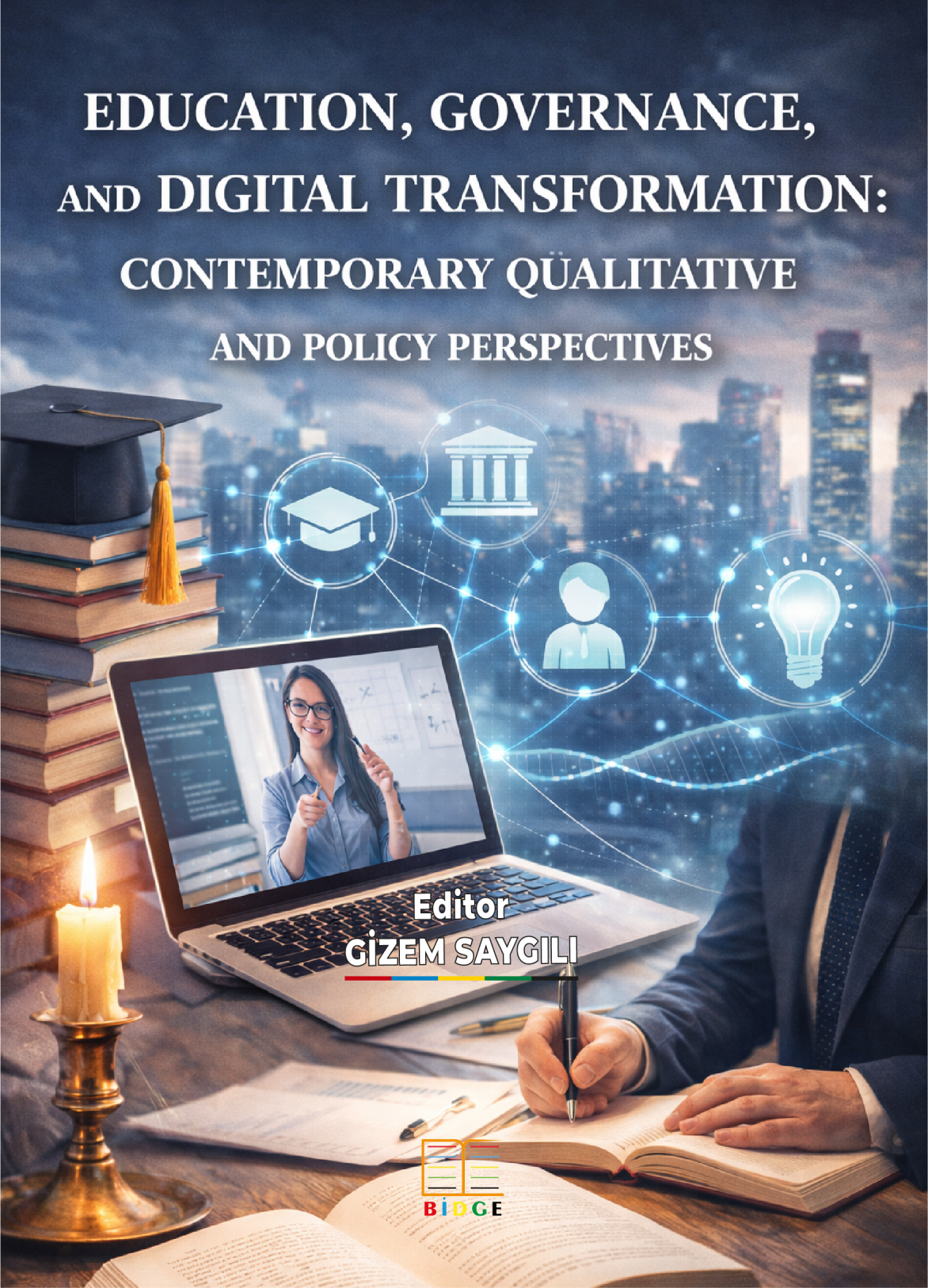
EDUCATION, GOVERNANCE, AND DIGITAL TRANSFORMATION: CONTEMPORARY QUALITATIVE AND POLICY PERSPECTIVES



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CONTENTS

CHAPTER 1

CHAPTER 1

TEACHER EXPERIENCE AND MOTIVATION AFTER THE EARTHQUAKE: A QUALITATIVE STUDY [1]

[1] This study was presented as an abstract paper at the 12th International Congress on Headteacher Education and Innovative Sciences on November 23-24, 2025.

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Introduction

Problem Statement

Natural disasters, especially earthquakes, have serious effects on individuals' psychological, social, and professional lives. Disasters are serious events that create a destructive impact on social order, develop suddenly, and cause permanent damage (Yan et al., 2010). Some occur as naturally developing disasters, while others may be human-induced. Events such as earthquakes, floods, hurricanes, industrial accidents, or wars have devastating effects on individuals, families, and communities (Arrogante-Funes et al., 2021). One of the important aspects of the education and training processes affected by these devastating events is the motivation of teachers. The differences in definitions of motivation indicate that school administrators have different perspectives on the motivation process. This is because each individual's expectations, needs, and desires differ, and their behaviors develop and change accordingly. In order to ensure teacher motivation, school administrators must be able to identify the expectations, needs, and desires of all teachers. To achieve this, they must have different perspectives. Indeed, school administrators who develop different perspectives must

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create the process that is most suitable for them to ensure teacher motivation (İşgörür, 2019: 80). Teacher motivation after an earthquake is an important topic of discussion in the context of the social effects of the disaster and the reconstruction of the education process. Major natural disasters such as earthquakes not only cause physical destruction but also deeply affect individuals psychologically and emotionally. Teachers are not immune to these effects, and the factors affecting their motivation are multifaceted. The rapid recovery of the education system after disasters such as earthquakes depends on the motivation of teachers. In this process, it is critically important that teachers are not left alone, that psycho- cial support is provided, and that working conditions are improved. The motivation levels of teachers who have experienced an earthquake are affected by various positive and negative factors. Certain negative factors, such as psychological trauma, housing problems, deterioration of physical conditions in the school environment, and the traumas experienced by students, can negatively affect teachers' motivation and performance. On the other hand, positive factors such as solidarity among colleagues, supportive attitudes from the community, psychological support services, and the rapid improvement of educational environments can increase motivation. Examining the positive and negative factors affecting the motivation of teachers who have experienced an earthquake and are currently working in the earthquake zone is important in terms of improving educational environments and developing professional support processes for teachers. Traumatic events such as earthquakes can significantly affect individuals' psychological state and motivation. Teachers who have experienced an earthquake may experience negative or positive changes in their motivation as they try to cope with their own trauma and support their students. The impact of this situation on educational environments and teachers' professional performance is an important research topic. This study, which began with the research question, "What are the positive and

negative changes in the motivation of teachers who have experienced an earthquake, and how can the factors affecting these changes be classified?", can provide important data for determining teachers' psychosocial support needs and increasing their professional resilience after trauma. This problem situation is also of great importance in terms of shaping education policies and developing support mechanisms for teachers. Understanding the factors that positively or negatively affect the motivation of teachers who have experienced an earthquake and pointing to the need to develop appropriate support mechanisms in this context The problem situation is of critical importance in terms of teachers being able to maintain their motivation and continue their teaching and learning activities in a healthy manner.

Purpose

The purpose of this study is to examine the post-earthquake experiences and motivation of teachers who experienced the February 6, 2023, earthquakes centered in Kahramanmaraş and still live in the earthquake zone.

Research questions

1. What are the post-earthquake experiences of teachers?
2. What are the positive and negative factors affecting teachers' post-earthquake motivation?

Literature Review

The Concept of Motivation

When reviewing the literature related to this concept, it is observed that the term motivation is approached in different ways and that researchers use this concept in multiple senses. "It is seen that the term motivation is used synonymously with the word "drive" in many studies. An individual must first want to take action in order to take action. The desire to act that arises in an individual due to desire and need is called motivation (Gök, 2019). The root of the word motivation comes from the Latin word "movere," meaning "to move, to carry," and later took its place in English and French as "motive," meaning "reason, drive." With the addition of new suffixes, the word has reached its current form: . The Turkish Language Association defines the word motivation as encouragement and drive. In Turkish literature, the term "drive" is often used instead of motivation. Within the common definition of most researchers, motivation is broadly defined as a driving force that prompts a person to act and provides them with the energy to carry out a behavior (Selçuk, 1999). There are many definitions of motivation. The etymological origin of motivation can be traced back to the Middle Latin word "motivus," meaning "to move." In the 15th century, motivation acquired the meaning of a mental state that drives a person to act. Definitions made today support the meaning the word has acquired. "In general, according to definitions, even if the contexts in which events are processed change, motivation can be thought of as the decision threshold that an individual passes through in order to exhibit a behavior. This threshold can take many different forms, change over time, and transform for various reasons. In this context, motivation encompasses various internal and external causes and their mechanisms of operation that drive individuals to behave, determine the intensity and energy level of these behaviors, give them a specific direction, and ensure their continuation. Motivation plays an important role in the process of individuals taking action and making efforts to achieve predetermined goals. Motivation is considered a complex situation that

includes motivating and direction-determining elements. Motivation has various functions, such as initiating behaviors, determining the energy and intensity levels of behaviors, directing behaviors, and ensuring the continuation of behaviors (Orhan, 2022). Motivation is a type of psychological driving force that enables individuals to perform the actions necessary to achieve their social or personal goals (Ekhsan and Parashakti, 2020). This concept is addressed in two main types: intrinsic and extrinsic. Intrinsic motivation is when an individual engages in an activity solely for the pleasure or personal satisfaction derived from that activity. For example, a person may continue to play an instrument because they enjoy playing music . Extrinsic motivation, on the other hand, is when an individual acts based on external factors such as rewards or recognition. According to Maslow's hierarchy of needs theory, individuals first try to satisfy their basic needs and then strive to satisfy higher-level needs (such as self-actualization) (Maslow, 1943). Herzberg's two-factor theory proposes that individuals' job satisfaction depends on two different elements: hygiene factors and motivators (Herzberg, 1959). Motivation theories offer different perspectives for understanding people's behavior and guiding them. These theories demonstrate how factors such as personal success, rewards, and social support play an important role in helping individuals achieve their goals. The concept of motivation is not solely related to the inner world. As a social being, humans are exposed to external factors in their environment, society, and educational institutions, which shape their motivation. The word "motivation" is derived from the Latin word "movere," meaning to move. The word motivation expresses the concept of "drive" (Önen and Kanayran, 2015). Along with the definition expressed, the concept of motivation emerges as a counterpart to drive. The term motivation explains that it is an extra power that enables people to achieve a goal. People's constant pace and movement bring the concept of motivation with them (Güney, 2015). In general terms, the

concept of motivation can be considered as the process of directing people towards desired behaviors. Altındağ and Akgün (2015) state that people achieve satisfaction in line with their needs and explain that they exhibit certain behaviors as a result of this satisfaction. It has also been determined that after exhibiting these behaviors, individuals identify areas where they can obtain motivation. In line with this statement , it has been emphasized that, in addition to the necessity of having a goal to fulfill and satisfy one's needs, it is also necessary to have sources of motivation that will provide continuity.

