# A Qualitative Focus on School Leaders' Perceptions of Roles, Responsibilities, and Expectations in Enhancing Equitable Access to Educational Technology in the Era of Gen-AI

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**ABSTRACT**

The purpose of this study is to provide a phenomenological perspective on school leaders' perceptions of their roles, responsibilities, and expectations in increasing equal access to educational technology in the age of artificial intelligence (AI). In this direction, we collected qualitative data regarding how educational leaders consider their roles, responsibilities, and expectations in increasing equal access to educational technology in the AI era. We collected data through in-depth interviews with a phenomenological approach. The participants consisted of school leaders (school principals [$n = 24$] and vice principals [$n = 18$]) working at various educational levels. The qualitative data obtained were analyzed by content analysis. Following the data collection process, themes were formed with main words or sentences. The data obtained through interviews were analyzed in a three-stage process of sorting, coding, and categorization. The findings reveal that school leaders view the integration of advanced AI technologies in schools as crucial for enhancing technological infrastructure and promoting educational equity. There is evidence for the need to address economic disparities and advocate for the proper and effective use of AI in education. Leaders also highlight the necessity of consistent, long-term policies governed by the Ministry of National Education to successfully integrate AI technologies into the educational system. Furthermore, these technologies are seen as having a positive impact on leadership approaches and strategies, especially in strategic planning and adapting to new innovations. Regarding the future of educational technology, school leaders predict that AI will play a key role in achieving equal educational opportunities and anticipate that technological advancements will make positive contributions to the field of education. This study is expected to make a significant contribution to the educational technology and leadership literature, especially on the use and effects of generative artificial intelligence technologies in school environments.

**Keywords:** Generative AI, equitable access to educational technology, school leadership, social justice, ChatGPT.

## Yapay Zekâ Çağında Eğitim Teknolojilerine Eşit Erişimin Artırılmasında Okul Liderlerinin Rol, Sorumluluk ve Beklentilerine İlişkin Algılarına Nitel Bir Bakış

**ÖZ**

Bu çalışmanın amacı, yapay zekâ (YZ) çağında eğitim teknolojilerine eşit erişimin artırılmasında okul liderlerinin rol, sorumluluk ve beklentilerine ilişkin algılarına yönelik fenomenolojik bir inceleme yapmaktır. Bu doğrultuda, eğitim liderlerinin YZ çağında eğitim teknolojisine eşit erişimi artırmada rollerini, sorumluluklarını ve beklentilerini nasıl gördüklerine ilişkin fenomenolojik bir yaklaşımla derinlemesine görüşmeler yoluyla nitel veriler elde edilmiştir. Katılımcılar, çeşitli eğitim kademelerinde çalışan okul liderlerinden (okul müdürleri [$n = 24$] ve müdür yardımcıları [$n = 18$]) oluşmuştur. Elde edilen nitel veriler içerik analizi ile analiz edilmiştir. Veri toplama sürecinin ardından betimsel süreçler sonucunda kelimeler veya cümleler ile temalar oluşturulmuştur. Görüşmeler yoluyla elde edilen nitel veriler sınıflandırma, kodlama ve kategorilere ayırma şeklinde üç aşamalı bir süreçle analiz edilmiştir. Elde edilen bulgulara göre, okul liderleri gelişmiş YZ teknolojilerinin okullara entegrasyonunu, teknolojik altyapıyı geliştirmek ve eğitimde eşitliği teşvik etmek için çok önemli görmektedirler. Ayrıca ekonomik eşitsizlikleri ele alma ve eğitimde YZ'nin doğru

ve etkili kullanımına yönelik bulgular elde edilmiştir. Liderler ayrıca, YZ teknolojilerini eğitim sistemine başarılı bir şekilde entegre etmek için Millî Eğitim Bakanlığı (MEB) tarafından yönetilen tutarlı ve uzun vadeli politikaların gerekliliğini vurgulamaktadır. Ayrıca, bu teknolojilerin, özellikle stratejik planlama ve yeni yeniliklere uyum sağlama konusunda liderlik yaklaşımları ve stratejileri üzerinde olumlu etkisi olduğuna dair bulgular elde edilmiştir. Eğitim teknolojilerinin geleceği ile ilgili olarak, okul liderleri, YZ'nin eşit eğitim fırsatlarının elde edilmesinde kilit bir rol oynayacaklarını öngörmekte ve teknolojik gelişmelerin eğitim alanına olumlu katkılar yapacağını tahmin etmektedirler. Bu çalışmanın, özellikle üretken YZ teknolojilerinin okul ortamlarında kullanımı ve etkileri konusunda eğitim teknolojisi ve liderlik literatürüne önemli bir katkı sağlaması beklenmektedir.

**Anahtar Kelimeler:** Üretken yapay zekâ, eğitim teknolojisine eşit erişim, okul liderliği, sosyal adalet, ChatGPT.

# Introduction

In the ever-evolving field of education, the importance of the roles and expectations placed on school leaders is crucial, especially in areas such as student learning (Leithwood, Sun, and Schumacker, 2020), teacher empowerment (Pasternak et al., 2023), and the overall effectiveness and improvement of schools (Wiyono et al., 2023). In the rapidly evolving landscape of educational technology, particularly with the advent of GenAI, the role of school leaders has become increasingly critical in ensuring equitable access to these resources. As highlighted by Asongu Orim, and Nting (2019), the integration of information and communication technology (ICT) in education is essential for fostering inclusive educational practices, particularly in regions facing significant income inequality challenges.

Recent technological developments have paved the way for the integration of generative artificial intelligence (GenAI) tools such as ChatGPT in teaching and learning processes (Chen et al., 2022; Panigrahi, 2020). When it comes to educational settings, school leaders are claimed to be responsible for the effective integration of GenAI in schools (Afshari et al., 2009; Tubin and Edri, 2004). Regarding this, school leaders stand at a key point in providing students with innovative learning experiences with even distributions as well as in allowing teachers to adopt the latest instructional technologies (Leithwood, 2021). Laouni (2023) notes the changing nature of this current role of school leaders. Likewise, Yu and Durrington (2006) argue that school leaders play a key role in improving equal access to GenAI-learning opportunities. This key role of school leaders is linked to social justice leadership (Kondakci, Zayim Kurtay, and Kaya-Kasikci, 2021). This approach seeks to address and overcome deep-rooted inequities in education systems, driven by economic disparities both within nations and globally (Blanden, Doepke, and Stuhler, 2023; del Tufo, Randle, and Ryan, 2023).

The development of GenAI has resulted in substantial advances, particularly in education (Bahroun et al., 2023). The use of AI into educational settings opens new opportunities for personalized learning, efficiency, and increased access (Baidoo-Anu and Ansah, 2023). However, it also poses obstacles, notably in ensuring that the technological gains are distributed equally (Alasadi and Baiz, 2023). The movement to incorporate AI, particularly GenAI, into education is a growing focus among policymakers and educators (Ratten and Jones, 2023). This development, however, is overshadowed by existing socioeconomic divisions, which risk widening the gap in access to AI-driven educational technology (Kayyali, 2024; Keskin and Vermeulen, 2024), as well as the digital divide, which remains an ethical problem in AI-based education (Ayeni et al., 2024). In this context, school leaders find themselves with an expanded role (Fullan et al., 2023; Gocen and Aydemir, 2021).

