

## Original Article

# Challenges of Integrating AI in School Administration: An Explorative Study of Secondary School Heads of District Larkana

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## Abstract

Globally, Artificial Intelligence (AI) has become a growing trend in terms of enhancing the efficacy of work and making suitable decision in every field particularly in educational administration. However, the major aim present study was to explore the challenges encountered by the institutional heads of secondary schools at Larkana District in integrating AI in their leadership. Qualitative research design was adopted and semi-structured interviews as data gathering tool to study the in-depth perceptions of school heads. The study involved all the institutional heads of secondary school of District Larkana as population while, took data from the 30. The analysis of data was done by utilizing the thematic analysis. The findings disclosed that there various challenges that hinder the successful adoption of AI in administration of school. The challenges are unreliable infrastructure, limited continuous professional development programs, pedagogical boundaries, technical challenges and support, limited cost, and biased assessment. This study recommended that there is dire need strategic planning to overcome these challenges.

**Keywords:** Artificial Intelligence, Secondary Education, Educational Administration

## INTRODUCTION

There has been a remarkable advancement in technology, especially Artificial Intelligence (AI) and flipped the overall landscape of education system throughout globe. AI has revolutionized the way the pupil learn, educators teach, and how school leaders monitor them (Alordiah, 2023a). There are various aspects of school leadership where AI based technologies are being adopted. Due to its changing nature its effects are going beyond operational effectiveness and it also affects wellbeing of school managers and their governance (Alordiah, 2023b). Wang (2021) and Wang (2020) in their studies disclosed that although it has made the school management more easy doing and benefitted it in many ways yet not a problem free as it increases, the reliance, displacement of employment, and ethical concerns.

In 21<sup>st</sup> century age, the job descriptions for school leader positions has changed significantly. Previously, they have rendered their services as educators, administrators and policy incorporators (Ohamobi et al., 2024; Filgueiras, 2023; Manafa et al., 2022). But AI has broadened their duties and made them responsible to look after the AI based systems, ensure digital equity and issues related to ethics. Administrators of schools should focus on planned and purposeful leadership, humanistic decision making, and adopt creative learning environment (Gocen, 2020). Psychologically, incorporating technology could be troublesome in terms of privacy of data and professional development.

According to Binns (2018) and Joseph and Uzundu (2024) artificial intelligence has an ability to enhance the quality of education by reshaping the teaching strategies and considering



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learning needs of students. However, there has been found unique challenges when integrating AI. While Urban and suburban areas might be blessed with technology based infrastructure, schools at rural area side have many hindrances like weak network connection, unsupportive infrastructure of technology, and lack of AI based training programs for faculty (Bozkurt & Sharma, 2023; Mustafa et al., 2024; Cheah et al., 2025). These challenges show that authorities should need to take timely measures and train school leaders to play strategic role in ensuring the successful integration of AI.

For making a suitable environment and culture for work critical leadership is very important. But in rural districts the educational authorities are maneuvering these challenges and assuring that technologies related to AI are being integrated into schools. It has been found in a study by Hartman et al. (2023) that integration of AI in education heavily relies on the accessibility and productive use of technological tools. Further it was also disclosed that financial constraint is one of the most significant challenge that educationist come up with because there is no any additional funding allocated to them for the maintenance for tools related to technology.

### **Statement of Problem**

Technology has been utilized in every walk of life to make it easy and worth living (Fullan et al., 2024). Particularly, it has made learning more flexible and accessible to all. More specifically, AI is offering access to the large data set just on fingertips (Osegbue, Ekwe, & Ogaga, 2025). It creates an engaging environment in the classroom where pupil could learn the things easily. Despite being too beneficial it is not a problem-free process. It offers many challenges especially in educational administration. Thus, the present study aims to explore the challenges that are being encountered by secondary school heads at District Larkana.

### **LITERATURE REVIEW**

As per official report of UNESCO (2023) the use of AI has been found for last 40 years while, the generative AI is found to be updated version of technology transforming education. While, Bernacki, Greene, and Crompton (2020) have mentioned two perspectives on AI in their study such as it would expedite the variations in education or it would urge the cautions it has in the shape of pros and cons. Recently, it has been warned by Zhao et al. (2023) about the

bond between individuals' level of well-being in subject and AI. Many studies have shown that AI is not a new thing but a growing trend in education with a new name of GenAI or ChatGPT just after COVID-19 (Mitrovic, du Boulay, and Yacef 2023; Ouyan 2023; Selwyn, 2020). Although, ChatGPT, an AI based tool developed by OPENAI2, has created easiness in terms of learning anything but has also lifted ethical and technical concerns (Chen et al., 2020).