Teacher Motivation

The quality of education is directly proportional to the quality of teachers. In this respect, it is very important for the quality of educational services that teachers who will work within the education system are well trained, both before and during their service. There are two approaches that a school administrator can use to bring about the desired change in any element within a school. The first is through rewards or punishment. The second is to change the organizational atmosphere by raising morale to high levels. School administrators must be sensitive to the social needs of teachers and students in particular. It will be difficult for administrators who are unaware of these needs and do not strive to meet them to raise and maintain morale in a school environment. The teacher's age, gender, seniority, motivation, and psychological state also influence the teaching method. There are usually multiple motives behind a behavior in the school environment. A well-established order within an organization is not easily disrupted by personnel turnover and similar changes. This continuity and consistency are not easily disrupted by initial and similar changes. Since

this continuity and purpose are lost, it is natural to describe the channels and patterns of motivation with financial terms (Dönmez, 2023:28).

Teacher motivation is one of the most important factors affecting success in education. Teachers' motivation directly affects how they teach, interact with students, and manage their classrooms in general. Teachers' intrinsic motivation is shaped by their professional satisfaction and the satisfaction they derive from contributing to their students' success , while extrinsic motivation depends on factors such as salary, career advancement, and social recognition. It is emphasized that both internal and external factors must be balanced to increase teachers' motivation. Bakker and Demerouti (2008) stated that teachers' job satisfaction is directly affected by psychological resources in the workplace, particularly workplace support and collaboration among teachers. According to this research, teachers are more likely to achieve higher levels of motivation in an environment where they receive social support. In addition, professional development opportunities for teachers create greater success in education and a sense of personal satisfaction. This situation strengthens not only teachers' own motivation but also their contribution to their students' learning processes. Another important factor in understanding teacher motivation is teachers' emotional commitment. Emotional commitment expresses teachers' passion for their work and their interest in their students. Various studies show that teachers' emotional commitment significantly increases the quality of teaching in the classroom and students' academic achievement. When teachers are emotionally attached to their work, they show more interest in their students, deliver lessons more effectively, and increase participation in the learning process (Klusmann, Kunter, Trautwein, Lüdtke, & Baumert, 2008). Effective leadership and management are also critical for developing teacher motivation. To increase teacher motivation, it is important for school

administrators to guide teachers in a supportive manner, provide them with professional development opportunities, and recognize their achievements. School leaders can increase teachers' motivation by giving them positive feedback and providing opportunities to develop their professional skills. This kind of support makes teachers more committed to their work and helps them serve their students better (Tschannen-Moran & Hoy, 2001).

The Importance of Motivation for Teachers

A newly hired teacher may lose their enthusiasm when starting work in a school with a negative organizational culture. From this perspective, schools need to have a positive school culture in order to develop. Therefore, school administrators have a lot of work to do. As a result of school administrators' democratic and development-supporting behaviors, young teachers new to the school may make every effort to ensure that the school has a positive culture (Ağaoğlu, 2012). The most important factor in achieving the school's goals and student success is the motivation of teachers, who are at the center of the education and teaching process. Teachers' high motivation levels reflect positively on themselves, their students, parents, and the work environment. Motivation is essential for teachers to be more productive and effective. If there are factors that negatively affect teachers' motivation, this leads to burnout. A burnt-out teacher cannot contribute to the school's goals and student success (Çiloğlu, 2023:18).

Teachers' motivation is an important factor that directly affects the quality of educational processes. Highly motivated teachers can guide their students more effectively and make lessons more dynamic and interesting. In this context, teachers' intrinsic motivation is directly related to their professional satisfaction

and their satisfaction with their contribution to student success. Increasing teacher motivation improves not only their own job satisfaction but also students' learning processes and school success. In schools where teacher motivation is high, student achievement is generally higher because highly motivated teachers tend to devote more time to their students and guide them better (Hargreaves, 2003).

It is possible to say that teacher motivation not only improves teaching quality but also helps reduce teachers' burnout levels. Teachers having high motivation increases their satisfaction with their work, which in turn prevents teacher burnout. Affective Commitment Theory (Meyer & Allen, 1991) argues that increasing teachers' emotional commitment to their work makes them less burned out and more motivated. When teachers' commitment to their work is high, their capacity to cope with stress increases, and they achieve greater success in their professional lives. This also improves their classroom management skills and ensures the continuity of teaching quality. The importance of teacher motivation also depends on the leadership style of school administrators. Teachers can show higher motivation with the support they receive from their leaders. The support provided by school administrators to teachers increases their professional satisfaction and commitment to their work. For example, school administrators' trust in teachers, support for their professional development, and appreciation of their achievements boost teachers' morale and motivation. School leaders' encouraging guidance of teachers makes teachers feel valued, which leads to improved education quality (Leithwood & Jantzi, 2000).

Domestic Research

Demirhan and Uludağ (2024) examined the motivation perceptions of classroom teachers working in Elbistan, Kahramanmaraş, after the February 6 earthquake. Using a case study from qualitative research designs, semi-structured interviews were conducted with 16 teachers selected through purposive sampling. Content analysis revealed that teachers' motivation was low, psychological factors in the school environment negatively affected their motivation, and they turned to hobbies to cope with this situation. Furthermore, it was found that gratitude had a positive impact on their motivation and that they expected support from the Ministry.

Özmen (2024) aimed to determine the changes experienced by teachers after the disaster, the factors causing these changes, the obstacles they faced, and their efforts to overcome these obstacles. The findings of the study showed that after the disaster, teachers moved away from roles such as knowledge transfer and classroom management and focused on motivational, supportive, and guiding roles. Consistent with the literature, it was found that teacher-student communication was of critical importance and that teachers' emotional support for students contributed to the normalization process. Furthermore, it was emphasized that teachers experienced emotions such as anxiety during this period but overcame difficulties through solidarity and effective communication. This study highlights the need to develop specific measures that support resilience to increase the sustainability of education after a disaster.

Polat and Sarıçam (2024) determined that the basic needs of teachers working in Hatay after the February 6 Kahramanmaraş Earthquake were not fully met, and that this situation led to social and psychological problems. Furthermore, the low motivation of teachers is a notable problem. Teachers expressed their most

important expectations as the regulation of personal rights for those working in the disaster area and the development of region-specific education programs.

Çıtak (2023) stated that earthquake victims experience anxiety, post-traumatic stress disorder, and sleep disorders, and that this situation negatively affects not only individuals' daily lives but also their professional roles and motivation. Teachers, in particular, experience lack of motivation, decreased professional productivity, and difficulties in classroom interaction due to these psychological problems. The effects of trauma make it difficult for teachers to establish healthy relationships with their students and also reduce the quality of the educational process. Therefore, in order to increase motivation, it is necessary to provide psychological support services and improve working conditions.

Research Conducted Abroad

Novitasari et al. (2023) concluded that a strong teacher-student relationship is a motivating factor for both teachers and students. It has been determined that such relationships increase students' active participation in the learning process and positively contribute to teachers' motivation.

Bikar et al. (2021) concluded that communication between teachers and students is critically important after a disaster. In this context, it was determined that teachers guiding students and exhibiting behaviors that motivate them to learn significantly contributes to the normalization process.

Mao and Agyapon (2021) concluded that teachers' motivation has a strong relationship with student motivation. Furthermore, it was determined that the support provided by family and friends has an important

and positive effect on individuals' mental health . These findings show that social support systems play a critical role in increasing the motivation and resilience of both teachers and students in the post-disaster period.

Kaffemaniene (2021) concluded that teachers' constant communication with parents, students, and the community increases their motivation. In particular, it was found that teacher-parent collaboration contributes to a better understanding of students' situations and supports teachers in overcoming the difficulties and problems they may encounter.

Seddighi et al. (2020) concluded that government policies developed regarding earthquake awareness training added to the education curriculum positively affect teacher motivation. Such policies contribute to increasing social resilience by assigning teachers a stronger role in disaster management and awareness raising. Teachers, who are responsible for educating and supporting students, especially after a disaster, become more prepared and equipped thanks to earthquake awareness training integrated into the curriculum. This enables teachers to take on a more effective guidance role for students and society. The state's supportive approach in this area increases teachers' professional confidence while also strengthening the sustainability of post-disaster education and contributing to the creation of a more resilient education system for future disaster situations.

Method

Research Model

This research used a "case study," one of the qualitative research designs. A case study is a research approach that aims to describe, understand, or predict a group, individual, or cultural situation (Bassey, 1999). Yin

(2014) states that in a case study, a current situation or event is examined in its authentic environment, in its own real-life setting. The case in this research is "the post-earthquake motivation of teachers who have experienced an earthquake."

Study Group

The study group consists of 16 teachers working in Reyhanlı district of Hatay during the 2023-2024 academic year. Purposive sampling was used in the study instead of non-random sampling. Purposive sampling involves selecting situations that are appropriate for the purpose of the study and rich in information in order to conduct in-depth research (Yıldırım and Şimşek, 2018). From this perspective, in order to select a sample appropriate for the purpose, the participants in the research were selected from among teachers who are currently working in the earthquake zone and who have experienced the earthquake. The demographic information of the teachers participating in the research is given in Table 1.

Table 1. Demographic Information of Participants

Participant No.	Gender	Age	Years of professional experience
K1	Female	26-35	0-10 years
K2	Female	36-45	11-20 years
K3	Female	26-35	0-10 years
K4	Female	20-25	0-10 years
K5	Female	36-45	0-10 years
K6	Female	26-35	0-10 years
K7	Female	26-35	0-10 years
K8	Female	26-35	0-10 years

K9	Female	26-35	0-10 years
K10	Female	26-35	0-10 years
K11	Female	26-35	0-10 years
K12	Female	20-25	0-10 years
K13	Female	20-25	0-10 years
K14	Female	46-55	20 years and over
K15	Male	36-45	11-20 years
K16	Female	36-45	0-10 years

As shown in Table 1, the majority of participants are female teachers. These teachers are young teachers aged 26 and above. The majority of teachers have 0-10 years of professional experience.