Educational technology is now a fundamental component of contemporary educational frameworks. The swift progress in technological environments has revolutionized education through the adoption of digital resources, tools, and platforms. This field covers a diverse array of technologies such as interactive whiteboards, online learning environments, educational software, virtual reality, and mobile technology (Jiang, 2023). Educators, policymakers, and technologists together express a wide range of viewpoints, underscoring the issues, obstacles, and tactics crucial for adeptly managing the ethical complexities associated with digital education (Balbaa et al., 2023).

The concept of educational opportunity equality represents a complicated phenomenon that has both personal and social implications (Gamoran and Long, 2007). Ergün and Arık (2020) emphasize the even distribution of success probability as a key indicator of educational equality. From an ethical and sociological perspective, equality is defined as the uniformity in position and intrinsic worth of all individuals (Mercik, 2015). The provision and accessibility of necessary opportunities that allow individuals to succeed in their life efforts is at the heart of opportunity equality (Ashford, 2015). To achieve equal educational opportunities, it is necessary to improve educational settings, extend compulsory education, improve physical infrastructure, and strengthen technological foundations (Işık and Bahat, 2021). Within the scope of the educational system, it is fundamental that every individual can participate in excellent education and acquire fundamental competencies (Sahlberg and Cobbold, 2021). Çevik and Toplu (2023) highlights the significance of addressing digital inequality in hybrid educational paradigms. Their research sheds light on the critical role of school leadership in bridging the digital divide by ensuring that the integration of educational technology goes beyond mere access, fostering meaningful engagement and learning outcomes for all students. Furthermore, Crompton and Sykora (2021) contribute to this discussion by emphasizing the importance of continual professional development for educators and calling for a systematic approach to technology integration that is aligned with pedagogical aims. This viewpoint is supported by Degar (2023), who investigated the influence of technological pedagogical content knowledge (TPACK) focused professional development on teachers' self-efficacy and technology integration practices, emphasizing the critical role of school leaders in supporting these professional learning opportunities.

Despite the existence of policy documents aimed at guiding the integration of AI in education (e.g., Groth and Southgate, 2024; Hasa, 2023; Nemorin et al., 2023), there is a distinct lack of qualitative research that investigates how school leaders perceive their responsibilities in promoting equitable access to educational technology. Previous research has focused on school leaders' technology leadership prior to GenAI developments (Daresh, 2006; Flanagan and Jacobsen, 2003; Garbin-Pranicevic, Spremic, and Jakovic, 2019; Leong, Kannan, and Maulo, 2016). However, there is a need for research that specifically analyzes school leaders' in-depth analysis of enhancing equitable access to educational technology (Bright and Calvert, 2023; Hendricks et al., 2003). Our study focuses on the integration of AI technologies in education, which is a relatively new domain when compared to the larger focus on ICT integration described in earlier literature (Afshari et al., 2008; Esplin et al., 2018). In this regard, this present study aims to fill that gap by examining school leaders' perceptions of their roles in ensuring equitable access to educational technology, with a focus on GenAI. The context of this research is anchored in the need for a paradigm shift in educational leadership, moving towards an inclusive and technologically adept environment. The importance of this research lies in its potential to contribute to the current and future educational practices and policies through its findings. The main purpose of this research is to explore and understand school leaders' perceptions of their roles, responsibilities, and expectations in promoting equitable access to educational technology in the context of GenAI. Based on this purpose, the research questions below guided this study:

RQ1. How do school leaders define their responsibilities for integrating productive AI technologies into their schools?

RQ2. What challenges and opportunities do school leaders identify in providing equitable access to productive AI educational technologies?

RQ3. How does the emergence of productive AI technologies affect leadership styles and strategies in schools?

RQ4. How do school leaders perceive existing policies and support systems for integrating productive AI technologies into education?

RQ5. What are school leaders' perspectives on the future of educational technology and its implications for equity and access?

## Method

### Research Model and Design

Researchers adopt the qualitative research model to focus on a specific problem, collect data in its natural environment, and reveal specific codes, categories, and themes by analyzing with inductive method (Creswell, 2012). Maxwell (1996) states that the advantage of qualitative research is mainly due to its inductive understanding, its focus on specific situations and individuals, and its emphasis on words rather than numbers. In this context, this research was designed as phenomenological research to be able to reveal the phenomenon addressed. This research qualifies as phenomenological because it aims to explore and understand a phenomenon deeply through the perceptions of individuals involved, focusing on their perspectives in natural settings. It utilizes qualitative methods to inductively analyze data, identifying specific codes, categories, and themes that emerge from these experiences, aligning with the phenomenological emphasis on the subjective interpretation of life's events.

### The Role of the Researchers

In this phenomenological study, the roles of the researchers are pivotal in shaping the investigation's direction, methodological integrity, and interpretative depth. Both researchers bring complementary expertise to the study, which is instrumental in designing the research model, collecting, and analyzing the data, as well as in interpreting the findings within the contexts of educational leadership and instructional technology. The first author's role was primarily focused on framing the study within the theoretical and practical fields of educational leadership. This included developing the interview protocol, ensuring that the questions were aligned with the phenomenological approach to capture the perceptions of school leaders regarding the integration of Gen-AI technologies in education. The first author also played a critical role in interpreting the data from an educational leadership perspective, helping to identify how these technologies influence leadership strategies, decision-making processes, and policy implications. The second author contributed expertise in computer and instructional technology, particularly in understanding the potential and limitations of Gen-AI technologies within educational settings. This involved advising on the technological aspects of the study, including the selection of productive AI technologies relevant to the educational sector, and providing insights into how these technologies can be integrated into educational practices effectively. The second author also contributed to analyzing the data with a focus on technological adaptability, infrastructure requirements, and the pedagogical implications of using AI in education. Both researchers collaborated closely in applying the phenomenological perspective, ensuring that the study accurately reflected the participants' perceptions. This collaboration involved jointly developing a data collection strategy that respected the essence of phenomenological research—gathering deep, reflective insights from participants through in-depth interviews. The researchers maintained a stance of neutrality and openness throughout the interviews, allowing participants to express their views without leading or biasing their responses. The researchers also shared the responsibility for data analysis, employing a systematic approach to content analysis that involved sorting, coding, and categorizing the data. This process was informed by their respective areas of expertise, allowing for a rich, multi-faceted interpretation of the findings.

### Participants

We recruited a total of 42 school administrators (principals and vice principals) who are educational leaders in schools affiliated to the Turkish Ministry of National Education (MoNE). The participation was on voluntary basis by maximum diversity sampling method. The demographic information of the participants is shown in Table 1 in detail.

