Technologies in Education: The Role of Educational Leadership and Organizational Models in Increasing Student Motivation for Learning

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Doi: 10.21608/ajahs.2025.420396

استلام البحث ١٢ / ١ / ٢٠٢٥

قبول البحث ٢ / ٢ / ٢٠٢٥

Aisha, Sarya (2025). Technologies in Education: The Role of Educational Leadership and Organizational Models in Increasing Student Motivation for Learning. ***The Arab Journal of Arts and Humanities***, Arab League Educational, Cultural and Scientific Organization, Egypt, 9(35), 563-602.

http://ajahs.journals.ekb.eg

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Abstract:

This research explores the role of technology in enhancing student motivation for learning, with a focus on the impact of educational leadership and organizational models in achieving this goal. Given the rapid advancements in technology, integrating digital tools into the educational process has become essential for engaging students and increasing their participation. The paper examines how educational leaders can adopt effective strategies to implement technology in classrooms and their role in fostering an organizational environment that supports innovation. The study indicates that flexible organizational models, such as blended and project-based learning, enhance student engagement when supported by visionary educational leadership. It also highlights the importance of professional development for teachers to ensure optimal use of technology. Findings show that schools implementing smart educational systems and dynamic leadership witness significant improvements in student motivation and academic performance. The research concludes that the success of technology in education depends on the integration of three key factors: effective educational leadership, adaptive organizational models, and continuous training. It recommends the development of educational policies that encourage innovation while ensuring equitable access to resources for all students.

Keywords: Educational technology, Educational leadership, Learning motivation, Organizational models, Innovation in education.

1. Introduction:

Nowadays, in schools and colleges, a common challenge is students losing interest in learning, which traditional teaching

ISSN : ***2537-0421*** **eISSN :** ***2537-043X***

methods struggle to overcome. This lack of engagement can result in decreased participation, poorer academic performance, and more students dropping out (Song et al., 2022). And as technology advances quickly, students are increasingly exposed to media outside of class, making conventional approaches seem boring and unexciting, so virtual reality (VR) and augmented reality (AR) methods show promise in addressing these issues by offering interactive learning experiences that can rekindle students' interest and improve their hold on information. Studies have confirmed that VR and AR can remarkably enhance student learning outcomes and enjoyment across subjects and settings (Huang et al., 2019). These technologies provide hands-on experiences that make learning captivating and enjoyable. allowing students to delve into real-life scenarios and intricate concepts in a relevant way, as well as harnessing VR and AR to address student concerns. Educational institutions have the ability to create progressive learning environments. This study on integrating these technologies into education systems while overcoming challenges is highly relevant in today's landscape, as it aligns with the goal of improving academic performances while preparing students for future success, and effective leadership plays a role in ensuring the integration of VR and AR into educational settings. School administrators need to lead the way in adopting these technologies. The main purpose of this study is to look at and talk about different theories in the field of educational management and leadership, specifically how Virtual Reality (VR) and Augmented Reality (AR) technologies are used in schools. The study looks at ideas like transformational, transactional, distributed, and digital leadership to find ways to get students more involved and improve their academic performance.

It also looks at different types of organizational structures that can be used to carry out this project and incorporate it into

ISSN : ***2537-0421*** **eISSN :** ***2537-043X***

the school system, such as hierarchical, flat, and matrix, and how to put them to use. Correctly by combining the right leadership theories to reach this goal and how different leadership theories can help with the successful integration of VR and AR in education. We will also talk about performance monitoring systems and how to make sure they work well to deal with problems and boost performance, as well as giving suggestions by giving useful advice to get people to use these technologies.

2. Theoretical Framework

Analyzing and evaluating key theories: In the fields of administration and leadership, different theoretical frameworks help to shape and improve how educational institutions handle administration and leadership. These frameworks are necessary to understand and effectively use different leadership styles to reach goals (Goldring & Greenfield, 2002). Examples of frameworks include transformational leadership, transactional leadership, distributed leadership, and digital leadership. This in-depth examination seeks to delve into these frameworks, assess their advantages and limitations, and ascertain their impact on administration and leadership practices.

Transformational leadership is the key concept that highlights the importance of inspiring and motivating individuals to reach peak performance levels by encouraging creativity, building a shared vision, and supporting personal and professional advancement (Permana, 2024). This leadership approach brings about several advantages, such as driving change and innovation, increasing motivation and morale, and developing strong relationships between leaders and followers. Nonetheless, it also comes with negatives like relying heavily on the leader's charm, facing challenges with short-term objectives, and carrying the risk of burnout due to high expectations placed on both leaders and followers. (Berkovich, 2016)According to Berkovich's study in 2016, there are concerns raised about the

ISSN : *2537-0421* eISSN : *2537-043X*

ongoing reliance on transformational leadership theory within educational administration. It proposes that it might be beneficial to explore alternative strategies beyond this conventional method. Even though transformational leadership works well for creating a good learning environment that inspires people, supports new ideas, and leads to long-lasting changes, it might not be the best choice when quick results are needed or when charismatic leaders are not present. Moreover, the outlook on leadership within educational institutions, as discussed by Bass (2000), takes into account the current situation in educational leadership and management. It highlights the shifting landscape and underscores the importance of flexible leadership approaches to keep pace with the evolving educational landscape (Bass, 2000).Although transformational leadership theory has played a crucial role in shaping educational management and leadership practices, there is a growing necessity to critically assess its ongoing significance and explore alternative or complementary strategies to tackle the diverse challenges encountered in educational environments.