### **Role of School Head**

Literature have shown a significant role of heads of schools in executing the latest technologies into their leadership practices. As per the diffusion of innovation theory by Rogers (2003) the implementation of any new technology relies on the inner capabilities of educational leaders how they motivate individuals and how they involve them in social system to communicate effectively. The school heads in rural areas have to arrange the resources and school culture in a way that supports AI execution in teaching and learning process (Showalter et al., 2023). They not only prefer to invest in technology but also have to assure that available tools are in working condition (Crawford & Wu, 2024). Durff and Carter (2019) have disclosed that the successful integration of AI in classroom premises is impossible without an effective leadership.

In rural areas face many hindrances like resource scarcity and isolation of geographic location thus there is need of critical leadership to overcome such complications. According to research the educational leaders in rural districts have to create balance between the necessity of innovation and limited support from the higher authorities like proper funding for technology integration and concerned resources (Laferriere et al., 2013; Holmes et al., 2019; Wargo & Simmons, 2021). These kind of areas institutional heads require to have problem-solving, community involvement, and proper planning for strategies aligning the goals (Showalter et al., 2023). There are many cases where stake holders like parents, people from local businesses government services, need to collaborate school management to support technology based programs in school (Wargo et al., 2021). Their strong support can help school management to secure financial assistance and overcome other challenges that disturb the AI execution.

## Challenges of integrating AI in school leadership

Intersection of leadership and AI into education is considered to be energetic and adaptable combination assumes a notable role in guiding the difficulties of digitalization in schools (Goh & Mansor, 2024; Ming et al., 2023). According to the studies of Thannimalai and Richardson (2018); Dexter (2018); Raman and Thannimalai (2019) there is plenty of literature available on “role of school heads in integrating technology” just after the COVID-19 broke out, also the institutional heads are referred as important authorities who support the digitalization and innovative classroom environment in schools.

Adams et al. (2021) and Lien et al. (2022) have shown that although the digital transformation in education is fruitful for enhancing the school performance yet there are challenges like heads of schools find themselves unfit for adopting such sudden change. The reason behind is their preparedness and lack of training which could help them successfully to execute (Berkovich & Hassan, 2024). Hence, it is becomes dutiful for educational leaders to first comprehend the advantages and disadvantages of digitalization. The other problem according to Mollick and Mollick (2022) is changes in teaching methods. Technology has made teaching process a bit complex because they have to put more efforts to adopt the suitable strategies and materials which could help them in making their teaching productive. Not only this, but assessment also becomes a challenging task for them (Zhang & Mao, 2023).

Keeping in view the critical perspective, it is notable to recall that “all that glitters is not gold”. Adopting AI offer innate challenges and boundaries. As per the study of Hargreaves (2023) AI poses academic dishonesty for instance students were found to copy-paste the homework from ChatGPT. They generated only essay type of answer rather than a critical. His study concluded that AI ChatBots are useful but risk the soft skills of students.

However, it is warned by UNESCO (2021a) that educational organizations should prepare themselves for future because AI will be the part of everyday lives. Further, it was added that policy makers must consider GenAI when developing curriculum. The European Commission (2022, 6) has also published a report for guidance of school administrators, stakeholders, and policy makers. The report concludes

*“From the way we stay to the way we make decisions, artificial intelligence AI is becoming ubiquitous in our economy and society. Naturally, it has reached our school as well. AI in education is no longer a distant future. It is already changing the way schools, universities and educators work and our children learn. It is making educational settings more responsive by helping teachers address each learner’s specific needs. It is fast becoming a staple in personalized tutoring and in assessment. And it is increasingly showing potential to provide valuable insights in student development. The impact of AI on our education and training systems is undeniable and will grow further in the future.”*

It is clear from the report that Europeans being developed nations of the world are preparing themselves for the future of AI. So, Pakistan is a developing country her emphasis should be more on AI than anything else.

## Theoretical background

Diffusion of Innovations (DOI) theory has been consider as a theoretical framework for present study. It shows that how an individual could comprehend and spread any new idea or approach or any technological tool such as artificial intelligence into the management. Roger has identified five stages through which one can execute any tool (Miller 2018). The five stages include: knowledge, persuasion, decision, implementation, and confirmation (Rogers, 2003).

As for as the execution of artificial intelligence (AI) in educational administration is concerned this theory is a best fit for underpinning before beginning. Because it will provide the educators to know the use AI, and encourage themselves to develop a positive attitude towards it and take decision whether to use it or not, then implement it, and check whether it has benefitted you or not.