Data Collection Tool

Research data were collected using a semi-structured interview form during the second half of the 2023-2024 academic year. Before the interviews, participants were informed about the interviews and the study. The semi-structured interview form used consists of two sections: interview questions and participants' personal information. While preparing the semi-structured interview form, studies related to the research problem were also carefully and thoroughly reviewed. Interview questions were prepared with the aim of the study in mind. All questions in the study were expressed clearly and concisely. The prepared form was submitted for evaluation to two assistant principals and one classroom teacher in the form of pilot interviews. Then, the final form was given its final shape, taking into account expert opinions. After receiving feedback from the pilot participants, it was seen that the questions served the purpose of the study and were clearly understood, and these questions were used in the main application.

Data Analysis

The data obtained in the study were analyzed using content analysis. In content analysis, similar data are grouped together under certain themes and concepts; they are organized and interpreted in a way that readers can understand (Yıldırım and Şimşek, 2016). Within this framework, the opinions of the teachers participating in the research were converted into tables in the form of codes, subcategories, categories, and themes. After the content analysis, 5 themes were created. These themes were determined and named using the deductive method based on the purpose of the research and the interview questions. The codes and categories were revealed using the inductive method. Direct quotations were included in the scope of the reliability of the research.

Findings

This section presents the themes of “experiences after the earthquake, changes in their professional lives, factors that motivate them, negative factors affecting their motivation, and factors that will motivate them” for teachers who experienced the February 6, 2023, earthquakes centered in Kahramanmaraş. These themes are presented in tables in the form of categories, subcategories, and codes.

Theme 1: Post-Earthquake Experiences

In this theme, six subcategories and 23 codes were identified under two different categories: "feelings after the earthquake" and "social adaptation." These codes and categories are listed in Table 2 along with their frequencies.

Table 2. Teachers' Post-Earthquake Experiences

Category	Subcategories	Codes	f
Post-Earthquake Feelings	Post-earthquake fear and uncertainty	Fear, anxiety, aftershocks, fear of death, uneasiness	8
	Helplessness and psychological effects	Helplessness, loneliness, shock, psychological breakdown, grief	7
	Physical and psychological trauma	Insomnia, numbness, mental breakdown, anxiety	6
	Family and close relationships	Survival with family, regret, lack of support	5
Social Cohesion	The meaning of life and starting over	Gratitude, understanding the value of life, rebirth	4
	Post-earthquake society and aid	Aid, community support, the impact of loss	3

Table 2 shows that the most intense emotions experienced by participants after the earthquake were fear, anxiety, and uncertainty. Many participants expressed feelings of fear and unease brought on by the earthquake. This fear, which continued with aftershocks, persisted for some time after the earthquake. For example, one participant (P1) said, *"The first thing I felt during the earthquake was the fear of death*," while another participant (P3) stated that they constantly lived *with "a feeling that it would happen again at any moment."* It is evident that these fears led to psychological trauma and deeply affected the mental state of individuals.

Helplessness and psychological effects were mentioned by the majority of participants. The feeling of helplessness stemmed from the loss of loved ones, other losses, and the uncertainty of life. One participant (P2) said, *"I felt that everything was meaningless*," while another (P5) said, *"After the earthquake, I suddenly felt that human life could vanish in an instant."* This shows how profound the psychological effects of the earthquake were, not just the physical ones. *Physical and psychological trauma* also emerged as an important

category. A large proportion of participants reported experiencing symptoms such as insomnia, numbness, and psychological breakdown. This reflects the psychological effects of post-earthquake stress disorder and the ongoing grief over the losses.

Family and close relationships were mentioned, particularly in relation to feelings of regret about survival and lack of support. One participant (K6) emphasized the importance of family ties during this difficult period, stating, *"There was a feeling of regret that we couldn't think of anyone but ourselves at that moment."* Similarly, the survival of family members and loved ones was conveyed by another participant (K1) as, *"I am lucky that I was able to save my two children."*

Regarding *the meaning of life and starting over*, it has been revealed that participants have become aware of the significant changes they experienced after the earthquake. One participant (K7) stated, *"I realized that life is very short and that we should live in the moment,"* while another (K8) expressed, *"I try to hug my loved ones tighter and collect pleasant moments."* Finally, the study also includes participants' thoughts on *the community's assistance and losses after the earthquake*. The impact of this assistance was described by one participant (K9) as *"material and moral support from our country and countries around the world."* This highlights the role of community solidarity in mitigating the effects of the earthquake. In conclusion, most of the emotional processes experienced after the earthquake revolved around anxiety, fear, uncertainty, helplessness, and traumatic effects. Participants experienced a significant trauma process due to the lack of psychological support and social bonds.

Theme 2: Changes in Professional Life

Seven categories and 24 codes emerged in this theme. These categories and codes are presented in Table 3.

Table 3. Changes Experienced in Teachers' Professional Lives After the Earthquake

Theme	Categories	Codes	f
Changes in Professional Life	Emotional Change	Being more emotional, empathy with children, compassion, appearing strong	5
	Unemployment and Career Changes	School closure, becoming unemployed, transitioning to government employment, finding a job	3
	Spiritual Values and Beliefs	Being flexible and compassionate, becoming a more moderate person, being reminded of death	4
	Professional Challenges and Incompatibility	Returning to school early, students not showing up, problems progressing in class, safety concerns	4
	Student and Family Relationships	Building friendlier relationships with students, gaining the trust of families, language learning	4
	Changes in Education	New conditions at school, safety measures in the classroom, language problems	3
	Coping with Challenges	Stress during an earthquake, calming children, coping with challenges	3

Table 3 shows that the changes in teachers' professional lives after the earthquake led to significant transformations, both emotionally and practically. Many participants stated that they became more emotional and empathetic after experiencing the pain with the children. For example, one participant (K1) emphasized the importance of emotional change, stating, *"We experienced the same pain as the children,* and *I had to appear strong to support them"* ( ). Another participant (K3) expressed a change in their outlook on life, saying, *"After the earthquake*, *I began to enjoy life and moments more*." The earthquake led participants to become more moderate, flexible, and compassionate individuals. This helped them develop a more positive approach in their professions. Unemployment and career changes also emerged as an important subcategory. Several participants (K2, K4) experienced a serious period of unemployment due to the closure of their school or being

forced to leave school. However, this process created new opportunities for some participants and led to positive outcomes such as government appointments (K2). Professional difficulties and incompatibilities are another important subcategory. After the earthquake, many teachers encountered problems such as students not returning to school or security concerns. For example, (K7) explains the disruption to education, saying, *"Many students did not want to come to school. This situation upset me greatly as a teacher. Because we were progressing with some students in class, but falling behind with others."* At the same time, there have been changes in student and family relationships. Participants stated that they established friendlier relationships with their students and began learning languages such as Arabic to be able to support them more (K.9). As a result, the most prominent changes in professional life after the earthquake focused on emotional and practical adaptation processes. The changes in both the teachers' own emotional well-being and their relationships with their students have positively affected their motivation. The earthquake deeply affected the teachers' emotional and professional lives, creating opportunities for some and difficulties for others. These changes have generally manifested themselves in the form of a more empathetic approach and a more flexible professional life.

Theme 3: Factors Motivating Teachers After the Earthquake

In this theme, two different subcategories, six subcategories, and 19 codes emerged as "internal and external" factors motivating teachers after the earthquake. These categories and codes are listed in Table 4 with their frequencies.

Table 4. Positive Factors Affecting Teachers' Motivation

Theme	Subcategory	Categories	Codes	f

Factors Motivating After an Earthquake	Internal	Spirituality and mental strength	Spiritual support, spiritual strength, source of morale	5
		Self-awareness	Recognizing one's own strength, psychological resilience, responsibility	4
	External	Family and loved ones	Family support, children, spending time with loved ones, being together	10
		Help	Community solidarity, assistance, unity in the city, support from outside	6
		Understanding the value of routines	Daily life, peaceful moments, valuable routines	5
		Social responsibility	Recovery in the city, local responsibility, solidarity in the city	4

When Table 4 is examined, the presence of family and loved ones is at the top of the list of reasons for participants' motivation after the earthquake. Many participants stated that the presence of their children, in particular, was a source of strength that kept them going. For example, one participant (P1) said, *"Having my young child gave me the motivation I needed to stay strong*," while another participant (P5) stated, "I *felt* that *being with my family gave me strength*." The strength of family ties stands out as the most important source of motivation that keeps people going in difficult times. Survival and health were a very distinct subcategory of motivation sources . Participants stated that despite the disaster they experienced, the health of themselves and their loved ones was more valuable than anything else. One participant (P7) emphasized the importance of health and safety, saying, *"The fact that nothing happened to me and my family motivated me*." Another (K4) expressed their feelings by saying, *"Being alive and having my loved ones alive was my greatest source of motivation*." Community and aid are another important factor affecting participants' motivation. The aid

provided after the earthquake and the solidarity of the community boosted the participants' morale. For example, one participant (K8) said, *"Aid from cities outside the earthquake zone motivated us*," while another participant (K9) said, *"The unity and solidarity in the community got us back on our feet*." Spirituality and mental strength were also subcategories that affected motivation. Participants indicated that spiritual support and their beliefs helped them recover. One participant (K3) said, *"Turning to spirituality motivated me*," while another participant (K5) expressed their feelings by saying, *"My source of morale to hold on to life was spiritual strength*." Understanding the value of routines led participants to gain awareness about their former lives. Many participants realized that daily life, which they had previously considered ordinary, was now much more valuable. One participant (K10) expressed understanding the value of simple things, saying, *"Clean clothes, healthy food, and peaceful moments motivated me*."

Responsibility for the city and community is another source of motivation. Participants stated that their efforts to rebuild the city and community motivated them. One participant (K6) said, *"Our attachment to our city was our greatest source of motivation*." This emphasizes the power of social solidarity and the importance of local responsibility. Finally, recognizing one's own strength and psychological resilience was also an important source of motivation. After the earthquake, despite the difficulties they faced, participants discovered their inner strength. One participant (K7) expressed their feelings by saying, *"I realized my own strength and thought I had to cope with it*," while another (K9) said, *"I had to be emotionally strong to continue living*." As a result, the most important factors motivating participants were the support of their families and loved ones, health, community solidarity, and spiritual strength. These factors enabled individuals to hold on to their lives

during difficult times. In addition, contributing to the recovery process of cities and taking on social responsibilities were also important sources of motivation.

Theme 4: Negative Factors Affecting Post-Earthquake Motivation

In this theme, two categories, eight subcategories, and 25 codes emerged, classified as "internal" and "external" factors. These categories and codes are presented in Table 5 along with their frequencies.