Transactional leadership, as a style of leadership in educational administration, relies on a system of rewards and consequences to lead followers. It emphasizes clear structures, tasks, and results to enhance performance, discipline, and supervision (Selvarajah et al., 2024). This approach has its strengths, like setting clear expectations and structures, being effective in meeting short-term goals, and offering direct feedback and rewards based on performance (Zhao & Sun, 2023). However, transactional leadership also has its drawbacks, such as potentially limiting creativity and innovation, relying on external motivation, and the possibility of creating a transactional rather than relational relationship between leaders and followers (Mwakajila & Nyello, 2021). Also, transactional leadership may lead to not planning outcomes, like fostering a

ISSN : ***2537-0421*** **eISSN :** ***2537-043X***

sense of competition among employees and prompting them to hide knowledge; this was observed in a research study involving university staff in Pakistan (Zahoor et al., 2024).

Transactional leadership involves leaders guiding and motivating employees by establishing goals and clarifying task requirements. According to Robbins & Coulter (2005), transactional leadership can foster a sense of fairness and equality among educators through its emphasis on setting clear expectations and acknowledging accomplishments (Yayu, 2024). To sum up, in educational settings where constant innovation and growth are important, relying too much on outside rewards and the potential to stifle creativity could be problems. However, transactional leadership is useful for setting clear goals, keeping things organized, and meeting short-term objectives in educational management (Leithwood & Sun 2012). Its problems with encouraging creativity and inner drive show that we need a more well-rounded strategy that includes elements of both transactional and transformational leadership to meet the complex and changing needs of academic institutions.

Distributed leadership in the field of educational administration involves sharing leadership responsibilities among various individuals within an organization, focusing on teamwork and collective decision-making, and utilizing the different strengths of team members (Mehra et al., 2006). This approach highlights the benefits of promoting collaboration, shared responsibility, leveraging diverse expertise and perspectives, and encouraging a sense of ownership and empowerment among staff members (Khan, 2024). While adopting distributed leadership brings advantages such as fostering a collaborative and inclusive environment, tapping into the strengths of a diverse team, and instilling a sense of ownership among staff members, it also comes with challenges. These challenges may include potential coordination issues, the

ISSN : *2537-0421* eISSN : *2537-043X*

possibility of conflicts arising within the team leading to fragmentation, and the importance of maintaining strong communication and trust among team members (Davison et al., 2013).Harris stresses the benefits of distributed leadership by saying that collaboration, reciprocity, a common goal, and shared ownership are important for driving institutional change and team performance (Harris, 2003). The idea of distributed leadership is gaining popularity as it shifts from traditional top-down structures to more collaborative and inclusive leadership styles (James, 2007). Schools can encourage teamwork and shared responsibility by using distributed leadership principles. This change, which is seen as a good thing, is affected by things like new public governance, which changes how organizations are set up and how leadership is carried out in these places. To sum up (Ninković & Florić 2016). Distributed leadership presents a promising approach to leading educational institutions by encouraging teamwork, utilizing a variety of expertise, and empowering staff members. Nevertheless, its successful implementation hinges on overcoming coordination hurdles, managing potential conflicts, and nurturing strong communication and trust among team members for effective results. (Dambrauskienė, 2019).

Digital leadership in the field of administration is a concept that focuses on using digital tools and technologies to improve educational outcomes through innovation and change. This approach involves strengths such as encouraging innovation, adapting to technologies, improving teaching and learning with tools, and preparing schools for future technological advancements (Chmyr, 2024). However, digital leadership also comes with challenges like the need for learning and adaptation, potential resistance to change from staff members, and the initial costs and resources (Karaköse et al., 2021). The role of school principals in demonstrating leadership

ISSN : ***2537-0421*** **eISSN :** ***2537-043X***

skills and technological competencies, especially during crises like the COVID-19 pandemic, is to establish a culture of digital learning in educational settings (Ming, 2024). Additionally, Ming (2024) stresses the importance of investing in developing digital leadership abilities among school leaders to drive innovation in education (Ming, 2024).Moreover, a study conducted by Hamzah highlights how principals digital leadership positively influences teachers use of technology in their teaching practices during periods like the COVID-19 pandemic. Also, planning and organizing leadership initiatives can positively impact students academic success during challenging times (Hamzah et al., 2021). To sum up, digital leadership is crucial for fostering creativity, improving learning experiences with technology, and getting educational institutions ready for the era. It involves learning, flexibility, and resource allocation. The advantages of digital leadership in education are significant for adapting to the changing landscape.

Instructional Leadership Theory highlights the role of school leaders in fostering an environment for teaching and learning. This theory underlines the importance of educational leaders in establishing and communicating school objectives, supervision, offering input on teaching methods, and fostering the growth of teachers (Yaacob & Ishak, 2023). Leaders focus on curriculum development, ensuring teaching quality, and improving student outcomes through an emphasis on learning methodologies, support for growth, and data-driven decision-making.