## METHODOLOGY

Qualitative approach of educational research has been employed in present study. The nature of study is explorative and focus of study is exploring the challenges of school heads in adopting the AI in leadership thus, the study adopted qualitative research design (Creswell, 2014). Semi-structured interviews were utilized to gather data because interviews are best fit when there is need to explore in-depth comprehension of insight of secondary school heads. The population in current study was all the secondary school heads of District Larkana.

There are total 294 schools providing middle, elementary, secondary, and higher secondary education in Larkana District. Using purposive sampling strategy 30 secondary school head teachers were selected to collect data from them. Purposive sampling is utilized when there is an specific purpose of selecting the respondents (Bogdan & Bikken, 2007) and present study aimed to explore the perceptions of secondary school heads. The description of participants was, s/he should be serving as head teacher, should be posted at any place of District Larkana, should have three years of experience as head teacher.

However, the interpretation of data was done using thematic analysis. Thematic analysis is a qualitative data analysis tool used to draw out themes from collected data (Creswell, 2014). The data firstly was transcribed into a transcript and them coded by hiding the personal details of participants. The themes were draw out by reviewing the chunk of words offering same meaning. After generating themes the data was then pasted in the findings. The above process was executed by keeping in view the ethical consideration.

- Consent would be taken from all the participants
- Participants would be informed that data or interview will be recorded only for the sake of study
- The personal details of respondents were secured
- Participants can withdraw at any stage of research study

## RESULTS & FINDINGS

The analyzed data showed that AI is helpful for enhancing the academic performance of students and also the overall school performance but the process is bit challenging. Study disclosed various challenges hindering the integration process of AI in leadership.

### Unreliable Infrastructure

The present study found that there is dire need of infrastructure that could support AI tool. The infrastructure includes the strong internet connection, 24/7 availability of electricity, and latest hardware. According to the analyzed data the schools were found defaulters in terms of the above mentioned infrastructure. There was no any access to internet through which school management could utilize to digitalize

their school records. In this regards one of the respondents told that F2: *"I have been serving here for last five years. I have always tried my best to bring AI into school affairs but due to the connectivity issues my efforts are wasted. Not to talk of the Wifi or PTCL internet but even my own SIM Card networks are inaccessible here. This has remained a disturbing factor."*

In addition, it was also found in this study that some schools lack availability of electricity. As per a respondent F6:

*"I serve as a Head Teacher in a rural village where there problem electricity load shedding. Although there has been an alternative of it that is the use of Solar energy. But my school still haven't received any solar plant. So, it has become many problems for me to manage school affairs especially the AI integration. AI is impossible to integrate without electricity backup."*

Furthermore, it was also disclosed in the findings of present study that appropriate hardware is also a challenge for school heads in adopting AI in their leadership. As it was reported by a respondent F8:

*"I have always been an advocate for bringing technology into the education since I have joined the services. At some places my efforts went successful but at my present posting I have issue of having proper hardware for integrating it like my school lacks proper technology based hardware such as computer labs which can support its fullest implementation."*

### Limited Continuous Professional Development of Teacher

The findings showed that teachers at secondary level are not facilitated with continuous professional development programs. Majority of the respondents have agreed to this point. One of the respondents told that F9:

*"In my school there more than twenty teachers and half of them are young below thirty years which mean they are aware about the latest technologies but due to the limited professional training programs they are unable to properly use the AI based tools. One of the best example I can share here is that our school has a digital board but only one or two of teachers only little bit know how to use it. But if they are trained time to time than I am hundred percent sure that that board could be very helpful for them to teach their respective subjects."*

In addition, study also found that the attitude of teachers towards the use of AI is negative. It

was disclosed that majority of teachers are more attracted towards the old fashioned teaching strategies. As per the views of a respondents F5:

*“in my school most of the teacher are old age so they hesitate to use AI in their teaching process. In simple their attitude towards the technology based tools is negative. They are just addicted to the old teaching methods. Thus, they fear from is wrong use.”*

### **Pedagogical Boundaries**

Analyzed data in this study showed that due to the limited pedagogical strategies teachers fail to adopt the AI into their teaching. As AI tools are developed for western cultures where technology is already shining. But in Pakistani culture especially in rural Sindh it is not that much famous. Thus, teachers fail to cater it in their culture. As one of the respondents mentioned that F8:

*“Our teachers have limited pedagogical strategies which they use to teach their subjects. They consider AI as a western culture and also a long process for which they have to learn to use thus, they fear to accommodate it in their teaching.”*

In addition, it was also found that due to the limited pedagogical of teachers they could be able to utilize AI in their teaching as AI has an English language prescriptions and examples are also related to their culture while, Urdu or Sindhi or any language teacher could not understand the specific word mentioned in the AI ChatBots. In this regard a participant told that F2:

*“I took initiatives to ask teachers to adopt AI in their teaching but problem occurred when the language teachers were unable to understand the options in it. Like a Urdu teacher do not have in-depth knowledge about the AI options and the vocabulary written there.”*

However, it is clear AI has created hurdles for the teachers.