Table 1
*Demographic Information of Participants*

| Participant | | Gender | Age | Experience (year) | Experience in school administration (year) | Education Status |
|---|---|---|---|---|---|---|
| P1 | School Principal | Male | 47 | 23 | 10 | Undergraduate |
| P2 | Vice-Principal | Male | 29 | 5 | 1 | Undergraduate |
| P3 | School Principal | Male | 36 | 14 | 10 | Undergraduate |
| P4 | School Principal | Male | 53 | 30 | 20 | Undergraduate |
| P5 | Vice-Principal | Male | 35 | 10 | 3 | Master's Degree |
| P6 | School Principal | Male | 37 | 13 | 8 | Undergraduate |
| P7 | Vice-Principal | Female | 34 | 11 | 4 | Master's Degree |
| P8 | Vice-Principal | Female | 33 | 5 | 2 | Undergraduate |
| P9 | Vice-Principal | Female | 34 | 11 | 1 | Undergraduate |
| P10 | Vice-Principal | Female | 40 | 12 | 2 | Undergraduate |
| P11 | School Principal | Male | 55 | 34 | 22 | Undergraduate |
| P12 | Vice-Principal | Female | 52 | 29 | 1 | Undergraduate |
| P13 | Vice-Principal | Male | 56 | 28 | 23 | Master's Degree |
| P14 | School Principal | Male | 33 | 9 | 1 | Master's Degree |
| P15 | School Principal | Male | 50 | 23 | 7 | Undergraduate |
| P16 | Vice-Principal | Female | 34 | 13 | 5 | Undergraduate |
| P17 | Vice-Principal | Male | 42 | 18 | 10 | Undergraduate |
| P18 | School Principal | Male | 47 | 23 | 9 | Undergraduate |
| P19 | School Principal | Male | 53 | 30 | 25 | Master's Degree |
| P20 | Vice-Principal | Male | 40 | 17 | 8 | Master's Degree |
| P21 | Vice-Principal | Male | 44 | 22 | 3 | Undergraduate |
| P22 | Vice-Principal | Male | 39 | 16 | 3 | Undergraduate |
| P23 | School Principal | Male | 45 | 25 | 15 | Undergraduate |
| P24 | Vice-Principal | Male | 39 | 16 | 12 | Undergraduate |
| P25 | Vice-Principal | Male | 43 | 10 | 9 | Undergraduate |
| P26 | School Principal | Male | 39 | 16 | 11 | Master's Degree |
| P27 | School Principal | Male | 39 | 18 | 8 | Undergraduate |
| P28 | Vice-Principal | Male | 40 | 16 | 4 | Master's Degree |
| P29 | Vice-Principal | Male | 38 | 14 | 7 | Master's Degree |
| P30 | Vice-Principal | Male | 44 | 20 | 6 | Undergraduate |
| P31 | School Principal | Male | 57 | 35 | 20 | Undergraduate |
| P32 | Vice-Principal | Male | 37 | 15 | 5 | Master's Degree |
| P33 | Vice-Principal | Male | 50 | 25 | 5 | Undergraduate |
| P34 | Vice-Principal | Female | 38 | 14 | 1 | Undergraduate |
| P35 | School Principal | Male | 42 | 18 | 18 | Master's Degree |
| P36 | School Principal | Male | 38 | 14 | 7 | Undergraduate |
| P37 | Vice-Principal | Female | 36 | 14 | 3 | Master's Degree |
| P38 | Vice-Principal | Male | 49 | 25 | 6 | Undergraduate |
| P39 | School Principal | Male | 35 | 12 | 8 | Undergraduate |
| P40 | School Principal | Male | 48 | 26 | 9 | Undergraduate |
| P41 | Vice-Principal | Male | 46 | 22 | 10 | Master's Degree |
| P42 | School Principal | Male | 54 | 30 | 18 | Undergraduate |

When the demographic data of the participants are analyzed in Table 1, it is seen that 57.1% of the participants are school principals ($n = 24$), 81% of them are male ($n = 34$) and 66.7% of them have bachelor's degree ($n = 28$), 13% of them have master's degree ($n = 13$) and 2.4% of them have doctorate degree ($n = 1$). The table shows a diverse age range from 29 to 57 years old. In terms of professional experience, their total professional seniority ranged from 5 to 35 years. In particular, the time spent in school management roles ranged from 1 year to 25 years. The educational backgrounds of the participants were predominantly undergraduate, although a significant number had a master's degree, and one had a doctorate degree. This diversity in age, gender, professional experience, tenure in administrative positions and educational levels provides a rich and varied perspective within the group and reflects the different paths and experiences that led them to their current positions in school administration. These data can provide insights into the professional and educational backgrounds of individuals in the role of school administrators and highlight aspects such as experience, gender distribution and educational attainment in this group.

**Data Collection Tools**

Data plays a crucial role as the foundational element of research, with qualitative research relying on methods such as observation (ranging from non-participant to participant), interviews, analysis of documents (covering both private and public documents), and the study of emotions (Yin, 2016). The process of gathering data in qualitative studies consists of a sequence of interconnected steps (Creswell, 2012). Among these methods, interviews stand out as a particularly vital tool for data collection in qualitative research (Punch, 2009). This research employs interviews to uncover participants' perceptions regarding the research topic. When aiming to collect spontaneous data in a study, researchers have the option of conducting either individual or group interviews (Seidman, 2006). Such data is typically gathered through verbal interactions or narrative forms. The value of these methods is enhanced by the participants' engagement in their social environments and their willingness to share their views on the study topic, making interviews a fundamental and highly effective method for collecting qualitative data (Ritchie et al., 2014). In this research, the data primarily originate from the participants' direct statements.

Phenomenological researchers obtain data from three main sources during the data collection process: (a) the researchers' own experiences on the research topic; (b) the verbal or written statements of the participants recruited into the study group through certain processes on the research topic; and (c) descriptions obtained from other research on the research topic or from the works of poets, painters, etc. (Polkinghorne, 1989). In this research, the methodology draws on one of the approaches outlined by Polkinghorne (1989), specifically utilizing "(b) verbal or written responses from participants." A semi-structured interview format, designed by the researchers and divided into two sections, was employed for data collection. According to Braun and Clarke (2012), semi-structured interviews afford the researcher the ability to maintain a balance of flexibility and structure in posing questions. Engaging in systematic, critical, and self-reflective questioning enables researchers to collect comprehensive data relevant to the study topic (Wellington, 2000). Prior to conducting the research, a thorough review of existing literature was undertaken. The semi-structured interview guide for school leaders was developed after reviewing pertinent literature, ensuring it was tailored for the data collection process. The initial part of the interview guide collects personal information from the participating school principals, while the second part contains questions designed to elicit their perspectives on the research theme. Table 2 displays sub-research questions with the semi-structured interview questions.

Table 2
*Distribution of Research Questions and Interview Questions*

| RQ1. How do school leaders define their responsibilities for integrating productive AI technologies into their schools? | 1. Can you explain your experiences and perspective on AI technologies in the context of education and training? <br> 2. How do you think AI will affect the roles and responsibilities of educational leaders and teachers? |
| --- | --- |
| RQ2. What challenges and opportunities do school leaders identify in providing equitable access to productive AI educational technologies? | 3. What are the main challenges you face in ensuring equal access to AI-enhanced educational technology for all students? <br> 4. How do you address digital skills gaps, computer ownership or not, and socio-economic inequalities among students when integrating AI technologies into your school? |
| RQ3. How does the emergence of productive AI technologies affect leadership styles and strategies in schools? | 5. In your opinion, what are the most critical roles and responsibilities of school leaders in implementing and managing AI technologies in schools? <br> 6. How does the emergence of AI technologies affect your leadership style or strategies in the educational environment? |
| RQ4. How do school leaders perceive existing policies and support systems for integrating productive AI technologies into education? | 7. What policies do you think are needed to support the effective and equitable integration of AI technologies into schools? <br> 8. How can educational policies be improved to better prepare schools for the challenges and opportunities of AI? |
| RQ5. What are school leaders' perspectives on the future of educational technology and its implications for equity and access? | 9. How do you ensure that the benefits of AI technologies in education are accessible to learners from different backgrounds and abilities? <br> 10. What are your views on ethical issues in the use of AI technologies in education? |

Internal validity in qualitative research concerns the researcher's ability to accurately measure the intended data using the chosen tools or methods (Yıldırım and Şimşek, 2005). To assure the internal validity of the interview form, it was reviewed by three experts in educational sciences before finalization. Additionally, pilot interviews with two participants were conducted to assess the clarity and comprehensibility of the questions. Nastasi and Schensul (2005) emphasize that in qualitative research,

the population/sample calculation is not made as in quantitative research, and the number of participants can be selected purposefully until the number of people required by the research is reached. In phenomenological research, interviews can be conducted by telephone, e-mail, or online interview form in cases where the participants do not allow face-to-face interviews due to geographical reasons (Langdridge, 2007). In this study, data were obtained from some participants through an interview form in cases where time planning for face-to-face interviews could not be made.