Table 5. Negative Factors Affecting Teachers' Motivation After the Earthquake

Theme	Categories	Subcategories	Codes	f
Negative Factors	Internal	Fear	Fear that the earthquake will happen again, safety concerns, fear of tremors at any moment	7
		Loss	Loss of family members, loss of home, displacement from one's immediate surroundings, forced migration	7
		Psychological Difficulties	Difficulty in psychological recovery, trauma, fear of losing family, fear and anxiety, feelings of loneliness and helplessness	6
		Expectations	Slow arrival of help	5
	External	Lack of social support	Loss of friends, indifference of those receiving help, loneliness	4

		Disruptions and Challenges in Education	Ongoing difficulties after the school opened, students not attending, inadequate school facilities	4
		Physical Challenges and Health	Physical injuries sustained during the earthquake, health issues, physical recovery process	3
		Changes in the Social Environment	Moving to a new city, moving away from the familiar environment, change of city	3

When Table 5 is examined, the most prominent factor negatively affecting teachers' motivation after the earthquake is concentrated in the category of fear and loss. Many participants (P1, P3, P5) stated that they lived in constant fear of another earthquake. These fears created physical and emotional effects and made their daily lives difficult. In addition, aftershocks and the thought of a new tremor that could occur at any moment increased their concerns about safety. The loss of people and possessions also created a significant loss of motivation. Participants who lost loved ones or their homes after the earthquake (K6, K8) faced serious emotional difficulties, and these losses negatively affected their motivation. Furthermore, those who were forced to leave their cities (K7) found this transition process very difficult and stressful. Psychological difficulties emerged as another important subcategory. The traumas experienced after the earthquake complicated the psychological recovery process and reduced participants' motivation. Many participants (K4, K9) stated that they had difficulty recovering psychologically. The delayed arrival of aid and lack of social support were also factors affecting participants. The delayed arrival of aid created feelings of loneliness and helplessness among participants (K9), while some participants were disturbed by the disappearance and indifference of friends in their neighborhood (K2). Disruptions in education and physical difficulties were also important factors. With the reopening of schools, disruptions occurred in the educational process, and the

absence of students from school further reduced the participants' motivation (K3, K8). In addition, one participant (K9) was unable to recover for a long time due to physical injuries sustained during the earthquake, which also negatively affected his motivation. In conclusion, the earthquake caused teachers to experience great difficulties both psychologically and physically. The loss of people, security concerns, the late arrival of aid, and psychological trauma seriously affected the participants' motivation. Furthermore, the environmental and social changes that occurred also increased the difficulties and prolonged the recovery processes.

Theme 5: Factors Motivating Teachers After the Earthquake

In this theme, 8 categories and 25 codes emerged that motivate teachers after an earthquake. These categories and codes are listed in Table 6 with their frequencies.

Table 6. Factors Motivating Teachers After an Earthquake

Theme	Categories	Codes	f
	Psychological Support	Psychological assistance, support teams, emotional recovery process, provision of psychological support	7
	Assistance and Coordination	Coordination of assistance, rapid and accurate distribution of assistance, ensuring assistance reaches villages	7
	Education and School Processes	School opening times, special support for teachers, acceleration of education processes, raising earthquake awareness in schools	6
	Urbanization and Physical Recovery	Rapid recovery and restoration of cities, improvement of local healthcare facilities	6

Factors Motivating Teachers	Social Support and Motivation	Granting the right to transfer, providing special motivation to teachers, meeting personal needs	5
	Professional Support and Incentives	Professional accommodations, assignment rights, and special assistance for teachers affected by the earthquake	5
	Improvement of Living Conditions	Improvement of living conditions, increased accommodation and health facilities	4
	Time and Patience	The healing process of time, the diminishing pain of loss, and recovery through patience and perseverance	3

When Table 6 is examined, one of the most important factors that can increase teachers' motivation after an earthquake is the category of psychological support and psychological assistance. Participants wanted to receive professional support for the traumas they experienced after the earthquake and for this process to be handled in a more systematic way (K1, K5).

The coordination and rapid delivery of aid was important for participants to receive support more efficiently. The need for aid to be distributed correctly and equally, the inability of some regions to receive aid (K2, K4), and the slow arrival of aid were among the factors that led to a loss of motivation. Furthermore, most participants (K6, K7) expected aid to be organized effectively and delivered on time. Accelerating the education process and reopening schools were also factors that increased motivation. The rapid reopening of schools (K5) and providing special support to teachers in the education process (K8) could have facilitated participants' return to work and transition to normal life. Furthermore, providing training in schools to raise awareness about earthquakes could also increase teachers' motivation. Urbanization and physical recovery also had an impact on motivation. Participants stated that their cities needed to be restored to their former state more quickly (K9) and that increasing health services would strengthen their motivation. Recommendations

in the areas of social support and motivation are also noteworthy. In conclusion, to increase motivation after an earthquake, it is crucial that psychological support and assistance are provided quickly and regularly . Furthermore, accelerating educational processes and making improvements in the areas of physical recovery and social support can speed up the recovery processes of teachers and other earthquake victims.

Discussion, Conclusions, and Recommendations

In this study, "external factors" were the most frequently mentioned category among the positive factors affecting teachers' motivation after the earthquake. This finding is supported by the research of Ada et al. (2013). Ada et al. (2013) stated that external factors are more effective than internal factors in ensuring teachers' professional motivation. Another study found that factors such as physical facilities and conditions and economic factors play an important role in influencing teachers' professional motivation (Gümüştaş and Gülbahar, 2022).

Studies demonstrating that teacher performance and motivation are significant factors in school effectiveness have shown that institutions providing social support and fostering a positive school climate contribute to the motivation and job satisfaction of teachers and other staff (Scheopner, 2010). Aelterman et al. (2019) recommend that teachers develop a motivating and supportive understanding regarding teacher motivation. This recommendation was also expressed by teachers in this study. In particular, the significant impact of family and community support on teachers' psychological well-being (Mao and Agyapon, 2021) and the influence of student motivation on teacher motivation (Kalyar et al., 2018) have been demonstrated in other studies consistent with our research. Looking at these results, it can be said that these findings in the literature

support the results of our study. It is also expected that teachers will generally provide emotional support to their students rather than academic support after an earthquake (Lee et al., 2017). Hermansson (2016) states in his research that civil society support also has an effect on teachers' capacity to return to education. However, it is stated that individuals who contribute to the recovery process after an earthquake also positively contribute to their own motivation through the support services they provide voluntarily (Taku et al., 2018). State policies play an important role in adding earthquake awareness training to the education curriculum, positively affecting teacher motivation (Seddighi et al., 2020). Dhital et al. (2019) stated that teachers play an important role in providing psychosocial support by instilling hope in students after a disaster; however, it has been found that teachers who have experienced traumatic experiences struggle to provide this support, which negatively affects their motivation.

In conclusion, this study found that the February 6, 2023, earthquakes centered in Kahramanmaraş led to various experiences in the lives of teachers who experienced these earthquakes and had both positive and negative effects on their motivation. The evaluations revealed that teachers experienced significant panic, anxiety, fear of death, and fear of losing loved ones during the earthquake. Looking at the situations and factors that motivated them after the earthquake, these included the good health of their loved ones, interacting with people and supporting each other, and the feeling of teaching their students again. It was observed that teachers experienced difficulties in adapting to school, working in another city, and supporting their students in the face of the students' suffering and psychological impact. Security, helplessness, being far from their city, being away from their families and loved ones, and the loss of life and property negatively affected teachers'

motivation . Improving living conditions, restoring the old order, increasing health facilities, and providing faster future aid were seen to motivate teachers more.

Post-earthquake motivation sources have been shaped by the emotional and psychological processes experienced by the participants. Most participants stated that the fact that their loved ones were alive and healthy was their greatest source of motivation. In addition, despite the difficulties experienced after the earthquake, social solidarity, the coordination of aid, and the sense of belonging also emerged as important factors that increased motivation. However, participants requested the creation of a stronger support mechanism through measures such as making psychological support and aid processes more effective, carefully planning the reopening of schools, and making special appointments for earthquake victims.

The following recommendations were developed as a result of this study:

- Teachers need to have access to safe spaces where they and their loved ones can feel secure.
- Appropriate school environments must be provided so that teachers can deliver effective lessons to their students.
- It is necessary to avoid creating a stressful environment for teachers during this difficult process that affects their lives and professions.
- More qualitative research can be conducted on schools (including school principals, teachers, students, and parents) in the aftermath of natural disasters such as earthquakes.

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CHAPTER 2

AI-DRIVEN SCHOOL GOVERNANCE: POLICY, REGULATION, AND INSTITUTIONAL ACCOUNTABILITY

Okyanus Işık Seda YILMAZ[1]

INTRODUCTION

The rapid integration of artificial intelligence (AI) into education has triggered a profound transformation in school governance systems. AI is no longer a peripheral instructional tool; it increasingly functions as a governance actor that organizes data flows, shapes decision-making infrastructures, and redefines institutional accountability. Contemporary research in education policy and governance highlights that decision architectures in schools are shifting toward algorithmic systems, creating new modalities of coordination, oversight, and control (Williamson, 2021; Selwyn, 2022). As a result, the central question for educational leaders is not merely how AI can be used, but how AI is restructuring

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governance itself and what ethical, political, and institutional consequences accompany this shift.

Modern governance environments have become more complex due to escalating data demands, intensified accountability pressures, and expanding compliance obligations. This complexity blurs the boundaries of responsibility for school leaders and challenges traditional assumptions about transparency, fairness, and decision legitimacy (Keddie, 2023; Givens, 2022). In many national systems, existing policy frameworks lag behind technological developments, producing what scholars identify as a policy vacuum—a regulatory gap in which AI-enabled systems operate without adequate institutional guidance or safeguards (Floridi & Taddeo, 2016). This vacuum often positions schools in asymmetrical relationships with technology vendors, thereby weakening governance oversight and institutional autonomy (Roberts-Mahoney et al., 2016).

Yet AI also offers significant opportunities for strengthening school governance. Advanced data analytics, real-time monitoring capabilities, predictive modeling, and automated compliance checks have the potential to enhance leaders' strategic decision-making capacity and improve institutional performance (Bulger, 2020). Thus, AI represents a dual dynamic: it introduces new risks related to bias, opacity, and power asymmetries, while simultaneously enabling more responsive and evidence-informed governance processes.

Against this backdrop, the purpose of this chapter is threefold. First, it provides a conceptual and theoretical foundation for understanding why AI is becoming indispensable to school governance systems. Second, it analyzes how AI-driven mechanisms—including decision infrastructures, monitoring systems, data flows, and accountability structures—reshape institutional practices, identifying both affordances and

vulnerabilities. Third, it proposes a structured governance framework that supports ethical, transparent, and human-centered leadership in AI-rich educational environments. By synthesizing insights from governance theory, algorithmic accountability, and contemporary educational leadership research, this chapter contributes to an emerging body of scholarship that seeks to align AI innovation with democratic, equitable, and ethically grounded governance in schools.