Change management theories, like Kotter's 8-Step Change Model, provide frameworks for guiding change processes. Kotter's model highlights the importance of creating a sense of urgency, establishing a team for change, and leadership in creating vision and strategy, sharing that vision, overcoming obstacles, celebrating successes, sustaining progress, and

ISSN : *2537-0421* eISSN : *2537-043X*

ingraining changes into the organization's culture for permanent effects (Nataliia, 2023). When it comes to introducing VR and AR technology, careful planning and execution of these changes are vital. Kotter's model is a way to handle changes by making sure there is a clear vision that everyone supports and coming up with ways to deal with problems. Strong leadership and commitment at all levels are needed for success; the hardest part is keeping the pressure on to get better and incorporating changes into the school's core values (Hallinger, 2010).

Comparing the theories:

Each of these frameworks gives ideas and strategies for using VR and AR technologies to get students interested in learning again in schools that can effectively implement and maintain the use of VR and AR technologies while encouraging innovation and raising student engagement and learning outcomes. It is essential to stress how important it is to pick the right leadership theory and style for success in places that support a strategic leadership approach to using VR/AR in education (Perera et al., 2021). This aligns with the concept of blending leadership styles to effectively address aspects of the implementation process. For incorporating Virtual Reality (VR) and Augmented Reality (AR) into education, leadership theories play a role in guiding the integration process. Five key theoretical frameworks that are essential for comparing and contrasting VR and AR implementation include transformational leadership, transactional leadership, and distributed leadership.

The study focuses on digital leadership and change management tactics. Several important theories can be looked at in the context of using Virtual Reality (VR) and Augmented Reality (AR) technologies in education to get students more interested. One of these is the Theory of Transformational Leadership, which stresses how important it is to inspire and motivate followers to go above and beyond their own interests for the good of the

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organization or a larger cause. The success of leadership in fostering a culture of innovation and excitement for technologies greatly depends on the leader's ability to motivate and communicate a clear vision. By offering stimulation and personalized attention, leaders can motivate teachers to explore ways to integrate VR and AR into the curriculum. (Kareem et al., 2023)Leaders who adopt this approach can create a vision for integrating VR and AR, enhance motivation levels, and promote teaching methods. However, its effectiveness largely depends on the leader's charisma. Sustaining it may pose challenges if the leaders influence diminishes. (Antonopoulou et al., 2021).- On the side Transactional leadership stresses expectations, monitoring progress, and offering rewards to motivate followers. Leaders following this style can establish goals for VR and AR integration, ensure loyalty to guidelines, and provide structure to the implementation process. (Yang, 2023). Leaders can establish expectations, utilize rewards as motivators, monitor technology use closely, and intervene when necessary.

Experts recommend using transactional leadership techniques to effectively manage day-to-day operations while implementing VR/AR technologies and meeting standards and short-term goals. However, the effectiveness of this approach depends on a leader’s ability to form connections with their team members while maintaining a balance between leadership roles and practical implementation strategies (Huang et al., 2019).On the other hand, distributed leadership entails responsibilities, collaborative decision-making processes, and capacity building throughout the organization. This method uses the knowledge and experience of people in the area to help make VR and AR technologies last longer. It recognizes the need for a strong framework to deal with the challenges of modern education, like incorporating new technologies (R. Phillips et al., 2023). Distributed leadership tries to be inclusive and long-lasting, but

ISSN : *2537-0421* eISSN : *2537-043X*

it needs coordination and communication to keep things from getting disorganized and decision-making taking too long. In the realm of VR and AR adoption, distributed leadership can promote teamwork among educators, administrators, IT staff, and students to ensure decision-making and leverage the institution's skill sets. Effective coordination and communication are crucial for aligning efforts and guiding an implementation journey (Mullakhmetov et al., 2019).The main focus of digital leadership is to enhance learning outcomes through the integration of technology and utilization of tools. Those who lead in this industry have a grasp of innovations that enable them to effortlessly integrate VR and AR into educational methods. They support proficiency, innovation, and adaptability, despite facing challenges with resource allocation and resistance to change (Izzaty Binti Salikan & Hanim Binti A Hamid, 2024). Technology in the realm of AR/VR is the success of any organization, especially when it comes to implementing digital changes and fostering innovation. It requires a shift in thinking and approaches to keep up with the growing scene (Sheninger, 2019). Digital leaders must plan, organize, motivate, and supervise activities to achieve objectives, all while building trust with their teams (Harto et al., 2022).

Ultimately, being a leader involves more than just using technology; it also needs adopting suitable leadership styles and behaviors that align with the demands of the digital progress, encouraging creativity, and guiding company growth. The digital plans and foresight are crucial aspects (Fitriani, 2023).In the context of integrating VR and AR technologies, instructional leadership is key to ensuring these tools enhance teaching practices and benefit student achievements. Providing teachers with training to effectively utilize VR and AR is essential for an implementation; however, balancing quality with addressing needs may pose challenges (Quintero, 2023). When it comes to

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motivation and engagement, transformational leadership is key; it engages followers to enhance motivation, whereas transactional leadership depends more on external incentives like rewards and punishments. Distributed leadership fosters a sense of ownership and shared responsibility that increases motivation, while digital leadership cultivates engagement through strategic technology use that encourages an innovative culture. When it comes to fostering innovation and creativity, transformational leadership shines at stimulating thinking, while transactional leadership tends to focus on programmed goals that may hinder inventiveness. For ongoing adaptation, we can say that each leadership theory has pros and cons when used to implement VR and AR technologies in education. Distributed leadership encourages innovation by using different points of view, while digital leadership drives innovation by using cutting-edge technologies.