**Data Analysis**

In this study, the content analysis technique (Drisko and Maschi, 2015), was employed to analyze the gathered data. Data from interviews were analyzed in four stages (Shaked and Schechter, 2017). *In the sorting* stage, the data gathered were sorted in accordance with the major problem situation and sub-objectives of the research during the sorting step, which is the first stage of the analytic procedure (Miles, Huberman, and Saldana, 2014). In the *coding* stage, the second step of the analytical process, began with each data set being coded according to the sub-objectives (Krippendorff, 2003), followed by the theme and categorization stage. Following the coding stage, themes and categories were generated *in the categorisation stage*, which is the third stage of the analysis process, based on the research's primary and sub-problems and the relevant literature. After the researchers completed their respective topic and categorisation processes, consensus was established on the new themes and categories (Miles and Huberman, 1994), which were presented in tables. In this direction, the themes, categories, and codes created within the framework of the relevant literature and the participant perceptions are shown in tables. In the process of analysing the data obtained, firstly, the interview records were transcribed and analysed. By analyzing the commonalities in responses to each question, various sub-categories were established. An independent educational science expert was then consulted to assist in forming conceptual categories based on this preliminary categorization. The themes, categories, and codes derived from the analysis were quantified using the formula outlined by Miles and Huberman (1994), which calculates reliability as follows: Reliability = consensus / (consensus + disagreement). According to this formula, for the analysis to be considered reliable, the level of agreement between the researchers and the expert needs to exceed 90%. Following this methodology, the calculated agreement rate was 91%, indicating that the themes, categories, and codes identified in the study were reliably established.

**Research Ethics**

The ethics committee report of this study was issued by the "Amasya University Non-Interventional Clinical Research Ethics Committee". The name of the ethics committee, decision date 19.02.2024 and decision number 180470.

# Findings

This part focuses on the main findings of our qualitative study, presenting the state of school leaders' perception and experience about the use of AI technologies in education. By means of the analysis of the in-depth interviews, we reveal their opinions in the context of roles, responsibilities, and the influence of AI on educational equity and leadership strategies.

**Defining Leadership Responsibilities in AI Integration**

Table 3 provides an integration of school leaders' perceptions regarding AI's contribution to educational leadership. It classifies the views of the respondents concerning the positive, negative and neutral attitudes towards AI and further explicates their opinions on their duties in the implementation of AI into educational practices. Table 3 also presents direct quotes from participants that well represent the general feelings within each category.

Table 3
*Roles and Responsibilities of School Leaders in AI Integration*

| Theme | Category | Code | n | Sample Quotations / Participants |
|---|---|---|---|---|
| Perception of AI | Positive Perception | useful | 12 | "It will make our life very easy." - P10, "I find it useful" - P12, "It is extremely useful in education." - P20 |
| | | facilitates learning/education | 8 | "Facilitates" - P16 |
| | | positive impact on roles and responsibilities | 6 | "It will make the teacher's job easier" - P40, "Very important in guiding students and teachers" - P41 |
| | Negative Perception | concerns / negative consequences | 2 | "It has negative consequences for student homework." - P18, "Technology makes things harder" - P42 |
| | Neutral or No Opinion | no opinion / experience | 10 | "No opinion" - P14, "No experience" - P15 |
| | | need for more experience or knowledge | 5 | "I am inadequate in terms of experience" - P7, "I am not familiar with AI" - P26 |
| Responsibility | Advocacy for Integration | support integration into education | 8 | "I strongly recommend that it be integrated" - P7 |
| | | caution in implementation | 2 | "It should be used when appropriate" - P24, |
| | Role and Impact on Leaders | change in role / enhanced responsibilities | 7 | "…will change our perspective and broaden our horizons" - P6, |
| | | no significant change in role | 2 | "Does not affect" - P23, "…will not change our responsibilities much" - P29 |

Table 3 outlines various approaches of school leaders to the integration of advanced AI technologies to education. The overwhelming majority is sympathetic with AI, which is considered to be a useful instrument for optimization of duties and improvement of educational activities. Regarding AI, eight participants specifically commended it for the facilitation of learning, and six acknowledged its supportive function in teaching and learning by reducing teaching workload and providing motivation. Nevertheless, a few people have some fears regarding the possible negative effects on the student assignments and technological issues. Ten were neutrals, i.e., those lacking opinion and experience, and five acknowledged the need for more knowledge or expertise. Eight participants strongly argued in favor of AI's integration with proactive implementation measures, but two advised moderation to avoid AI interfering with some school activities that are critical. Seven leaders expected that AI would reshape their roles and expand their duties, stimulating teacher's professional growth. However, two did not anticipate the significant modifications of their roles.

**Identifying Challenges and Opportunities for Equitable AI Access**

Table 4 specifies the identified challenges and opportunities linked to equitable access to AI in education by school leaders. It identifies the particular issues they confront, including economic barriers and digital literacy voids, as well as growth and betterment domains.

Table 4
*Challenges and Opportunities for Equitable Access to AI in Education*

| Theme | Category | Code | n | Sample Quotations / Participants |
|---|---|---|---|---|
| Challenges | Economic Barriers | economic constraints / inequality | 20 | "No facilities, no money, no infrastructure" - P7, "Income inequality may have a negative impact." - P42 |
| | Infrastructure Issues | lack of internet access and technological tools | 15 | "Lack of internet access and computer classrooms" - P8, "Infrastructure problems" - P22 |
| | Geographic Disparities | rural vs urban divide | 6 | "Living in the countryside has its difficulties." - P11, "The difference between east and west" - P28 |
| | Access to Materials | limited material resources | 5 | "Access to material" - P6, "Not all students have equal access to the internet" - P27 |
| | Socio-Economic Factors | socio-economic status affecting access | 8 | "Socio-economic difference" - P40, "Economic and Hardware deficiency" - P30 |
| | Digital Literacy | varied digital skills and awareness | 4 | "We do not have enough knowledge about AI." - P24, "Digital inequality" - P29 |
| Opportunities | Addressing Inequalities | efforts to overcome inequalities | 6 | "We endeavor to allocate more time to students with fewer opportunities" - P22 |
| | Institutional Support | support from state and institutional bodies | 3 | "This problem can be solved with local facilities and contributions of our state." - P33 |
| | Educational Benefits | enhanced learning and accessibility | 2 | "I think AI will positively impact the roles and responsibilities of educational leaders and teachers." - P39 |
| | Economic Opportunities | economic empowerment through AI | 1 | "Guidance for those who are economically and technologically deficient" - P41 |

Table 4 presents the views of school leaders concerning the ensuring of the equal access to GenAI educational technologies, primarily pointing out infrastructure and economic issues. The barriers of internet and technological facilities are cited by fifteen leaders, while the economic disparities are emphasized by twenty. Six respondents observe rural-urban divide as an obstacle, access to materials and digital skills are also raised. Socio-economic status is the most mentioned factor among eight leaders. On the other hand, ways to alleviate this problem are discussed, such as focused help for underprivileged students, support from the government and institutions. Also, the possibilities of AI to improve the learning environment and to offer economic improvement are mentioned.