CONCEPTUAL AND THEORETICAL FOUNDATIONS

Governing schools in an era of algorithmic systems requires conceptual tools that extend far beyond traditional administrative frameworks. AI changes not only what leaders do but also how authority, accountability, and decision-making are structured within educational organizations. This section synthesizes core governance theories, leadership models, and algorithmic governance literature to establish the theoretical foundation for AI-driven school governance.

Governance Theory in Education

Educational governance has evolved from hierarchical, bureaucratic models toward more decentralized, networked, and data-intensive forms of coordination. Classical governance frameworks emphasized rules, compliance, and centralized authority; however, contemporary models recognize governance as a dynamic process shaped by multiple actors, distributed responsibilities, and complex decision environments (Ball, 2012; Ozga, 2009). Policy enactment theory further highlights that policies do not simply "flow" from government to schools; they are interpreted, negotiated, and reconstructed by institutional actors (Braun, Maguire & Ball, 2010).

In this context, AI introduces a new governance layer by mediating how policies are operationalized—embedding regulatory intentions into data structures, automated decision rules, and algorithmic monitoring systems. Thus, AI becomes not merely a tool but a policy enactment mechanism, influencing what counts as valid knowledge, evidence, or performance within educational systems (Williamson, 2021).

Algorithmic Governance: Definitions and Core Assumptions

Algorithmic governance refers to the use of computational systems that structure decision-making, classification, prediction, and evaluation processes (Yeung, 2018). In education, it operates through data extraction, machine-learning models, and automated decision infrastructures that redefine how students, teachers, and institutions are assessed and managed (Selwyn, 2022).

A central assumption of algorithmic governance is that large-scale data patterns can produce more efficient, objective, or "optimized" decisions. However, this assumption has been widely contested: algorithms may reproduce structural inequalities, encode biased datasets, and render institutional processes opaque (Eubanks, 2018; Noble, 2018).

For schools, algorithmic governance introduces a tension between efficiency and equity. While it promises improved organizational oversight, early-warning systems, and risk detection, it also raises concerns regarding fairness, accountability, and the legitimacy of machine-driven judgments.

Leadership and Accountability Models

Educational leadership has traditionally centered on human judgment, professional autonomy, and relational ethics (Shapiro & Stefkovich, 2016). Accountability models, meanwhile, have focused

on performance indicators, compliance regimes, and public reporting (Keddie, 2019).

AI disrupts both domains by redistributing cognitive labor and reframing responsibility. Leaders increasingly rely on algorithmic insights, predictive analytics, and automated reporting mechanisms. This shift challenges conventional models of accountability: Who is responsible when an algorithm influences—or makes—a decision?

Emerging literature argues that algorithmic systems must be embedded within human-centered accountability structures, ensuring that leaders remain the ultimate ethical agents, even when decisions are technologically augmented (Givens, 2022; Tsai et al., 2021).

AI as a Governance Actor

Recent scholarship conceptualizes AI as an institutional "actor" that shapes governance processes through its capacity to classify, rank, predict, and regulate behavior (Beer, 2017; Knox et al., 2020). AI reforms the architecture of decision-making by:

- determining what data are collected and prioritized,
- structuring evaluative categories and outcomes,
- influencing disciplinary and compliance pathways,
- and embedding values such as efficiency, risk aversion, or performance optimization.

In this sense, AI participates in "decision infrastructures"—the sociotechnical systems through which schools understand problems, allocate resources, manage staff, and evaluate students (Anagnostopoulos et al., 2023).

Recognizing AI as a governance actor is crucial because it reframes leadership responsibilities, regulatory needs, and ethical expectations in ai-rich school systems.

AI-ENABLED SCHOOL GOVERNANCE MECHANISMS

AI is reshaping the internal governance mechanisms of schools by transforming how information is collected, interpreted, and used in decision-making. Governance, in this context, refers not only to formal rules and policies but also to the organizational routines, technologies, and power structures that shape how decisions are made. This section analyzes the mechanisms through which AI becomes embedded in school governance and explains how these mechanisms alter leadership practices, accountability structures, and organizational norms.

Data Flows and Decision Architecture in Schools

AI-driven governance begins with the structuring of data flows—how information is collected, processed, classified, and circulated within school systems. Contemporary educational governance increasingly relies on "data infrastructures" that transform everyday practices into quantifiable indicators (Williamson, 2021). These infrastructures feed machine-learning models that inform attendance monitoring, behavioral risk prediction, resource allocation, and performance evaluations (Anagnostopoulos et al., 2023).

Decision architecture refers to the sociotechnical arrangement through which decisions are shaped: who (or what) produces information, which metrics are prioritized, and how outcomes are interpreted. AI shifts these dynamics by embedding policy logic directly into algorithms, thereby making governance partially automated and pre-structured. As a result, school leaders often make decisions within frameworks already constrained by algorithmically generated outputs, altering institutional autonomy.

AI Systems for Monitoring, Reporting, and Oversight

AI-enabled monitoring systems—such as predictive attendance tools, automated behavior detection, and real-time performance dashboards—are increasingly central to oversight processes. These systems promise enhanced accuracy, early detection of anomalies, and efficient reporting mechanisms (Selwyn, 2022).

However, research warns that algorithmic surveillance may expand institutional reach in ways that affect student privacy, teacher autonomy, and school–community trust (Keddie, 2023; Bulger, 2020). Machine-learning models trained on historical data can reproduce existing inequities, disproportionately flagging marginalized students or misrepresenting classroom dynamics (Noble, 2018).

Thus, while AI augments oversight capacity, it simultaneously intensifies ethical obligations around consent, data minimization, and the proportionality of monitoring practices.

Predictive Analytics in Governance Processes

Predictive analytics—ranging from early-warning systems to performance forecasts—play an increasingly prominent role in resource planning, risk assessment, and student intervention models. Studies show that these tools can help schools identify emerging issues such as chronic absenteeism or declining achievement before they escalate (Bowers et al., 2017).

Yet predictive systems are probabilistic, not deterministic. They may reinforce stereotypes embedded in historical datasets, leading to self-fulfilling governance outcomes in which predicted risks shape institutional behavior rather than objective needs (Eubanks, 2018). For school leaders, this creates a tension between leveraging predictive insight and avoiding overreliance on

algorithmic classifications that may lack explanatory depth or contextual nuance.

AI-Enhanced Compliance and Risk Analysis

Compliance regimes in education—including safety standards, reporting requirements, inclusion policies, and financial oversight—are increasingly mediated by AI-driven analytics. Automated compliance systems can streamline documentation, flag policy violations, and support audit readiness with real-time reporting (Tsai et al., 2021).

Similarly, AI-based risk analysis tools can detect irregular patterns in attendance, financial records, cybersecurity threats, or well-being indicators. While these capabilities strengthen institutional resilience, they also introduce new vulnerabilities—such as dependence on proprietary vendor systems, opaque algorithms, and the risk of misinterpreting false positives or false negatives.

Ultimately, AI-enhanced compliance demands a governance approach that combines technological capacity with human interpretive judgment, ensuring that regulatory decisions remain accountable, transparent, and educationally meaningful.

INSTITUTIONAL ACCOUNTABILITY IN AI-RICH SCHOOL SYSTEMS

Shifting Responsibility: Human vs. Algorithmic Decision-Makers

The integration of AI into governance infrastructures complicates traditional notions of institutional responsibility. In conventional models, accountability is grounded in human agency—leaders and educators are held responsible for decisions they make, justify, and implement. AI, however, introduces a layer of

algorithmic agency, wherein decisions are shaped or partially generated by machine-learning models (Givens, 2022).

This raises a central question: Who is accountable when an algorithm influences a decision that affects students, teachers, or communities? Research shows that AI systems can obscure decision pathways, making it difficult to trace how outputs were produced or which variables shaped the resulting recommendations (Burrell, 2016). Such opacity complicates normative expectations of responsible leadership.

Institutional responsibility therefore shifts from merely "using data wisely" to establishing interpretive oversight, ensuring that leaders critically evaluate AI-generated insights instead of accepting them as inherently objective.

Transparency Obligations for School Leaders

Transparency—historically associated with clear reporting and open communication—takes on new meaning in AI-mediated environments. Algorithms often operate through proprietary models or "black-box" processes that are inaccessible to school staff (Pasquale, 2015). This creates a transparency deficit at a time when stakeholders increasingly demand visibility into decision-making systems.

School leaders must navigate two forms of transparency:

1. Technical transparency: understanding the logic, limitations, and data assumptions underlying AI systems.
2. Institutional transparency: communicating to teachers, parents, and students how AI tools are used, what data are collected, and how outputs inform school practices.

Studies show that transparent processes enhance stakeholder trust and mitigate fears associated with algorithmic surveillance and automated classification (Keddie, 2023). Transparency thus becomes an ethical and strategic necessity in AI-rich governance.

Ethical Accountability: Bias, Fairness, and Explainability

Ethical accountability requires confronting the risks embedded in algorithmic systems—particularly bias, fairness, and explainability. Machine-learning models trained on incomplete or historically biased datasets can produce discriminatory outcomes that disproportionately impact marginalized groups (Noble, 2018; Eubanks, 2018).

Fairness demands that leaders examine whether algorithmic tools reinforce inequities in discipline, placement, intervention, or resource allocation.

Explainability concerns whether leaders can interpret and justify algorithmic predictions in ways that are comprehensible and educationally defensible (Floridi & Taddeo, 2016).

Without explainability, institutional actors cannot meaningfully contest or contextualize algorithmic outputs. As a result, ethical accountability hinges on implementing governance mechanisms that require human evaluation of AI-generated insights before they influence organizational decisions.

Stakeholder Reporting and Community Trust

In AI-rich systems, institutional accountability extends beyond internal oversight to include community-facing reporting practices. Parents, students, and local communities increasingly expect to know how AI technologies influence disciplinary decisions, risk assessments, and learning pathways (Bulger, 2020).

Trust is not achieved merely by deploying AI tools; it emerges through transparent justification, ethical safeguards, and participatory communication. Research shows that when stakeholders perceive AI systems as opaque or overly punitive, school–community relations deteriorate (Williamson, 2021). Conversely, when leaders provide clear rationales for AI use, outline protective measures, and engage stakeholders in ongoing dialogue, trust and legitimacy strengthen.

Thus, institutional accountability in AI-rich school systems is fundamentally relational—it depends on aligning algorithmic practices with democratic values, ethical obligations, and the expectations of the communities schools serve.

REGULATORY GAPS AND LEADERSHIP CHALLENGES

Misalignment Between National Policies and AI Systems

AI adoption in education has expanded far more rapidly than the development of coherent national regulatory frameworks. Many countries lack clear guidelines on data governance, algorithmic decision-making, and ethical auditing in schools (Williamson & Piattoeva, 2022). This misalignment results in a policy–practice gap, where schools implement AI-driven systems without strong regulatory anchors.