3. Application to Educational Contexts:

Applying the concept: In settings, the use of different leadership frameworks can have a significant impact on effectively incorporating Virtual Reality (VR) and Augmented Reality (AR) technologies. Transformational leadership, transactional leadership, distributed leadership, and digital leadership each bring principles and concepts that can be utilized to improve the implementation of VR and AR in both classrooms and online education environments. Deep into transformational leaders, they focus on creating a vision and fostering innovation. They can inspire teachers by outlining a vision for integrating VR and AR in classrooms, starting pilot programs, and motivating educators with success stories. In education settings, they can envision how VR and AR technologies can revolutionize virtual learning spaces and motivate instructors through engaging learning experiences (Vu et al., 2020). That's why our process will start with Creating a vision that resonates

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with the awaiting changes and sharing it across the educational community is crucial for applying transformative leadership approaches and preparing for it. This involves organizing workshops to discuss the significance of change and innovation, ensuring that teachers do not feel overwhelmed or burdened by new responsibilities, and conducting training sessions to demonstrate how to utilize the latest technologies to help solve any challenges and make teachers more at ease with unfamiliar tools. Moreover, establishing a performance assessment program should be part of the initiative; within an online learning environment, a dedicated platform should be set up with resources for teachers, inspiring success stories should be shared to motivate them, and there should always be open communication channels with management and experts to provide support.- Transactional leaders emphasize setting expectations, monitoring progress, and providing rewards. In educational contexts, transactional leaders can establish objectives for integrating VR and AR technologies, develop structured implementation strategies, and offer incentives for successful execution. In school settings, they can set goals, keep track of progress on a regular basis, and recognize online teachers who use VR and AR tools well in their classes (Capitano et al., 2020). When transactional leadership methods are used, it's important to be clear about how teachers will be evaluated and what levels they are expected to reach. The evaluation process should be tied to a rewards system based on student performance metrics to promote model practices, such as happiness hours, recognized certifications, or bonus points in annual teacher evaluations. You can also link rewards in an online learning setting to student satisfaction surveys.- Distributed leadership entails shared responsibilities and collaborative decision-making. In school settings, leaders who are spread out across roles can engage different parties in

ISSN : ***2537-0421*** **eISSN :** ***2537-043X***

decision-making, encourage collaborative projects, and provide training to enhance skills. In education, these leaders can create teams that bring together disciplines, establish communities for professional growth, and promote effective teamwork among educators, instructional designers, and IT experts (Saberon, 2024). The principles of distributed leadership are vital as it relies on skilled professionals and teachers who are well-experienced in technical aspects; giving them decision-making authority can empower them and enhance their effectiveness.

Also, teachers should have regular discussions to review progress, share ideas, and feel more connected to their work; parents should have a say in choosing meeting times and methods that suit them; external experts can offer guidance as needed in online education; teamwork tools like Teams can help support shared leadership; and teachers can take charge of running these sessions.- Digital leadership focuses on integrating technology and using tools strategically. In schooling, digital leaders ensure that the school's infrastructure supports virtual reality (VR) and augmented reality (AR), invest in necessary technology resources, and offer training to improve digital literacy. In education, they design curriculum that embraces technology advancements, offer training opportunities, and incorporate VR and AR to enrich the online learning experience (Berkovich, 2016). We can promote the use of tools like smart boards and educational apps in classrooms; this involves training teachers on how to effectively utilize these technologies and integrating them into the curriculum. Additionally, data-informed decision-making involves using student performance data to identify areas for improvement and customize teaching approaches accordingly. For instance, we can implement a student information system (SIS) to monitor progress and guide instructional strategies. In online education settings, integrating technology extends beyond traditional tools to include advanced

ISSN : *2537-0421* eISSN : *2537-043X*

learning management systems (LMS) such as Canvas or Blackboard for managing virtual courses. Regarding data-driven decision-making, it requires analyzing data on student engagement and results to enhance course content and delivery systems. An example of this would be utilizing analytics to identify students in need of additional support or even identify teachers.

Schools can successfully use VR and AR technologies by following these leadership strategies and combining parts of transformational leadership, transactional leadership, distributed leadership, and digital leadership models. This will encourage creativity and teamwork in both traditional classrooms and online learning settings.

Case study 1:

Exploring the impact of transformational leadership in a school environment at Meadowbrook High School in Seattle, Washington, a key study by Algerafi (2023) delves into the realm of augmented reality (AR) and virtual reality (VR) within education. According to (AlGerafi et al,2023) this study shows the benefits of technologies that work well with Meadowbrook High School's setting and its use of transformational leadership to include AR/VR tools in the learning process.

Algerafis's investigation sheds light on how various leadership styles, including transformational leadership, can unleash the possibilities of AR and VR. By scrutinizing how leadership tactics drive the integration of AR/VR technologies, educators at Meadowbrook High School can glean insights on fostering innovation, motivation, and engagement among both teachers and students through these tools. This case study explores how a transformational leader at Meadowbrook High School can develop and communicate a vision for integrating AR/VR to motivate educators and students, cultivate a culture of innovation and creativity, increase motivation and morale,

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promote teaching methods, and drive ongoing progress through the use of AR/VR technologies. Algerafi's evaluation shows that the case study shows how transformational leadership helped bring AR/VR to Meadowbrook High School, which improved both teachers' and students' learning and academic success (Algerafi et al., 2023).

