Algerian context.

6. **Make a Clear, Long-Term Plan for AI in Education**

Using AI in schools is not a one-time thing it needs continuous effort, monitoring, and improvement. The Ministry of Education should create a long-term strategy that includes funding, training, infrastructure upgrades, and evaluation.

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Appendices:

Appendix 1: Questionnaire :

Topic: The Impact of Artificial Intelligence on School Leadership and Management in Algerian High Schools

This **questionnaire** aims to investigate the impact of Artificial Intelligence (AI) on School Leadership and Management in Algerian high schools.

Your participation is appreciated, and your responses will remain confidential.

1. What is your current role in the school?

☐ Principal

☐ Vice-principal

☐ Teacher

☐ Other...

2. How many years of experience do you have in education?

☐ 0–5

☐ 6–10

☐ 11–15

☐ More than 15

3. What is your age group?

☐ Under 30

☐ 30–40

☐ 40–50

☐ Over 50

4. Are you familiar with the concept of Artificial Intelligence (AI)?

☐ Yes

☐ No

5. Have you received any training related to AI in education?

☐ Yes

☐ No

6. Does your school currently use any AI-based tools or systems?

☐ Yes (Please specify) ……

☐ No

7. In your opinion, can AI improve school management efficiency?

☐ Yes

☐ No

☐ Not Sure

8. What potential benefits do you associate with the use of AI in school leadership?

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9. Do you believe AI will have a positive or negative impact on educational leadership?

☐ Positive

☐ Negative

☐ Neutral

☐ Other:……

10. What are the major obstacles preventing AI integration in your school?

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11. Are teachers and staff in your school ready to adopt AI-based tools?

☐ Yes

☐ No

☐ Not Sure

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12. How do you think AI can support decision-making in schools?

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13. What support or training would you need to feel confident using AI tools?

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14. Should the Ministry of Education implement AI training programs for school leaders?

☐ Yes

☐ No

…….....

.....

15. Please share any suggestions or concerns regarding AI in school management:

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…….....

.....…

Appendix2: Interview

Fettacha seddam
Master's Student ELT
University of Amar Theliji Laghouat

Dear ……..

My name is Fettacha sedddam, and I am working on my Master's thesis at the University of Amar Theliji Laghouat.and The title of my research is:

"School Leadership and Management in the Era of Artificial Intelligence (AI): Recent Innovations and Future Directions."

I am conducting a short interview with school leaders and educators. I invite you to answer the following questions via email at your convenience. Your responses will remain completely confidential

1. Can you please introduce yourself and tell us a bit about your position in the school?

……
……

2.What do you know about Artificial Intelligence (AI) in general?

……
…….

3.Have you heard about the use of AI in school leadership or education? If yes, can you give examples?

……
……

4.Do you or your school use any AI-based tools for management or teaching? What are they used for?

……
……

5.In your opinion, how can AI help school leaders in their work?

……
……..

6.Do you think AI can make decision-making easier for school principals or supervisors? Why or why not?

……
……

7.What are some difficulties that school leaders may face when trying to use AI in schools?

……
……

8.Do you think school staff are ready or trained to use AI tools in their daily work?

……
……

9.Are there any ethical problems or risks you think about when using AI in education, such as privacy or data safety?

……
……

10. What do you suggest to improve the use of AI in Algerian schools for better leadership and management?

……
……...

Thank you for your time.

ملخص :

تهدف هذه الأطروحة الموسومة بعنوان القيادة والإدارة المدرسية في عصر الذكاء الاصطناعي: الابتكارات الحديثة والمستقبل، اضاءة على دور الذكاء الاصطناعي في دعم القيادة و الادارة المدرسية التحديات التي تواجه القادة وكذا الافاق التي يتيحها الذكاء الاصطناعي في مجال التربية و التعليم خاصة في المدارس الثانوية بصفتها قاعدة اساسية للدراسات الجامعية والدراسات العليا . في السنوات الأخيرة، بدأت التكنولوجيا وخاصة الذكاء الاصطناعي تدخل في مختلف المجالات من بينها التعليم ومع أن هذه التكنولوجيا أصبحت تُستخدم في بعض البلدان بشكل متطور، إلا أن تطبيقها في المدارس الجزائرية لا يزال محدودًا جدًا. تضمنت الدراسة جزأين: جزء نظري تناول مفاهيم القيادة المدرسية الحديثة، وأهم التطورات في مجال الذكاء الاصطناعي، وكيف يمكن أن تساهم هذه التقنيات في تحسين الإدارة المدرسية من حيث التنظيم، التخطيط، المتابعة، واتخاذ القرار. أما في الجزء التطبيقي، فقد تم توزيع استبيان وإجراء مقابلات مع عينة من 20 مشاركًا من مديري ونواب مديري وأساتذة يعملون في بعض ثانويات ولاية مسعد المنتدبة جيث تم اختيارها كونها تمثل بيئة تعليمية حقيقية تواجه التحديات اليومية في التسيير المدرسي. وقد أظهرت النتائج أن أغلب المشاركين يعرفون الذكاء الاصطناعي بالاسم فقط، دون أن يستعملوه فعليًا في عملهم. في ثانويات مسعد، حيث لا يزال الاعتماد على الطرق اليدوية في تسجيل الغيابات وتنظيم الجداول، كما أن الإنترنت غير متوفر بشكل دائم ورغم ذلك، عبر بعض المدراء من مسعد خلال المقابلات عن اهتمامهم بهذه التقنيات، وقالوا إنهم مستعدون لتجربتها إذا توفرت التكوينات والدعم من الجهات الرسمية. ومن خلال تحليل الردود، تبين أن الذكاء الاصطناعي يمكن أن يقدم حلولًا عملية للمشاكل اليومية في الإدارة، لكن يحتاج إلى بنية تحتية وتكوين مستمر في الختام، توصي الدراسة بتوفير دورات تكوينية حول الذكاء الاصطناعي لفائدة مديري المدارس، وتحسين وسائل العمل داخل المؤسسات، خصوصًا في المناطق مثل مسعد، حتى تواكب المؤسسات التعليمية التطور التكنولوجي الوطني والعالمي

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