Because vendors increasingly shape what is technologically possible—and therefore what becomes "governable"—policy often follows practice instead of guiding it. As a result, schools may adopt systems that exceed their regulatory capacity, leaving leaders responsible for decisions influenced by technologies that are only partially understood and inadequately governed.

Vendor–School Power Asymmetries

The expansion of edtech markets has generated asymmetrical relationships between schools and technology providers. Vendors

often control the design, data architectures, predictive models, and update cycles of AI tools, positioning themselves as primary governance actors (Roberts-Mahoney et al., 2016).

This raises three major challenges:

1. Opacity: proprietary algorithms limit insight into how outputs are generated.
2. Dependency: schools rely on vendor expertise for interpretation, maintenance, and troubleshooting.
3. Data ownership: vendors may retain access to or rights over data, blurring legal responsibilities.

These asymmetries weaken institutional autonomy and complicate leaders' ability to ensure ethical, accountable decision-making.

Legal and Ethical Grey Zones

AI introduces ambiguous territories in privacy law, discrimination protections, and educational rights. Machine-learning systems often rely on sensitive data—attendance, behavior, socioemotional indicators, or demographic attributes—which may fall outside existing consent protocols or data-protection guidelines (Bulger, 2020).

Key grey zones include:

- whether predictive classifications constitute discriminatory profiling,
- whether automated recommendations count as "decisions" under legal definitions,
- and how liability is assigned when algorithmic outputs are incorrect or harmful.

In many jurisdictions, legislation has not yet evolved to meet the complexities posed by predictive analytics, algorithmic surveillance, or AI-mediated disciplinary processes. Leaders must therefore operate with heightened ethical sensitivity despite incomplete legal clarity.

Public–Private Data Governance Conflicts

AI governance in schools operates at the intersection of public accountability and private-sector innovation. While schools are public institutions obligated to uphold transparency and equity, AI systems are often developed by private companies whose priorities include market competitiveness and intellectual property protection (Williamson, 2021).

This creates tension between:

- public values (fairness, inclusion, transparency), and
- private logics (efficiency, proprietary algorithms, data monetization).

Conflicts emerge when vendor data practices or algorithmic processes cannot be audited due to confidentiality claims. These limits on inspection undermine democratic oversight and hinder leaders' ability to ensure accountable governance.

The Leadership Burden: Oversight Without Technical Expertise

School leaders are increasingly expected to oversee complex AI systems without specialized training in data science, machine learning, or algorithmic auditing. This "expertise gap" is well documented across public-sector institutions (Givens, 2022; Tsai et al., 2021).

Leaders face several burdens:

- interpreting outputs they cannot fully validate,
- managing risks they cannot technically diagnose,

- balancing innovation pressures with ethical obligations,
- navigating stakeholder concerns about privacy and fairness,
- and ensuring compliance with evolving regulations.

This results in heightened cognitive, ethical, and administrative load. Leadership theory traditionally emphasizes relational and human-centered dimensions; however, AI governance introduces a technical dimension that stretches existing competency frameworks beyond their intended scope.

Consequently, leaders must cultivate hybrid capacities—combining ethical judgment, policy awareness, and foundational technological literacy—to effectively guide AI-rich governance environments.

A FRAMEWORK FOR AI-DRIVEN SCHOOL GOVERNANCE

Core Principles

A governance framework for AI-rich school systems must be rooted in ethical, democratic, and educational values rather than solely technological capacities. Based on contemporary debates in algorithmic accountability, digital ethics, and educational leadership, five foundational principles emerge.

Transparency

Transparency requires that AI systems be understandable in terms of their data sources, decision rules, model assumptions, and potential limitations (Floridi & Taddeo, 2016). For schools, transparency also includes communicating clearly with stakeholders—teachers, students, and families—about how AI tools are used and how algorithmic insights inform institutional decisions.

Accountability

Accountability means that human leaders remain ultimately responsible for decisions shaped or supported by AI. As scholars argue, delegating judgment to opaque systems undermines democratic governance and professional ethics (Givens, 2022). Leaders must therefore ensure that algorithmic processes are reviewable, contestable, and aligned with institutional norms.

Fairness

Fairness requires active mitigation of algorithmic bias and systematic inequalities. Because machine-learning systems often reproduce historical disparities embedded in datasets (Noble, 2018), fairness must be operationalized through bias audits, inclusive data practices, and equity-focused evaluation protocols.

Human Oversight

Human oversight ensures that algorithms augment, rather than replace, educational judgment. Schools must build decision pathways where AI-generated predictions are interpreted through professional expertise, contextual knowledge, and ethical reasoning (Tsai et al., 2021).

Data Ethics

Data ethics emphasizes proportionality, consent, privacy, and responsible data stewardship. Schools must limit data extraction to clearly defined educational purposes, apply robust security protections, and ensure that data practices conform to both national regulations and local community values (Bulger, 2020).

These principles collectively form the normative foundation of AI-driven school governance.

Structural Components of the Governance Framework

To translate principles into practice, schools require concrete organizational structures that guide oversight, implementation, and evaluation.

Governance Teams

A cross-functional governance team should include school leaders, data specialists, teachers, legal or compliance advisors, and community representatives. Research shows that distributed oversight reduces the risks associated with unilateral technology decisions and enhances institutional legitimacy (Williamson & Piattoeva, 2022).

These teams are responsible for:

- reviewing AI tools before adoption,
- assessing vendor contracts and data agreements,
- monitoring system impacts on equity, privacy, and instructional practice,
- and ensuring ongoing alignment between AI use and school mission.

Protocols for Oversight

Effective oversight requires standardized, repeatable processes that structure how AI tools are evaluated. These protocols may include:

- Algorithmic impact assessments,
- Bias and performance audits,
- Explainability reviews,
- Risk classification procedures,

- Incident reporting mechanisms when algorithmic harms occur.

Oversight protocols ensure that AI adoption does not outpace institutional capacity for ethical governance.

Ethical Audit Cycles

Rather than one-time evaluations, AI governance must rely on continuous ethical auditing cycles. Because models drift, datasets change, and school contexts evolve, periodic audits are essential for identifying emergent risks and unintended consequences (Anagnostopoulos et al., 2023).

Ethical audit cycles typically involve:

1. Data review: assessing data quality, representativeness, and bias.
2. Model monitoring: examining prediction accuracy and stability.
3. Impact evaluation: analyzing effects on student outcomes, teacher workload, and institutional equity.
4. Corrective action: modifying use policies or adjusting model parameters where necessary.

These cycles institutionalize responsibility and prevent ethical complacency.

Implementation Roadmap for School Leaders

Implementation requires staged development, especially given leaders' varying levels of technical expertise and institutional readiness. A phased roadmap supports sustainable, responsible adoption.

Early Stage: Foundation-Building

- Establish governance teams and clarify oversight roles.

- Conduct an inventory of existing data systems and AI tools.
- Provide introductory training on AI literacy, data ethics, and algorithmic accountability.
- Develop guiding policies for procurement, data retention, and privacy protections.

At this stage, the goal is not rapid adoption but capacity development.

Mid Stage: Structured Integration

- Introduce AI tools in limited, high-need areas (e.g., early-warning systems, attendance analytics).
- Implement oversight protocols and ethical audit cycles.
- Strengthen transparency practices, including stakeholder communication plans.
- Evaluate technical performance and social impacts through mixed-method analysis.

At this stage, AI becomes part of routine governance—but under deliberate, monitored conditions.

Mature Stage: Systemic Alignment

- Integrate AI into broader strategic planning, resource allocation, and institutional improvement frameworks.
- Use audit data to refine policies, improve model accuracy, and mitigate risks.
- Engage stakeholders (teachers, parents, students) in participatory evaluation of AI impacts.
- Pursue long-term alignment with national regulations and emerging ethical standards.

A mature system is not defined by maximal AI use but by coherence, accountability, and educational purpose.

IMPLICATIONS FOR POLICY, RESEARCH, AND PRACTICE

Policy Recommendations

The rapid adoption of AI in education requires policy frameworks that are anticipatory, robust, and ethically grounded. Current research identifies several urgent policy needs:

Develop National Standards for Algorithmic Governance

National regulations must define how AI tools are evaluated, audited, procured, and monitored. Without clear standards, schools face inconsistent expectations and uneven protections across regions (Williamson & Piattoeva, 2022). Standards should address transparency requirements, data minimization, bias auditing, and incident reporting mechanisms.

Mandate Algorithmic Impact Assessments (AIAs)

Before deploying AI tools, schools should be required to conduct formal assessments of potential risks, including equity concerns, privacy implications, and unintended consequences. Similar frameworks are emerging in public-administration contexts and should be adapted for education.

Strengthen Data Protection and Ownership Policies

Policy must clarify who owns educational data, how long it can be retained, and under what conditions it may be shared with vendors. Scholars warn that ambiguities in data ownership undermine democratic oversight and empower private actors at the expense of public accountability (Roberts-Mahoney et al., 2016).

Ensure Public Transparency and Community Consultation

Policy should require schools to disclose which AI tools are used, what data are collected, and how decisions are shaped by algorithmic systems. This protects community trust and counters potential misuse of surveillance technologies.

Research Gaps on AI–Governance Interaction

Although scholarship on AI in education is expanding, several gaps limit the field's capacity to support responsible governance.

Understanding How Algorithms Reshape Decision-Making

More research is needed on the micro-level processes through which AI influences judgment, classification, and intervention decisions. Existing studies highlight concerns about automation bias, but empirical work in school contexts remains limited.

Longitudinal Impacts on Equity and Inclusion

Few studies examine long-term equity outcomes associated with AI-driven governance. Given concerns about bias in predictive analytics, longitudinal research is essential for identifying cumulative effects on marginalized groups (Noble, 2018; Eubanks, 2018).

Governance Capacity and Leadership Preparedness

There is little empirical evidence on how prepared school leaders are to oversee AI systems. Research should explore training needs, technological literacy, and the interplay between professional norms and algorithmic infrastructures (Givens, 2022).

Vendor Influence and Market Dynamics

The private sector plays a major role in shaping AI governance in schools. More investigation is needed into vendor–

school relationships, procurement structures, and the implications of proprietary algorithms for public accountability (Williamson, 2021).

Practical Guidance for School Administrators

While policy and research shape the broader ecosystem, school leaders require concrete strategies for navigating AI-rich governance environments.

Build AI Literacy Across the Institution

Administrators, teachers, and support staff need foundational understanding of how algorithms work, what their limitations are, and how they may influence decisions. Literacy programs should focus on bias, explainability, and ethical use.

Adopt a "Human-in-the-Loop" Decision Model

AI outputs should inform—but never replace—professional judgment. Leaders must institutionalize pathways where humans review, contextualize, and interpret algorithmic recommendations before any action is taken.