Case Study 2:

Douglas Boynton did research in the United States. The focus on the region is important because it shows the educational, technological, and infrastructure landscape of the U.S. public school system. It also looks into how augmented reality (AR) and virtual reality (VR) technologies are integrated into K–12 education, with a focus on how they are used in schools and the best ways to put them into action. It underscores the significance of digital learning infrastructure, which was reported to be accessible in 96% of public schools by 2018, paving the way for the adoption of these advanced technologies in education. By gathering qualitative feedback from teachers and administrators, the study finds nine essential themes crucial for successfully integrating AR and VR technologies. These themes encompass aspects like collaborative leadership, continuous professional development, and a strategic framework that prioritizes adaptive leadership and resource management. The main goal is to encourage a culture of constant learning and new ideas by giving teachers, policymakers, and administrators advice on how to use AR/VR technologies to improve student learning and prepare them for a future dominated by technological advances.

Some of the results showcase how teachers and school administrators are using creative methods to promote immersive learning, serving as a source of motivation for others in the field of education. It underscores the crucial role that administrators play in supporting immersive learning by recognizing the

ISSN : *2537-0421* eISSN : *2537-043X*

essential resources, policies, and organizational frameworks required. The insights gained from this study can influence future educational strategies and approaches, particularly in improving support for immersive learning in K-12 environments. The study emphasizes the importance of teamwork, strategic planning, and ethical considerations when integrating AR and VR technologies into educational settings. The goal is to enhance student experiences and outcomes in today's digital era (Boynton, 2024).

Challenges and Opportunities:

Despite the heavy price for having these technologies and the requirement to prepare classrooms and provide training for teachers, incorporating augmented reality (AR) and virtual reality (VR) into educational settings has the potential to greatly increase student involvement. These tools, which students tend to enjoy using, help in simplifying complex ideas, in that way enhancing comprehension. As a result, academic achievement is expected to improve because of the enhanced clarity and interactive learning experiences, ultimately making attending school more pleasing for students.

Evaluation of AR and VR in education shows how important these technologies are for creating interesting and meaningful learning experiences that help students become tech-savvy and knowledge-driven (AlGerafi, 2023). Using both augmented reality (AR) and virtual reality (VR) together in the classroom could completely change the way we teach. By offering immersive, interactive, and captivating experiences, it has the potential to boost student motivation, improve learning results, and change students' attitudes toward education for the better. (Tan, 2024). But these technologies in education bring various challenges and advantages. Issues such as managing resources, resistance to change, technological setup, teacher training, and ensuring equal access can impede the integration of

ISSN : ***2537-0421*** **eISSN :** ***2537-043X***

these technologies in different educational settings. However, by utilizing grants and forming partnerships, schools can tackle resource management obstacles effectively (Rudnik, 2023). Inspirational leadership plays a crucial role in encouraging educators to embrace new technologies by demonstrating their benefits through workshops and pilot initiatives to overcome resistance to change (Rudnik, 2023). Prioritizing investments in technological infrastructure with the help of digital leadership and seeking collaborations to enhance connectivity is essential, particularly in less privileged areas.

Distributed leadership promotes comprehensive teacher training programs that encourage collaboration and shared responsibility among educators. Strategies like sharing resources and offering after-school activities can enhance equity and accessibility to VR and AR technologies. On the flip side, opportunities like increased engagement and learning outcomes, professional development opportunities for teachers, inclusivity in education practices, real-world applications of technology in learning environments, and opportunities for research and development could bring significant advantages to educational settings. Transformational leadership, along with digital leadership, is crucial for developing innovative curriculum content that integrates VR and AR for enhancing learning outcomes (Rudnik, 2023). These technologies support inclusive education by offering personalized learning experiences that cater to various needs, with leadership ensuring that initiatives are fair and accessible. Moreover, VR and AR help prepare students for careers driven by technology by providing practical skills through hands-on experience. Digital leaders collaborate with industry experts to create relevant content, also presenting opportunities for research and development, adding to the knowledge on how these technologies enhance learning (Rudnik, 2023).

ISSN : *2537-0421* eISSN : *2537-043X*

In summary, despite facing challenges, applying leadership principles like transformational, digital, and distributed leadership can assist educational institutions in overcoming obstacles and leveraging the advantages offered by VR and AR technologies. By using these leadership styles to deal with problems like allocating resources, encouraging new ideas, and making learning more enjoyable, we can make it easier for VR and AR to be used in many different educational settings.

4. Organizational and Governance Structures:

Analyzing organizational and governance models: The organizational and governance structures in educational institutions have strengths and weaknesses that affect their effectiveness. Traditional schools often use hierarchical structures, which make it clear who does what and make it easier to manage things, but they can struggle with making decisions quickly and adapting to change (Katz, 2024). On the other hand, institutions with network structures, where teams from different areas work together, tend to be more innovative and collaborative, allowing for flexibility in how they operate. However, coordinating these teams can be tricky, and sometimes there are conflicts over roles (Wu et al., 2019). Large educational institutions often have matrix structures that blend control with flexibility, making it easier to manage resources efficiently. However, overlapping responsibilities can also complicate these structures administratively. (Omarov et al., 2023). Educational institutions can benefit from adopting network or matrix structures to foster innovation and collaboration.