**Impact of AI on Leadership Styles and Strategies**

Table 5 outlines the repercussions of AI on the leadership styles and approaches in educational institutions. It focuses on the perceptions of AI's influence on leadership in both positive and negative ways and the significant role knowledge plays in living with this dynamic environment. Table 5 also provides a reflection of the strategic role of school leaders in the implementation and support of AI initiatives, with specific quotes that represent these influences from the participants' point of view.

Table 5
*Influence of AI on Educational Leadership Styles and Strategies*

| Theme | Category | Code | n | Sample Quotations / Participants |
|---|---|---|---|---|
| Impact on Leadership | Positive Impact | facilitates management and strategy | 15 | "Provides convenience in operation" - P9, "Affects positively" - P41 |
| | | encourages change and adaptation | 6 | "It forces people to change" - P10, "The necessity to renew yourself every day" - P21 |
| | | supports equal access and opportunity | 5 | "To distribute opportunities equally" - P37, "Providing equal opportunities" - P22 |
| | Negative Impact | creates challenges and competition | 3 | "A competitive environment is created" - P16, "Negative effects" - P22 |
| | Neutral or No Impact | no significant change or impact | 4 | "Does not affect" - P25, "No opinion" - P30 |
| | Need for Knowledge | requires enhanced knowledge and skills | 7 | "School leaders should be equipped about AI" - P11, "Not having sufficient knowledge and experience" - P24 |
| Role of School Leaders | Implementation and Control | responsibility in implementation and oversight | 8 | "Control and correct use of content" - P17, "Ensures its implementation and carries out supervision" - P31 |
| | Strategy and Vision | influences strategy and vision development | 5 | "Their vision is very important" - P34, "To instill vision and curiosity" - P29 |
| | Support and Encouragement | role in encouraging and supporting AI use | 4 | "Administrators encourage and support such practices" - P5 |

Table 5 delves into the impact of productive AI technologies on school leadership styles and approaches mostly indicating positive effects. Most of the leaders see how AI improves management, strategic planning, and operational effectiveness. AI fosters dynamic leadership by requiring continuous self-improvement, according to six respondents. AI's part in supporting educational equity is emphasized by the five leaders, aiming to equalize education for all children. Nevertheless, adverse effects are brought up, such as problems and exacerbated competition caused by AI. Four leaders have a neutral attitude, since there is no major difference or they are still uncertain about the impact of AI. Seven highlights the necessity of AI literacy among leaders for its successful utilization. Eight responders highlight the function of school leaders in AI introduction and control, emphasizing the need to develop AI influenced strategies and visions. In addition to this, four look at the requirement from the leadership to help AI adoption, proposing what administrative guidance and incentives are crucial to the integration of AI into educational settings.

**Perceptions of Policies and Support for AI Integration**

School leaders' perspectives about policies and support mechanisms that are necessary for the successful implementation of AI in education are presented in Table 6. It gives their opinions on the whether the equality of opportunity, policy support, infrastructure development, and the systematic

implementation strategies are needed. The table further gives their ideas on the functions leaders and teachers should perform in the form of extracts from which the range of opinions that participants held can be deduced.

Table 6.
*School Leaders' Views on Policies and Support for AI in Education*

| Theme | Category | Code | *n* | Sample Quotations / Participants |
|---|---|---|---|---|
| Perception of Policies | Need for Equality and Opportunity | equality of opportunity in education | 12 | "Equality of opportunity, every student should be offered the same opportunities" - P7, "Equality in economy and education" - P30 |
| | | focus on disadvantaged areas | 5 | "Starting from disadvantaged areas" - P4, "Prioritizing boarding schools" - P4 |
| | Policy and Infrastructure Support | support from state and technological bodies | 8 | "State policy required" - P11, "Under the control of the Ministry" - P18 |
| | Training and Development | need for in-service training and capacity building | 6 | "In-service trainings should be provided" - P5, "All education workers should receive in-service training" - P11 |
| | Economic and Socio-Economic Factors | economic equality and socio-economic improvements | 4 | "Socio-economic conditions should be improved" - P16, "Economic equality must be ensured" - P20 |
| | Technological Infrastructure | preparation of technological infrastructure | 7 | "It is important to create a good technological infrastructure" - P6, "Technological infrastructure must be prepared" - P24 |
| Strategies and Approaches | Implementation Strategy | systematic and long-term approach required | 4 | "It requires a long-term work, and a fixed policy understanding is a must." - P15, "The state's education policy must be continuous" - P18 |
| | Role of Leaders and Teachers | role in implementing and using AI technologies | 5 | "Managers play the biggest role" - P15, "First of all, it is necessary to inform our teachers" - P21 |
| | Application and Utilization | equitable distribution and use of resources | 3 | "Every individual should be educated" - P32, "A policy of adherence to the principle of justice and equality" - P37 |

Table 6 discusses the perspective of school leaders about core policies and supports of AI implementation in education, focusing on educational equality and access for all students, especially those in deprived areas. Eight respondents stress greater governmental and technological sector support, with regulatory frameworks and ministry of education oversight. Teacher training and professional development are considered critical by six leaders focusing on ongoing skill and capacity building. Economic and socio-economic issues are discussed by four discussants who emphasized the need for addressing dissertations with regard to fair use of AI. Seven luminaries highlight the importance of strong technological base in the adoption of AI in education. It is the insistence of four respondents on uniform educational policy and the involvement of leadership in AI activities of five respondents. Furthermore, three leaders emphasize the necessity of fair distribution of resources.

**Future of Educational Technology: Equity and Access Perspectives**

Table 7 provides an example of what the future in educational technology would be like as seen by school leaders in the context of ensuring equal technology opportunities in schools. It highlights the leaders' views on equity and access, ethical concerns, and ways to enhance access.

Table 7
*School Leaders' Outlook on the Future of EdTech Regarding Equity and Access*

| Theme | Category | Code | *n* | Sample Quotations / Participants |
|---|---|---|---|---|
| Promoting Equal Tech Opportunities in Schools | Equity and Access | ensuring equal opportunities and rights | 15 | "All students should be offered equal opportunities and rights." - P5, "By creating equal opportunities" - P12 |
| | | utilization of shared facilities | 3 | "By offering shared facilities" - P4 |
| | Infrastructure and Support | development of technological infrastructure | 7 | "…must have a computer course" - P8, "By providing technological facilities" - P18 |
| | Collaboration and Cooperation | cooperation with families and local bodies | 4 | "By co-operating with families" - P9, "In co-operation with stakeholders" - P17 |

| | | | | |
|---|---|---|---|---|
| | Policy and Planning | need for systematic policy and planning | 6 | "Program can be made according to student level" - P6, "State policy required" - P11 |
| Ethical Considerations | Ethical and Moral Concerns | attention to ethics and personal data protection | 10 | "Ethical considerations should not be ignored" - P5, "Personal data must be protected" - P14 |
| | Societal Dynamics | alignment with societal dynamics and values | 4 | "We must take into account the dynamics of society" - P6 |
| | Use and Impact | ethical use of AI in education | 6 | "AI is a very broad concept." - P23, "Using this technology will be beneficial for all."- P26 |
| Accessibility Strategies | Individualized Learning | tailoring programs to individual needs | 5 | "Can be applied individually to the student" - P32 |
| | Educational Infrastructure | enhancing educational infrastructure | 7 | "Schools can be made by preparing environments that can provide these opportunities." - P34 |
| | Training and Development | training for leaders, teachers, and students | 6 | "Training managers in the field of AI" - P31, "First of all, the necessary training to all stakeholders" - P35 |

Table 7 reviews school leaders' perspectives on the future of educational technology are discussed with particular emphasis on equity and access. Fifteen participants highlight the important requirement of the equal chance of any child with shared resources and improved facilities as solutions. Comprehensive computer education in schools is promoted by seven respondents looking into a technology embedded educational future. The role of family and community partnerships is emphasized by four leaders, considered the critical element to better academic outcomes. Six leaders endorse student-centric strategic planning that is consistent with state policies, emphasizing an adaptive approach to planning. Eight leaders emphasize ethical standards and privacy of the user's personal data in the use of educational technology, whereas four leaders discuss alignment of the technology with societal values. The ethical integration of AI in education is deliberated by six participants, giving prominence to its possible social advantages and the need for attentive implementation. Personalized learning is backed by five leaders, pointing at an approach to adaptive, student-centered instruction. Seven respondents consider improvement in IT infrastructure such as modern classrooms pertinent. Finally, six leaders emphasize the importance of training programs for all the stakeholders and educators to navigate and use the AI technologies efficiently.