Document Governance Practices and Decision Pathways

Clear documentation strengthens accountability and supports internal audits. Schools should record when AI tools were used, how outputs were interpreted, and what alternative options were considered.

Engage Stakeholders Early and Often

Trust is built through participation. Leaders should involve parents, students, and teachers in discussions about AI adoption, ensuring that concerns are acknowledged and ethical guardrails are co-developed.

Monitor for Unintended Consequences

Regular reviews should be conducted to evaluate whether AI tools produce disproportionate outcomes, increase staff workload, or heighten surveillance pressures. Early detection enables timely corrective action.

CONCLUSION

Synthesis

The integration of artificial intelligence into school governance marks one of the most significant organizational transformations in contemporary education. AI reshapes how institutions collect data, assess performance, allocate resources, monitor compliance, and manage risk. As demonstrated throughout this chapter, algorithmic systems function not merely as technical tools but as active governance agents that influence decision architectures, reconfigure accountability structures, and redefine the boundaries of institutional autonomy (Williamson, 2021; Selwyn, 2022).

This synthesis underscores a central theme: AI amplifies both the possibilities and vulnerabilities of modern governance. It can strengthen oversight, enhance predictive capacity, and streamline administrative processes. Yet it also introduces new forms of opacity, bias, and power asymmetry that challenge long-standing democratic and ethical norms.

Leadership as the Anchor of Ethical AI Governance

In AI-rich environments, leadership becomes the decisive force in determining whether technological innovation supports or undermines educational values. School leaders must navigate expanding responsibilities—interpreting algorithmic outputs, safeguarding privacy, mitigating bias, and communicating transparently with stakeholders.

Ethical and human-centered governance requires leaders to maintain ultimate responsibility, even when decisions are augmented by computational systems. As the literature makes clear, AI does not diminish the need for leadership; it intensifies it (Givens, 2022). Leaders must cultivate hybrid competencies that combine ethical judgment, technological literacy, and policy awareness. Their capacity to recognize both the affordances and limitations of AI is essential for fostering equitable and trustworthy governance.

Future Directions for Human-Centered Governance

Looking forward, sustainable AI governance in education will depend on aligning technological development with democratic accountability, equity principles, and community values. Several future directions emerge:

- Strengthening regulatory infrastructures to ensure transparency, fairness, and data protection.
- Developing robust auditing mechanisms capable of monitoring algorithmic impacts over time.
- Expanding interdisciplinary research on AI's social, ethical, and pedagogical implications.
- Building institutional cultures that promote critical reflection rather than uncritical adoption.
- Ensuring meaningful stakeholder participation in decisions about AI adoption and use.

Ultimately, the goal is not to create highly automated schools, but to build intelligent governance systems that support human flourishing, professional integrity, and educational justice. AI's promise can only be realized when its deployment is guided by thoughtful leadership, strong ethical commitments, and inclusive governance practices.

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CHAPTER 3

DIGITAL HABITUS: THE POSITION OF EDUCATIONAL ADMINISTRATORS BETWEEN STRUCTURE AND ACTION[1]

BURCU TÜRKKAŞ ANASIZ[2]

Introduction

The transformative impact of digitalization in education and educational administration, as in other areas, is undeniable. In the Turkish context, for example, according to TUİK 2024 data, 97.4% of children appear to have internet access. Furthermore, during the COVID-19 period, the usage rate of EBA, the Ministry of National Education's publishing system, rose to 66%. At first glance, these high rates suggest that digitalization has largely taken place in Turkey. However, a deeper examination reveals that there are still children without internet access, households lacking devices, and regions experiencing regular connection problems. This situation

[1] This study is an expanded and revised version of the paper titled "Digital Habitus: The Position of Education Administrators Between Structure and Action," presented at The International Conference on Educational Technology and Online Learning (ICETOL) held in Balıkesir, Turkey, on August 26–29, 2025

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indicates that digital inequalities remain a significant problem. However, the main point of discussion in this section is not these inequalities themselves, but the increasing responsibilities of education administrators in this digital sphere. In other words, the focus is on the habitus with which administrators act in the digitalization process, how they use their capital, and how they reproduce or transform the structure. In other words, digitalization shows that education administrators have an increased responsibility to manage the digital sphere.

Along with their increased responsibilities, education administrators are expected to manage not only the technical infrastructure but also the social relationships and power dynamics that occur in the digital environment. At this point, Pierre Bourdieu's concepts of habitus, field, and types of capital provide an important framework for understanding how education administrators position themselves in the digital environment and their decision-making processes. Habitus refers to the behavioral and thought structures shaped by managers past experiences and social environments (Bourdieu, 2000; 2006), while field defines the place where power relations occur (Bourdieu, 2000) and, in the context of work, refers to social spaces defined by specific rules and power relations, such as the digital environment. Types of capital encompass the economic, cultural, social, and symbolic resources that managers possess in these fields (Bourdieu and Passeron, 1977) and, in this study, refer to the capital that plays a decisive role in the effective management of the digital field.

However, the practices of educational managers in the digital field should also be evaluated in the context of the structure and action debate. Indeed, Anthony Giddens' structuration theory states that structure not only constrains actions but is also reproduced through actions (Giddens, 1984). From this perspective, it can be assumed that the ways in which managers manage the digital space both

reflect existing rules and norms and have the potential to reshape the structure of this space.

In line with this, the study discusses how the digital habitus of education managers reproduces or transforms structures in the digital sphere. In other words, should education managers be considered merely passive actors in digitalization processes, or should they be thought of as actors who reproduce digital structures? This situation aims to understand the roles of educational administrators in the digitalization process, focusing on both Bourdieu's relationship between field and habitus and Giddens' approach to the mutual interaction between structure and action. The following sections attempt to reveal the practices of educational administrators in the digital sphere and how these practices maintain or transform existing structures.

Habitus, capital, field, and structuration theory

With the increasing impact of digitalization, the responsibilities and decision-making processes of education administrators are taking shape in a complex environment that encompasses both technical infrastructure and social interactions. The habitus of education administrators, formed by their past experiences and professional socialization, the types of capital they possess, and their interactions in the digital environment, can be considered fundamental parameters that determine the direction of their practices. Furthermore, conceptualizing digital platforms as a field and the reciprocal interaction between structure and action within the framework of Giddens's structuration theory provides an important framework for understanding how administrators' digital practices reproduce or transform existing structures. In this regard, concepts such as habitus, types of capital, field, and digital field, as well as the structure-action relationship, are discussed.

In Bourdieu's work, habitus has been defined in various ways, such as 'a structured but also structuring structure', 'the product of concretization', and 'the genetic principle of different and distinctive practices' (Bourdieu, 2000; Bourdieu, 2006). For example, in his book The *State Nobility*, Bourdieu points out how the everyday discourse of business schools collaborates with the cultural and social claims and preferences of the French elite and facilitates their social reproduction in the school system (Bourdieu, 1977). When conceptualizing habitus, Bourdieu mostly adopted the definition of 'constructed structure' (Corcuff, 2007). In doing so, he avoided determinism while pointing to the continuity of dialectical relationships between objectivity and subjectivity, structure and agency, and past and present. Habitus can essentially be expressed in two different ways. The first can be described as continuous and transferable individual tendencies and tendencies that guide everyday practices (Bourdieu and Chartier, 2010; Bourdieu, 2000, 2006).

Based on Bourdieu's definitions of habitus, it is necessary to review classical habitus due to the forms of existence in the digital realm. With digitalization, communication and processes, which are fundamental elements of socialization, are undergoing change due to the impact of technological innovations (Tandaçgüneş Kahraman, 2020). In the network society (Castells, 2009), which incorporates the possibilities of new media into everyday life practices and turns them into habits, the concept of digital habitus has emerged in addition to classical habitus. Individuals have now begun to adapt to the new space by developing new forms of socialization and communication in online spaces (Tandaçgüneş Kahraman, 2020). These new adaptation processes have introduced additional norms and parameters to habitus. As digitalization has become a central aspect of our communication forms, habitus has also begun to reshape itself within this space. Bourdieu's (2000) classical

concept of habitus provides a basis for demonstrating how social interactions in online groups can utilize this familiar space for collaboration and socialization.

When examining the use of the concept of habitus in internet and digital environment studies in general, it is observed that it is often used to explain social inequalities (Kvasny, 2005; Robinson, 2009). The concept of habitus is very important in such research because it seeks to answer the question of how social actors with different social backgrounds (class, status) use technology as a resource for different purposes. When applied to topics such as digitalization and digital inequalities, the concept of digital habitus is important for understanding how individuals' forms of interaction with digital technologies relate to their capital and digital skills (Ristić & Kišjuhas, 2023). However, considering the flexibility of Bourdieu's habitus concept when applied to the digital sphere, it would not be incorrect to explain the concept of digital habitus in this study as the practices and tendencies shaped by educational administrators within the scope of their past experiences and types of capital and applied in the digital sphere.

Furthermore, Bourdieu's types of capital also tend to transform in digital spaces. So much so that a subject exhibiting agency in any field actually expects to possess the types of capital that carry this agency into digital spaces. Action in the digital sphere also reveals the structure of the individual's identity and the structure of the field (Van Dijk, 2006). Therefore, the types of capital possessed by the individual appear to be extremely influential on action in the field. Capital is the most important component of power and domination (Tandaçgüneş Kahraman, 2020). To understand the structure of the social field, capital must be evaluated not only economically but also culturally and symbolically (Bourdieu, 2014). Bourdieu explains the fundamental areas of capital as 'economic capital', 'cultural capital', 'social capital', and 'symbolic capital'.

Bourdieu's approach to 'economic capital' is a continuation of Marxist discourse (Schwartz, 2013). However, it goes beyond a reductionist view of capital to an economic dimension and provides a comprehensive explanation of all the gains an individual obtains as a result of their participation in the social field and competition within that field (Bourdieu, 1977). Cultural capital encompasses factors such as an individual's level of education and tastes. Social capital, which refers to individuals' relationships with their friends or business circles, develops as social relationships between individuals strengthen (Bourdieu, 1977). Symbolic capital is a type of capital that represents social status and position, which is the sum of all these capitals (Schwartz, 2022). When looking at types of capital in the context of digitalization, it can be said that cultural capital encompasses elements such as digital literacy and taste, social capital encompasses interaction and communication established in digital networks, economic capital encompasses access to digital technologies, and symbolic capital encompasses visibility and leadership in the digital sphere.