By implementing decentralized or collaborative governance models, they can enhance flexibility and engagement in diverse educational settings. These adaptable and cooperative approaches have the potential to boost student involvement with educational materials, leading to improved comprehension and

ISSN : ***2537-0421*** **eISSN :** ***2537-043X***

academic achievement. Furthermore, the integration of advanced technologies like AR/VR into these models can serve as a catalyst for student motivation and facilitate more effective learning experiences. (Damirova, 2023) A well-rounded strategy that includes both control and flexibility, along with the smooth integration of cutting-edge technology, could improve educational outcomes and make institutional operations run more smoothly.

Governance models also play a big role. Centralized models like those where the Ministry of Education makes decisions ensure that choices are made consistently and promptly while maintaining control, but this setup might not encourage much innovation or adaptability (Ho, 2019). In contrast, decentralized models like those found in private universities promote innovation and flexibility but can result in decisions varying widely and more administrative complexity. Collaborative models like community schools involving parents, teachers, and administrators create a strong sense of community but can face challenges in coordinating efforts and taking longer to make decisions. (Khabiyev, 2024)Discussion of model application in general:- In traditional and e-learning settings, the organizational and governance setups have their own unique features and obstacles. Hierarchical structure typically follows a top-down approach with distinct chains of command, where school principals supervise teachers and administrative staff. While this system offers clarity in roles and responsibilities, it can be inflexible and resistant to change, hindering creativity and teamwork (Erten, 2023). On the other hand, e-learning relies on virtual hierarchies that outline specific roles for online educators and support personnel, ensuring accountability and clear duties in a digital realm. Nevertheless, this setup may face challenges in adapting to rapid technological advancements due to its structured nature. (Narang et al., 2023)In traditional education, a

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flat structure promotes collaboration by minimizing management levels and encouraging teacher-student involvement in decision-making processes. This fosters better communication and innovation but may result in role ambiguity and less defined accountability. In the realm of online education, digital learning platforms enable direct communication and teamwork between teachers and students, fostering open dialogue and quick adaptation to new teaching tools and techniques. While this approach can enhance collaboration, it may also lead to confusion regarding roles and a lack of clear leadership (Thakur, 2023). In traditional educational settings, the matrix structure combines functional aspects with project-based tasks, allowing educators to engage in special projects alongside their regular responsibilities. This setup offers flexibility and dynamism but could potentially create conflicts related to authority and resource distribution. In education, virtual teams collaborate on specific projects under the guidance of multiple leaders, promoting innovation across diverse fields. However, juggling dual reporting lines and managing conflicting priorities can pose significant challenges. The evolution of educational governance in higher education reflects a shift toward more adaptable and integrated frameworks influenced by technological progress and societal shifts (Wagenaar, 2023).

Discussion of a model application for AR and VR:

In educational settings, the hierarchical model is widely used as an organizational and governance structure for implementing virtual reality (VR) and augmented reality (AR) technologies. In this setup, administrators or principals play a key role in starting VR and AR projects, while technology coordinators or instructional designers oversee their execution. Teachers and educators then follow the guidance provided by the higher-ups (Berrett et al., 2015). This model brings advantages like clear and consistent use of VR and AR technologies across

ISSN : ***2537-0421*** **eISSN :** ***2537-043X***

the institution, ensuring a standardized approach. Moreover, centralized decision-making can facilitate efficient approval and funding processes for such projects. However, there are drawbacks to this approach as well. The top-down method may stifle grassroots innovation and creativity in education, potentially limiting the exploration of new concepts. Additionally, staff resistance may surface when teachers feel left out of decision-making processes, leading to decreased involvement and dedication to the initiative (Berrett et al., 2015).Studies have found that introducing technology into schools using a top-down approach, like the collaborative model, can lead to resistance from teachers who feel that they are not involved in the decision-making process (Berrett et al., 2015). This resistance may be influenced by issues such as excessive politicization in school management, lack of clarity in policy implementation, and the high workload faced by school principals (Khanal & Regmi, 2023). Despite these obstacles, research has shown that virtual reality (VR) and augmented reality (AR) technologies can enhance student learning outcomes and enjoyment across different subjects and settings. Several studies have shown that VR and AR can help students remember things, learn new skills, and improve their hand-eye coordination in school settings (Huang et al., 2019; Masood, 2024). However, schools can get the most out of these technologies to make teaching and learning better by balancing guidance from above with input from teachers.