## Discussion, Conclusion and Recommendations

Our research focused on the perceptions of school leaders concerning their roles, duties, and expectations associated with ensuring equitable access to educational technology within the framework of GenAI. It has been found that principals state the need for their personal development and readiness in terms of AI technology as consistent with studies conducted by Esplin, Stewart, and Thurston (2018) and Brockmeier, Sermon, and Hope (2005), which revealed a general demand for the improvement of the technology leadership preparation among school principals. In contrast to the optimism of the school leaders in our study regarding the role of AI in improving the educational processes, Afshari et al. (2008, 2009) noted the crucial role played by school principals in guiding the integration of ICT in schools. Our study, in line with the early work, provides a consensus on the value of technology in the learning process if good management and infrastructure are in place. The issues raised in our research about the adverse effects of AI, like low quality information or overdose on technology, are in line with the results of Hines et al. (2008) and Flynn (2021).

This research implies a change in the technological environment and the necessity of school leaders to be skilled and informed. Although previous research have registered many levels of readiness and attitude towards technology integration among school administrators (e.g., Yu and Durrington, 2006; Schofield and Davidson, 1998), our findings show an agreement among them in terms of the significance of AI in education. This could suggest an increased tolerance for the unavoidable and potential advantages of AI technologies in education. The results of our study, as well as the previous research, emphasize the need for personalized professional development courses, oriented on the implementation of AI technologies into educational settings. This study reveals the lack of readiness and knowledge that school leaders are experiencing in technological integration which means that

professional training is very important according to Esplin et al. (2018). This vacuum is particularly pronounced in the artificial intelligence field when technological change is swift and requires perpetual learning and adaptability. The economic inequalities and socio-economic contexts highlighted in our results are in line with the issues raised by Schofield and Davidson (1998) and Asongu et al. (2019) that income inequality thresholds impact the desirable benefits of ICT in inclusive education. Attention to the studies undertaken by Çevik and Toplu (2023) and Flynn (2021) reflects the government and cooperation aspect of reducing digital inequality and ensuring equal educational opportunities, which is similar to what we call state and institutional support. Our results regarding the possibility of the digital divide to deepen educational inequalities are in line with those of Jacob et al. (2016) as well as Kuş, Mert, and Boyraz (2021), who discuss how technology access and use represent and worsen the existing inequalities.

Our study provides more detailed analysis of the problems and perspectives of AI technology including education, than the general ICT talks of Afshari et al. (2008, 2009) and Brockmeier et al. (2005). Despite it being highlighted in several studies, it is revealed in our study that AI-specific knowledge and training among educators and administrators is a major challenge for effective integration. Although the issue of policy intervention is a repeated topic, our research emphasizes the need for policy support in order to ensure equitable AI integration that calls for a strategic approach. Our study showed the transformative influence of AI technologies on the dynamics of educational leadership, which indicated that school leaders are united in their view that they should modify their leadership styles and approaches in the face of technological changes. This result is in line with other researches, which stress the importance of professional development and training for school leaders to implement technology in educational settings (Esplin et al., 2018; Afshari et al., 2008, 2009). It was revealed that school leaders have an appreciation for the double-edged nature of technology integration with both its promises and limitations. This balanced approach is critical in ensuring that AI technologies are successfully adopted in schools, an issue that is in line to the studies of Brockmeier et al. (2005) and Richardson et al., (2013) who looked at the challenges of technology integration in educational leadership.

Our study, however, demonstrated differences in the proportion of the study of the effect of technology on leadership dynamics. Although we find variations in the readiness levels of school leaders, our study's focus on professional development is in line with the literature, for instance. Esplin et al. (2018) provided concrete indicators of principal's readiness that suggests a more measurable approach to the measurement of readiness to lead technologically than we have previously used. In addition, although we talked about AI technologies in leadership, researches like Laouni (2023) go further to look into effects of leadership styles, especially in the case of young principals on technology integration. This opens up a potential area for further study, in particular how demographic variables and leadership practices impact technology acceptance and effectiveness in educational leadership. Our results deal with the digital divide and educational equality, which was discussed by Schofield and Davidson (1998) and Çevik and Toplu (2023).

Although our study did not focus on the digital divide per se, it seems that the way school leaders approach technology integration has a great effect on reduction of educational disparities. In the end, our results contribute to the increased volume of literature in the area of technology and educational leadership interface. The importance of capacity building and in-service training for teachers to use AI technologies effectively is highlighted by our results, which supports the findings of Esplin et al. (2018) who argue for more professional development in technology leadership. Economic factors and socio-economic disparities were identified as the key challenges in the implementation of AI technologies. This issue is in line with the related literature, for example, the works of Asongu et al. (2019) and Çevik and Toplu (2023), on digital divide and its effects on educational equality. Despite former studies that have investigated technology integration and digital divide at large, our research targets AI technologies in education. The specific attention makes us be able to reveal the incomparable challenges and possibilities concerning AI, as well as to learn or specialize expertise and how it can help in improving personalized education. Our study also highlights the role of state and institutional policy in promoting AI integration, calling for holistic policies rather than one-off initiatives. This approach is developed

from findings of studies such as those of Hines et al. (2008) and Yu and Durrington (2006) that focus on the effect of electronic communication and technology standards on school management but do not explicitly discuss the strategic policy approaches necessary for AI integration.

Our findings are consistent with Schofield and Davidson (1998) and Asongu et al. (2019), who perceive the digital divide and the importance of equal opportunities for education. The results point out the challenge related to making sure that technological aids are available for all students which illustrates our focus on fair AI inclusion. It was found by Esplin et al. (2018) that there existed a correlation between technology leadership professional development and primary preparedness levels, and that is supportive of our view on the significance of training and resources for successful AI adoption. Our research on the role of ethical aspects of AI integration resembles Afshari et al. (2008) and Baydar (2022) who consider ethical technology use and digital citizenship in their studies. Studies such as ours emphasize the role of educational leaders in addressing the ethical side of technology use. In contrast to the general ICT integration analyzed in the works of Yilmaz-Ince, Kabul, and Kabul (2022) and Kuş et al. (2021), which relate to the problems of e-learning and digital inequality in the COVID-19 pandemic, our research focuses on AI technologies in education. This differentiation emphasizes the changing face of educational technology and the conspicuous possibilities and complexities posed by AI. Laouni (2023) points out the relationship between the leadership styles of principals and the technology integration levels finding that the younger principals are most likely to adopt transformational and transactional styles that can positively affect technology integration. Our study does not draw a direct relationship of leadership styles and effectiveness of AI integration but rather reaffirms the importance of supportive policies and institutional collaboration that is warranted for AI adoption to be successful.