### **Technical Challenges and Support**

The present study has found technical challenges as one of hindering barriers that disturbs the implementation of AI. It was disclosed that there was lack of technical staff who could assist teacher and head teachers or other non-teaching staff who could assist them to utilize AI in a proper way. As per a respondent F4:

*“keeping in view the available technological tools I took efforts to adopt them into the teaching process also in the school management but I found*

*less technical support. We do not have individuals who are from the field of technology and have skills to guide us in the process. So, I along with newly appointed young teachers helped ourselves to do it in an effective way.”*

However, technical support is essential for integrating AI into education.

### **Limited Cost**

The findings showed that there is lack a specific cos available for repairing technological tools available at school. School has two types of budgets one is school management committee (SMC) fund another is contingency budget. SMC is sanctioned for the daily school expenses like Chalk, board marker or A4 pages for printing the school record. While, the contingency budget is utilized for the purpose of repairing the school building like painting and damaged walls are repaired. In this regard it was mentioned by a respondent that F9:

*“I do not have any issue in adopting latest technological changes like AI in the school affairs. But the technological tools available at my school are out of order and are not in a condition to be used. On other hand we do not have any specific budget that we can utilize to repair them. Thus, it create hindrance to use AI in school.”*

However, school face challenges in repairing the technological tools just because of the limited budget.

### **Biased Assessment**

It was disclosed in the findings that AI could create biasness in assessment. The reasons behind is that teachers are addicted to the old fashioned assessment tools so, it might be challenging for them to assess students' academic performance in a proper and fair way. The reason behind is that teachers who do not know the proper use of LMS might not be able to give proper marks to students as the LMS has various option which could confuse them. A participants told in this regard that F9:

*“fair assessment of students' academic performance is also a challenge for me whenever I think to integrate AI in teaching because I have received many complains from the people that technology based assessment create biasness like teachers mistakenly assign marks of one student to another.”*

However, the study showed that due to lack of training program of teachers the assessment also become an issue for the teachers to assign the proper marks.

## Discussion

The major aim of study was to explore the challenges of secondary school heads of Larkana district in executing AI or technology into their leadership. However, the present study disclosed similar findings like unreliable infrastructure, limited continuous professional development programs, pedagogical boundaries, technical challenges and support, limited cost, and biased assessment.

Findings in current study showed that there is unreliable infrastructure in secondary schools therefore, it becomes challenging for school leaders to bring AI or any latest technology into their leaders. While, Fullan et al. (2024) have also shown in their study that for an effective utilization of technology there should be a proper infrastructure like specified rooms where technological tools could be placed and run. Additionally, it was also discovered in this study that teachers at secondary schools have less programs related to their professional growth thus, they do not have skills to use the AI in their teaching. In this regard Osegbue, Ekwe, and Ogaga (2025) have recommended that higher authorities should arrange various training programs for teaching and non-teaching faculty member in order to prepare them for the future advancements in technology like AI ChatBots etc.

According to the findings of present study pedagogical boundaries and biasness in assessment remained other hindering problems for secondary school heads. Kim and Wargo (2025) have warned that educators should consider the needs of individual students when switching their teaching from traditional to the AI or any technology based teaching. Lastly, study also found that there technical challenges and limited cost. Ng, Chan, and Lo (2025) have mentioned that before initiating the technology into leadership institutional heads should make sure that there is proper budget sanctioned for the said purpose and there are technical staff available to support them when they get stuck at any stage.

## CONCLUSION

The current study was conducted in the context of secondary schools of District Larkana aiming to explore the challenges that head teachers of schools faced when they executed AI in their administration. The study discovered various challenges like However, the present study disclosed similar findings like unreliable

infrastructure, limited continuous professional development programs, pedagogical boundaries, technical challenges and support, limited cost, and biased assessment. However, study recommends that stakeholder should consider these challenges when they are making any policy related to the education. It is recommended from the findings of present study that there should be proper infrastructure at schools.

Authorities should also arrange training programs for the teaching and non-teaching faculty so that they update their skills with respect to the developments in technology. Training programs will not only improve their technical skills but also their pedagogical and assessment skills. Nonetheless, for initiating AI execution in leadership there should be a specific budget sanctioned for technological tools repairmen when they get out of order. The recommendation need to be strictly followed in order to overcome the mentioned challenges.

## Competing Interests

The authors did not declare any competing interest.

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