The organizational structure known as the flat model, which features a decentralized setup with few hierarchical levels, highlights the importance of collaborative decision-making and equality. When it comes to integrating Virtual Reality (VR) and Augmented Reality (AR) technologies in education, the flat model involves teachers and staff working together to determine how these technologies are adopted and utilized. All members

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have an equal voice in shaping the use of VR and AR in the classroom, encouraging innovation and adaptability in their application. One notable benefit of the flat model is its capacity to nurture innovation and creativity by promoting experimentation and varied applications of VR and AR technologies. This approach also boosts staff engagement levels, as they feel more motivated and engaged when they are involved in decision-making processes. However, challenges exist within the flat model. The absence of clear authority in a decentralized structure can sometimes lead to confusion or inconsistent implementation of VR and AR technologies. Moreover, decision-making processes based on consensus in flat organizations may result in slower decisions compared to more centralized approaches. A lot of research has been done on the benefits of flat organizational structures for making teams more adaptable and flexible in fast-changing environments (Bjørnstad, 2011; Qi et al., 2014). This research has been done in a variety of settings, such as military units and supply chain management. Researchers have found that flat structures can help people work together, be flexible, and make organizations more resilient. This can improve performance and make them more open to change (Palepu et al., 2020). By leveraging the strengths of the flat model, educational institutions can tap into their staff's collective expertise and creativity to maximize the benefits of VR and AR for enriching teaching and learning experiences.

The matrix organizational model represents a blended approach that integrates elements from both hierarchical and flat structures. In the context of integrating Virtual Reality (VR) and Augmented Reality (AR) technologies into education settings, the matrix model involves employees reporting to multiple managers—typically both functional supervisors and project leaders. In traditional educational settings, teachers often report to subject area coordinators and a VR/AR project manager for

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the seamless integration of these technologies. Similarly, in online education, educators may collaborate with course managers and VR/AR project leaders to create cohesive and interdisciplinary VR and AR content. The matrix model excels in optimizing resources by effectively leveraging specialized expertise and diverse resources within an organization. It also fosters cross-functional collaboration, allowing for the development of innovative solutions through the utilization of different perspectives and skill sets. Despite its advantages, the matrix model presents challenges such as potential confusion and conflicts arising from multiple reporting lines. Managing competing priorities among various managers requires strong leadership skills to ensure effective coordination and alignment of efforts. (Mislan et al., 2021) Research has shown that matrix organizational structures, especially in healthcare and complex systems, can work better with streamlined leadership structures and executives who work in different places but report to a central authority (Mislan et al., 2021). Furthermore, the distinct communication hurdles brought about by the matrix structure call for a subtle approach to interpersonal relations and information dissemination (Gillard, 2005).To sum up, the matrix organizational model offers a complex way to use VR and AR technologies in education by leveraging different types of expertise and encouraging teamwork between various functional areas. Because the matrix model is complicated and has problems with coordination, educational institutions can use the good things about this hybrid structure to encourage new ideas and make it easier to use VR and AR technologies in teaching and learning.

Evaluate the models:

When we look at how different organizational and governance structures impact administration and leadership, we find that each model has its strengths and weaknesses. The

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hierarchical model, with its authority and defined responsibilities, improves decision-making efficiency and consistency throughout the organization, helping maintain order and achieve goals (Erten, 2023). However, it may limit flexibility. Slow down responses to change, possibly dampening lower-level initiative due to its down decision-making style. On the one hand, the flat model promotes collaboration and faster decision-making at levels, encouraging innovation and employee involvement. Yet it can create role ambiguities that make coordination challenging in organizations. (Thakur, 2023).The matrix model efficiently powers expertise across projects to improve resource use and flexibility. This model has the potential to cause confusion regarding reporting lines and authority relationships among managers from different areas. Lastly, the network model is adaptable and flexible, ideal for environments facilitating information flow and collaboration, which are crucial for communication and leadership. Still, it may struggle with maintaining practices necessitating communication tools for effective management. (Wagenaar, 2023)Quality and Accountability:To make sure that educational institutions maintain standards and responsibility, it's necessary to have a quality assurance framework. This framework should include setting measurable standards for results, teacher effectiveness, and student involvement. It should also involve assessments through evaluations of all aspects of the institution, including academic programs and administrative services. Using the Rasch model to analyze data on quality assurance evaluations can greatly benefit educational institutions in enhancing their processes (Mursidi & Soeharto 2017).The implementation of quality assurance procedures within settings is vital for maintaining quality education and organizational integrity ("undefined" 2019). Setting standards or benchmarks for evaluating aspects of an institution like its goals, leadership,

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staff, teaching methods, and internal quality control can provide a framework for assessing quality (Čizmić & Crnkić 2013). Quality assurance in education involves management and evaluation practices to track progress toward goals and ensure high-quality outcomes and enhancements (Okereke, 2014). Effective leadership plays a role in ensuring the quality of education institutions (Setiawati, 2016).Also To improve the quality within schools, it is important to implement methods for measuring performance. Two useful approaches for this purpose are the Balanced Scorecard Approach and the utilization of Key Performance Indicators (KPIs) and benchmarks. To get a full picture of performance, the Balanced Scorecard Approach looks at a number of factors, such as accomplishments, cost-effectiveness, customer satisfaction, and internal processes (Nazari Shirkouhi et al., 2020). This method makes sure that different parts of the institution are looked at when judging how efficient and effective it is, which is in line with the goal of getting the results and performance that were expected.