Our findings highlight the revolutionary potential of AI in education in a way that other research, such as Afshari et al. (2009) and Tawfik, Reeves, and Stich (2016), have not. However, these studies deal with technology in education in general, and our study is concerned with the role of AI in personalized learning and achieving better educational outcomes. Our research contributes to this literature through the specific focus on AI technology integration, and more importantly, on the very nuanced positions of school leaders on the advantages and issues that can be faced. However, our results are consistent with the general issues of fair access, ethical use, and the requirements for good infrastructure and training raised by earlier research, but also emphasize the special possibilities of far-reaching changes in educational practices and outcomes, which AI brings. This dialogue highlights the need in filling current laps of technology leadership preparation and arguing for legislations that foster ethical and fair utilization of AI in education, setting the stage for further research and practice in this fast proliferating discipline. As shown in the results of this study, there is certain amount of strong evidence for employment of GenAI in education. We found that school leaders recognize that they play the crucial part of including AI in the educational processes in the purpose to improve educational outcomes and develop their A1 ready. They face many challenges in achieving on AI access is infrastructure deficiencies and socioeconomic differences. They are optimistic about the power of AI to revolutionize education, advocating for leadership change and the creation of new policies that prioritize ethical implementation. There is an ever-increasing demand for well-grounded policy approaches and infrastructure support requirements that will facilitate successful AI contribution. Leaders emphasize diversity and ethical value, and they advocate in favor of programs that fit for the needs and backgrounds of many different students. The significance of continuously evolving policies to keep up with AI developments, and of the preparation of educators with AI capabilities are highlighted as essential in maintaining relevant and equitable education systems. Finally, school leaders imagine an AI-orientated future that plays a significant role in resolving educational inequalities and improving the learning experiences within strategic, inclusive and ethical framework.

Despite its contributions, this study faces limitations, notably the varied AI knowledge among school leaders, affecting their understanding of AI's potential in education. The future research could concentrate more on increasing the familiarity with AI for leaders and creating special professional development. Moreover, the inequality in resources associated with urban and rural schools influences fair AI access, thus need for research on infrastructural equality. The AI integration strategies in educational leadership are also not agreed upon by many people which means that there is a need for

the standardized approaches and the best practices. Furthermore, the bridge between AI theoretical knowledge and its real implementation in schools shows a necessity for further research on how AI knowledge can be used successfully, for example, by utilizing case studies and pilot programs that have proved to be successful regarding its implementation.

## Contribution Rate of Researchers

Contribution of the 1st Author: The first author undertook the identification of the research topic, designing the methodology and managing the data collection processes in this study. By taking an active role in the writing and analyses of the study, significant contributions were made to the interpretation of the findings and preparation of the final version.

Contribution of the 2nd Author: The second author made significant contributions to the research design and data analysis processes. The second author took an active role in the literature review and the development of the theoretical framework and revised some sections during the writing phase of the article. These contributions played an important role in creating and deepening the holistic structure of the study.

## Conflict of Interest

In the process of conducting this study and reporting the results, it is declared by the researchers that there is no conflict of interest. In all stages of the research, the principles of transparency and objectivity were observed, and all data and findings were evaluated without any external influence or individual interest. Within this framework, we emphasize that the results of the research were obtained and presented in accordance with the principles of scientific ethics and integrity.

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## Genişletilmiş Özet

## Giriş

Bu araştırmanın temel amacı, okul liderlerinin üretken yapay zekâ (generative artificial intelligence [GenAI]) bağlamında eğitim teknolojisine eşit erişimi teşvik etme konusundaki rollerine, sorumluluklarına ve beklentilerine ilişkin algılarını araştırmak ve anlamaktır. Bu çalışma, eğitim liderlerinin gelişmiş yapay zekâ (YZ) teknolojilerini okul ortamlarına entegre ederken karşılaştıkları karmaşıklıkları ve zorlukları araştırmayı ve okul liderlerinin bu teknolojilerin sosyo-ekonomik geçmişlerine bakılmaksızın tüm öğrenciler için erişilebilir ve faydalı olması için rollerine, sorumluluklarına ve beklentilerine ilişkin algıları hakkında veri sağlamayı amaçlamaktadır. Araştırmaya rehberlik eden araştırma soruları şu şekildedir:

1. Okul liderleri, üretken YZ teknolojilerini okullarına entegre etme sorumluluklarını nasıl tanımlamaktadır?

2. Okul liderleri, üretken YZ eğitim teknolojilerine eşit erişim sağlamada ne gibi zorluklar ve fırsatlar tanımlamaktadır?

3. Üretken YZ teknolojilerinin ortaya çıkışı okullardaki liderlik tarzlarını ve stratejilerini nasıl etkilemektedir?

4. Okul liderleri, üretken YZ teknolojilerini eğitime entegre etmek için mevcut politikaları ve destek sistemlerini nasıl algılamaktadır?

5. Okul liderlerinin eğitim teknolojisinin geleceğine ve bunun eşitlik ve erişim üzerindeki etkilerine ilişkin bakış açıları nelerdir?

## Yöntem

Bu çalışmada, nitel araştırma modeli benimsenmiştir. Nitel araştırma, insanların veya kişilerin deneyimlerine dayalı bilimsel bilgi üreterek bilimsel çalışmalarda önemli bir yere sahiptir. Bu araştırma türünde, ele alınan durumlar detaylı bir şekilde incelenmekte ve "ne" oldukları tanımlanmaya çalışılmaktadır. Araştırmanın çalışma grubu, Türkiye'de Milli Eğitim Bakanlığı'na bağlı eğitim kurumlarında eğitim lideri olarak görev yapan 42 okul yöneticisinden (müdür ve müdür yardımcıları) oluşmaktadır. Katılımcılar, maksimum çeşitlilik ve ölçüt örnekleme yöntemleriyle gönüllü temelinde belirlenmiştir. Katılımcıların %57,1'i okul müdürü ($N = 24$), %81'i erkek ($N = 34$) ve %66,7'si lisans derecesine sahipken ($N = 28$), %13'ü yüksek lisans ($N = 13$) ve %2,4'ü doktora derecesine sahiptir ($N = 1$). Yaş dağılımı 29 ile 57 yaş arasında çeşitlilik göstermektedir. Profesyonel deneyim açısından, toplam mesleki kıdemleri 5 ile 35 yıl arasında değişmektedir. Katılımcıların eğitim geçmişleri çoğunlukla lisans düzeyinde olup, önemli bir kısmı yüksek lisans derecesine ve bir kişi doktora derecesine sahiptir. Bu çeşitlilik, grubun içinde zengin ve çeşitli bir perspektif sunmakta ve okul yöneticiliği pozisyonlarına giden farklı yolları ve deneyimleri yansıtmaktadır. Bu çalışmada, katılımcıların konu hakkındaki algılarını ortaya çıkarmak için mülakat yöntemi benimsenmiştir. Veri toplama sürecinde, araştırmacılar tarafından hazırlanan ve iki bölümden oluşan yarı yapılandırılmış mülakat formu kullanılmıştır. Bu çalışmada, veri toplama sürecinde "(b) belirli süreçlerle çalışma grubuna dahil edilen katılımcıların sözlü veya yazılı ifadeleri" kullanılmıştır. Elde edilen veriler, içerik analizi tekniği kullanılarak analiz edilmiştir.