Creating Key Performance Indicators (KPIs) that are in line with objectives and industry standards is another beneficial approach for ongoing evaluation (Idris, 2016). By establishing KPIs and benchmarks, educational establishments can monitor their advancement, pinpoint areas needing enhancement, and ensure compliance with industry norms and superior practices. Both the balanced scorecard approach and utilizing KPIs, along with benchmarks, serve as models and strategies for maintaining quality and responsibility in institutions by offering comprehensive performance measurement mechanisms that encompass various crucial aspects of institutional operation. To create accountability systems in institutions, it's important to have two main strategies in place. First, all departments should regularly report on their progress toward the institution's goals. This helps to ensure transparency and accountability by keeping

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track of performance indicators, identifying areas for improvement, and aligning efforts with the institutional objectives. Secondly, gathering feedback from stakeholders such as students, parents, and staff is crucial. This feedback provides insights that can guide leadership in making decisions and improving areas that need attention. By collecting feedback, educational institutions can address concerns, increase stakeholder satisfaction, and show responsiveness to community needs. Incorporating reporting practices and implementing an approach to stakeholder feedback are key elements of accountability systems in educational settings. These strategies contribute to better performance outcomes, transparency in operations, and increased engagement with stakeholders.

The role of technology:

The importance of technology in improving the quality and accountability of institutions cannot be overstated. Utilizing resources like Learning Management Systems (LMS) and Data Analytics Platforms has the potential to transform how student progress is tracked in course content. Teaching effectiveness evaluated (Casanova & Moreira 2017). These tools offer insights into student performance, resource allocation, and operational efficiency, empowering decision-making processes and enhancing outcomes. Effective communication tools such as collaboration platforms and feedback systems are vital for facilitating interaction between departments and gathering feedback from stakeholders (Casanova & Moreira 2017). By making use of platforms like Microsoft Teams or Slack for collaboration and digital surveys for feedback collection, institutions can promote communication, alignment with objectives, and efficient feedback mechanisms, ultimately strengthening accountability and transparency. According to research (Masoumi & Lindström 2011), automated reporting systems and e-governance tools help make performance reports

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automatically. This ensures adherence to rules, minimizes errors, and streamlines administrative tasks. These tools enable institutions to effectively monitor compliance with standards in order to uphold accountability and regulatory compliance. Ultimately, incorporating technology via tools for tracking performance, improving communication, and automating reporting and compliance monitoring significantly boosts quality and accountability in settings. This in turn results in achievements and operational effectiveness.

Conclusion:

In this study, we carefully examined leadership models, like transformational leadership, transactional leadership, distributed leadership, and digital leadership, and how they influence the integration of virtual reality (VR) and augmented reality (AR) technologies in schools. The results point out the benefits and drawbacks of each model. For school leaders and administrators, our study emphasizes the importance of choosing and combining leadership styles to create an environment that supports innovation and effective teaching methods. Introducing VR and AR technologies requires a strategy that includes inspiration, clear goal setting, teamwork, and technology use. Leaders need to be flexible by utilizing the strengths of models to meet the needs of their institutions, enhance teacher-student interaction, and improve educational outcomes .Future studies should concentrate on examining how blended leadership styles affect the long-term sustainability of VR and AR technologies in education. It is essential to explore how new technologies such as artificial intelligence (AI) can impact leadership practices in education and improve decision-making processes. Furthermore, research should evaluate the effectiveness of leadership training programs designed to prepare leaders for navigating educational landscapes with technological advancements and changing teaching methods.

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Inclusive Change Management Plan for Applying Virtual and Augmented Reality Technologies in Education	
Current state : There is a reliance on traditional methods by teachers, Due to their commitment to presenting the material as it is in the textbooks which has led to decreased student engagement in classes and increased absenteeism.	
Gup : decreased student engagement	
Objective : To enhance student motivation and learning outcomes through the implementation of Virtual Reality (VR) and Augmented Reality (AR) technologies.	
Scope : Teachers, students, teaching assistants, and administrative staff.	
Goles	1- Increase student engagement and motivation. 2- Improve comprehension and retention of complex subjects. 3- Develop technical skills.
Phase 1: Planning	□ Needs Assessment: Conduct surveys to identify needs and readiness. □ Vision and Goals: Develop a clear vision and set measurable goals.
For 2 weeks	
Phase 2: Training	□ Professional Development: Offer training sessions for teachers on VR/AR. □ Resource Allocation: Ensure all necessary resources are available.
For 2 monthes	
Phase 3: Pilot Programs	□ Small Scale Trials: Implement VR/AR in a few classes to gather feedback. □ Evaluation: Assess the effectiveness and make adjustments
For 3 monthes	
Phase 4: Full	□ School-Wide Rollout: Expand VR/AR use

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Implementation	to all relevant classes. □ Ongoing Support: Provide continuous support and professional development.
For term 2 and term 3	
Evaluation and Feedback	□ Performance Metrics: Use metrics like student engagement, academic performance, and teacher feedback to evaluate success. □ Continuous Improvement: Regularly review and refine the implementation based on feedback and performance data.
Monthly report	
Challenges and Solutions	□ Cost: Seek grants and partnerships to fund the initiative. □ Resistance to Change: Use transformational leadership to inspire and motivate stakeholders. □ Technical Issues: Ensure robust technical support and infrastructure.
Engage Stakeholders: Internal Communication, Feedback Mechanism, Continuous Improvement.	
Budget	To set up a special class room : 250000 For the necessary tools : 80000 for training the staff : 30000 Recognition and rewards : 10000
Performance indicators	satisfaction surveys for teachers, students, and parents. student attendance records student academic assessment records the number of resolved issues teacher professional performance evaluations.

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ISSN : ***2537-0421*** **eISSN :** ***2537-043X***