## Bulgular

Okul liderleri, YZ'yi genellikle faydalı ve eğitim süreçlerini kolaylaştıran bir araç olarak görmektedirler. Çoğunluk, YZ'nin öğretmenlerin işini kolaylaştıracağını ve eğitimde olumlu etkiler yaratacağını düşünmektedirler. Ancak, bazı katılımcılar teknolojinin öğrenci ödevleri üzerinde olumsuz etkileri olabileceğini belirtmektedir. Liderlerin YZ entegrasyonunu desteklemesi ve uygulamada dikkatli olmaları gerektiği vurgulanmaktadır. Eğitimde YZ'ye eşit erişim sağlamada önemli zorluklar olarak altyapı eksiklikleri, ekonomik engeller ve coğrafi farklılıklar öne çıkmaktadır. Liderler, dezavantajlı öğrencilere yardım etmek ve eşitsizlikleri gidermek için çeşitli çözümler önermektedir. Bunlar arasında devlet desteği ve eğitimde yapay zekanın olumlu etkilerinin kullanılması yer almaktadır. Katılımcılar, YZ'nin liderlik tarzlarını ve stratejilerini olumlu yönde etkileyeceğini düşünmektedir. YZ,

yönetim kolaylığı sağlayarak ve eşit fırsatlar sunarak eğitim liderlerini değişime ve adaptasyona teşvik etmektedir. Bununla birlikte, bazı liderler YZ'nin rekabet ortamı yaratabileceğini ve liderlik üzerinde önemli bir etkisi olmayacağını belirtmektedir. Liderler, YZ'nin eğitimde etkin bir şekilde entegre edilmesi için eşit fırsatlar, devlet politikaları ve altyapı desteği gerektiğine dikkat çekmektedir. Eğitim çalışanlarına yönelik hizmet içi eğitimlerin önemi ve eğitimde sosyo-ekonomik koşulların iyileştirilmesi gerektiği vurgulanmaktadır. Stratejik yaklaşımlar ve liderlerin rolü, YZ'nin başarılı entegrasyonu için kritik önem taşımaktadır. Okul liderleri, eğitim teknolojilerinin geleceğinde eşit fırsatlar ve hakların sağlanmasının önemini vurgulamaktadır. Teknolojik altyapının geliştirilmesi, aileler ve yerel kurumlarla iş birliği, etik kaygılar ve bireyselleştirilmiş öğrenme stratejileri öne çıkan konular arasındadır. Eğitimde YZ'nin etik kullanımı ve bütün paydaşlara yönelik eğitimin sağlanması, gelecekteki eğitim teknolojilerinin başarısı için kritik öneme sahiptir.

## Tartışma, Sonuç ve Öneriler

Çalışmamızda okul liderleri, kendi gelişimlerine ve YZ teknolojisi konusunda hazırlıklarına ihtiyaç duydukları tespit edilmiştir. Benzer şekilde, Esplin, Stewart ve Thurston (2018) ile Brockmeier, Sermon ve Hope (2005) tarafından çalışmalarda da okul müdürlerinin teknoloji liderliği hazır bulunuşluklarının iyileştirilmesine yönelik ihtiyaç tespit edilmiştir. Afshari vd. (2008, 2009) tarafından okul müdürlerinin okullarda teknoloji entegrasyonunu yönlendirmedeki kritik rolü de, etkili liderlik ve altyapı mevcut olduğunda teknolojinin eğitimdeki potansiyel faydaları konusunda literatürdeki fikir birliğinin bir örneği olarak değerlendirilebilir. Çalışmamızda YZ'nin potansiyel olumsuz etkileri, bilgi kalitesinin azalması veya teknolojiye bağımlılık yaratması gibi konulara ilişkin endişeler, Hines, Edmonson ve Moore (2008) ve Flynn (2021) tarafından yapılan çalışmalarda da tespit edilen bulgulardandır. Çalışmanız ve Esplin vd. (2018) tarafından yapılan araştırma, okul liderleri arasında teknoloji entegrasyonu konusunda hazırlık ve bilgi eksikliğini ortaya koymakta, bu yönde mesleki gelişim ihtiyacının önemine vurgu yapmaktadır. Ekonomik farklılıklar ve sosyo-ekonomik koşullar, Schofield ve Davidson (1998) ile Asongu, Orim ve Nting (2019) tarafından ortaya konan bulgular ile uyumludur. Çevik ve Toplu (2023) ve Flynn (2021) tarafından yapılan araştırmalar da dijital eşitsizliği ve eşit eğitim fırsatlarını sağlamak için politika müdahalelerinin ve işbirliği çabalarının kritik rolü vurgulanmaktadır. Çalışmamız, YZ teknolojilerinin eğitim liderliği dinamikleri üzerinde dönüştürücü bir etki gösterdiğini ortaya koymaktadır. Esplin vd. (2018), eğitim ortamlarında teknoloji entegrasyonunu etkili bir şekilde yönlendirebilmek için okul liderlerinin mesleki gelişim ve eğitiminin önemini vurgulamaktadır. Çalışmamız, okul liderlerinin teknoloji entegrasyonunun fırsatlarını ve zorluklarını kabul ettiklerine ve YZ teknolojilerinin okullarda etkili uygulanmasının öneminin ve bilincinin farkında olduklarını göstermektedir. Bulgularımız, eğitimcilerin YZ teknolojilerini etkili bir şekilde kullanabilmeleri için hizmet içi eğitim ve kapasite geliştirmenin kritik bir ihtiyaç olduğunu vurgulamaktadır. Esplin vd. (2018) teknoloji liderliği mesleki gelişimi ile ilgili bulguları, eğitimciler ve yöneticilerin eğitim ortamlarında YZ ve diğer dijital teknolojilerin karmaşıklıklarını yönlendirmek için gereken becerilerle donatılmasının önemini vurgulamaktadır. Çalışmamız, Schofield ve Davidson (1998) ile Asongu vd. (2019) tarafından vurgulanan dijital uçurum (digital divide) ve eğitimde teknolojiye eşit erişimin önemini yansıtmaktadır. Esplin vd. (2018) tarafından bulunan teknoloji liderliği mesleki gelişimi ile müdürlerin hazırlık seviyeleri arasındaki korelasyon, YZ uygulamasının etkili olabilmesi için eğitim ve kaynakların gerekliliğine vurgu yapan bulgularımızla örtüşmektedir. Afshari vd. (2008) ve Baydar (2022) tarafından yapılan araştırmalar, teknolojinin etik kullanımına ve dijital vatandaşlığa odaklanırken, çalışmamız eğitim liderlerinin teknoloji kullanımının etik sonuçlarını yönlendirme sorumluluğuna dikkat çekmektedir. Gelecekteki araştırmalar, hedeflenen mesleki gelişim programları geliştirmek için okul liderlerinin YZ teknolojilerine ilişkin hazırbulunuşluk düzeyini ve özel eğitim ihtiyaçlarını değerlendirmeye odaklanmalıdır. YZ teknolojilerine erişimde kentsel-kırsal uçurumun üstesinden gelme stratejileri de dahil olmak üzere, farklı okul türleri arasında altyapı ve kaynak kullanılabilirliğini eşitleme yolları araştırılabilir. Okul liderleri için açık kılavuzlar ve en iyi uygulamaları sağlamayı amaçlayarak, eğitim liderliğinde YZ entegrasyonuna yönelik yaklaşımlar geliştirmeye ve standartlaştırma yönelik çalışmalar yapılabilir. Başarılı YZ entegrasyon stratejilerini gösteren vaka çalışmaları ve pilot programlar da dahil olmak üzere, YZ'nin teorik bilgisini eğitim liderliğinde pratik uygulamalara dönüştürmenin etkili yöntemlerini araştıran çalışmalara ihtiyaç vardır.