Fields, where habitus and capital are used, are defined by Bourdieu as places where social practices are performed (Bourdieu, 1977). According to him, fields are places of struggle where the dominant class maintains its existence (Schwartz, 2022). Various strategies and practices are applied to maintain existence in fields. Field types maintain their existence within their own norms and rules. Transitioning from one field to another requires the application of certain strategies and the internalization of the field's norms. The rules of the field, i.e., doxa, are accepted and maintained by individuals. Those who do not accept this doxa or who are unaware of the field's boundaries generally cannot maintain their presence within the field (Schwartz, 2022). Therefore, Bourdieu's concept of field encompasses the application of habitus, types of capital, and doxas. In this context, digital platforms have emerged as new fields

where strategies for combating digitalization are displayed. On digital platforms, individuals develop various strategies and practices to demonstrate their agency and maintain their presence in these new fields. From the perspective of education administrators, these digital platforms can be considered new fields of struggle and interaction. At this point, it is necessary to recognize that digital platforms are not merely passive tools but social structures shaped by specific rules, norms, and power relations. Therefore, the practices of educational administrators in these areas are not only constrained by existing structures but also have the potential to transform them. To better understand this reciprocal interaction, it is necessary to look at Giddens' (1984) structuration theory.

Giddens' (1984) structuration theory can explain how digital practices are both constrained by structure and transform structure. In his structuration theory, Giddens (1984) attempts to overcome the dualism between structure and action, arguing that social life is a dynamic process (Giddens, 1984). Social structures are not so much structures that constrain the subject's action as they are orders that are reproduced by the subject. Structure and action, in other words, are not intersecting but rather a cyclical process that constantly sustains each other. The phenomenon called structure consists of rules, resources, and norms. It provides a framework for the subject's actions. However, in their everyday practices, the subject uses, reproduces, and sometimes transforms these rules (Giddens, 1984). In the context of digital platforms, this perspective shows that the practices of educational administrators are not only determined by the existing technological infrastructure and institutional policies, but also that this infrastructure and these policies are legitimized through the actions of the subject, i.e., the educational administrator. Thus, structuration theory can explain that the practices exhibited in digital spaces are both constrained by structure and transform structure.

Consequently, it is assumed that educational administrators' past experiences, educational backgrounds, and professional interactions are influential in the formation of their habitus. Furthermore, it is thought that the types of capital possessed by educational administrators affect their practices and decision-making processes in the context of digitalization. Furthermore, it can be assumed that educational administrators' struggles for visibility in digital spaces lead them to develop a digital habitus by striving to conform to the doxas in the field. In this context, it can be said that educational administrators not only conform to the boundaries of the structure but also legitimize the structure in question and contribute to its reproduction.

The Formation of digital habitus

In his book *The Presentation of Self in Everyday Life* (1959), Goffman uses the example of theater to point out that a person's onstage and offstage behaviors change. While individuals present idealized performances in their on-stage behaviors according to society's expectations, their off-stage behaviors are more authentic to themselves. In other words, the behaviors individuals display towards others, which are socially normative and regulated, are on-stage behaviors. There is a performance in on-stage behaviors, and the individual shapes themselves according to others' expectations. Behind-the-scenes behaviors, on the other hand, are areas where individuals can behave more naturally, with

less control, and independently of social expectations. Behind the scenes, the individual's "role" definition becomes flexible, and the individual is left alone with themselves or interacts only with people they trust. This situation can be compared to the way digital habitus is presented.

Bourdieu's concept of habitus is a set of tendencies shaped by an individual's past experiences, class position, and socialization

processes, which have become almost automatic (Schwartz, 2022). Digital habitus, on the other hand, suggests that an individual's behavior, preferences, and practices in digital environments are shaped by this social background. Who uses which platform, what they share, and how they interact can be described as products of this habitus. This new habitus, which shows that the habitus of digital platforms such as Facebook and Twitter (now called X) is becoming increasingly prevalent in everyday life practices, is called digital habitus (Papacharissi et al., 2013). This new type of habitus allows individuals to create new characters, new roles, and virtual statuses in digital environments (Güzel, 2016). Just as in Goffman (2009), while the selves presented on stage, i.e., on digital platforms, are displayed in their new forms, all these practices are simultaneously influenced by the individual's habitus and also shape their new digital habitus.

Individuals can create their own digital habitus on any social media platform and share content, thereby increasing their audience or follower count. For example, posts, stories, LinkedIn profiles, etc.—everything shared is a front-of-stage performance. An academic sharing an article on platform X and a middle-class individual sharing coffee corner posts are examples of this front-of-stage behavior. Here, digital habitus plays a decisive role in determining what content is selected and how it is presented. However, not sharing anything on social media or using closed WhatsApp groups, which are widely used today, can correspond to an individual's behind-the-scenes behavior. This is because individuals can behave more naturally in these closed groups, which are behind the scenes. This is because there is an area that is less controlled by society and relatively independent of social expectations. Examples of this situation include closed WhatsApp groups, DMs (direct messages), and sometimes using digital media without sharing anything. The individual's digital habitus is again influential here. Behind the

scenes, some individuals are actually more free, while others may choose to censor their posts.

However, as mentioned in Goffman's (2009) analogy, digital habitus takes on a new dimension with the permanent recording of performances played out on stage. Since Goffman's stage behavior involves a theatrical analogy, it can be considered a type of temporary behavior. However, in the digital world, every post creates an archive of "*past* performances." This situation can influence how individuals present themselves, necessitates the continuity of performance, and may lead to more strategic behavior. As in Goffman's (2009) theory, individuals are compelled to perform within a continuous impression management process. This is because they know that the symbols acquired from digital platforms, namely likes, comments, and retweets, are actually a type of response from viewers or followers; these responses cause the person to recreate and shape their digital habitus.

Deleuze (1992), drawing on Foucault's (1977) concept of disciplinary societies, notes that by the end of the twentieth century, social control no longer operated through closed organizations such as schools, factories, hospitals, and prisons, but rather through networks and constant fluidity. People are no longer confined to one place. They are

constantly "modulated" subjects. In Foucault's (1977) disciplinary society, people are educated in a specific place (school) for a specific period of time and then graduate. In the surveillance society, however, there is a continuous process of learning, working, and socializing (Deleuze, 1992). Individuals in society are constantly monitored and modulated through measures such as credits, online certificates, and algorithmic scoring. In this context, digital habitus causes the tendencies and strategies of the continuously modulated individual to change as well. For example, a digital habitus derived

from cultural capital enables an individual to share educational content on the digital platform

. Paying attention to how to share this content is a result of their digital habitus. However, as the algorithms of the digital platform where these individual shares content bring up popular content, they can change the content and format of their posts accordingly. In other words, if an individual's sharing on digital platforms does not receive interaction, they can adjust their sharing strategy according to popular tags. This situation coincides with Deleuze's (1992) concept of the constantly modulated subject.

Ultimately, digital habitus refers to a phenomenon that explains individuals' actions in digital environments through their past experiences and accumulated capital (Papacharissi et al., 2013). This new type of habitus determines how and in what way individuals share on digital platforms, while also referring to Goffman's (1959) conceptualization as a kind of front-stage performance. Sharing on digital platforms, in its organized form, is a front- stage performance, while closed message groups or not sharing and being a passive user on digital media can be described as backstage. In addition, the formation and reproduction of digital habitus is not only shaped by past experiences; situations such as the constant modulation of algorithms, notifications, and digital platform applications refer to Deleuze's (1992) concept of the surveillance society. In this context, digital habitus can be expressed as a set of dynamic tendencies shaped not only by the individual's types of capital but also by the algorithmic structures of digital platforms. It is precisely at this point that the mutual interaction between structure and action provides an important conceptual framework for understanding how digital habits transform the decision- making, communication, and leadership practices of educational administrators. The following section discusses the relationship between the structure-action

dialectic and digital habitus and evaluates how educational administrators position themselves in the digital environment.

The Digital habitus of educational administrators between structure and action

The practices exhibited by educational administrators in the digital environment are not merely the result of individual preferences; rather, these practices are shaped by structural elements such as institutional policies, regulations, technological infrastructures, and the algorithmic functioning of digital platforms. However, these structures do not entirely determine administrators' capacity for action in the digital sphere. Educational administrators essentially have the potential to transform these structures by using the digital sphere for their own purposes. At this point, digital habits gain importance as a phenomenon that shapes decision-making, communication, and types of interaction with stakeholders, combining with educational administrators' past experiences and the types of capital they possess.

From the perspective of education administrators, while there are predefined structures in the digital realm, there are also areas that can be built along their own paths. While the practices of education administrators in the digital realm are influenced by pre-established structures, their actions can also influence digital structures. Therefore, rather than separating structure and action as in social life (Cohen, 1989), one should think in terms of the reality of the digital realm. This structure, referred to by social science as the duality of structure, is discussed in various ways to understand the phenomena of social life (Cohen, 1989). In this context, Antony Giddens and Pierre Bourdieu have proposed theories to overcome this crisis in social sciences. While Giddens focuses on the concepts of "dualism of structure" to overcome or reconcile the duality of structure

(Giddens, 1976), Bourdieu stands out with his "theory of practice" (Bourdieu, 1990).

The duality of structure and practice theory essentially attempts to discuss the dualities experienced in social life with a conciliatory approach (Cohen, 1989). Giddens' (1984) structuration theory conceptualizes structure not only as an element that limits individual actions but also as a "duality" that is constantly reproduced through these actions. Similarly, Bourdieu's (1977) theory of practice, through the concepts of habitus and field, argues that an individual's actions are determined by tendencies derived from past experiences and that these actions have the potential to transform social structure. These theories put forward important arguments to explain the diversity and continuity of actions in social life. In particular, practical theory attempts to explain structure and action in a conciliatory manner, without excluding either or giving priority to one over the other (Schwartz, 2022). Indeed, considering the diversity and richness of actions in social life, it would be misleading to debate whether structure produces this or whether the subject itself decides it (Schwartz, 2022). Instead, both Giddens's structuration theory and Bourdieu's theory of practice argue that social life is a two-way production process, transcending the structure-society and individual-action dichotomy. In this context, it is assumed that these two theories approach the dualities in social life from a conciliatory perspective and can also explain actions in digital life.

When considering the subject's agency, the connection between structure and action is undeniable (Giddens, 1984). Giving priority to either of these two phenomena can lead to a misunderstanding of the processes and problems in social life (Cohen, 1989). Similarly, questioning whether structure or action takes precedence in digital life will lead to misconceptions. This is because digital life has now become an integral part of physical life (Castells, 2009; Couldry, 2012). The forms of life exhibited in physical life have also begun to

be exhibited digitally; interaction patterns continue to manifest themselves in digital spaces, either remaining similar or transforming (Miller et al., 2016). Thus, both the subject's habitus and the ways in which this habitus is displayed are reproduced in digital environments (Bourdieu, 1977; Papacharissi, 2013). In other words, the habitus and types of capital possessed by the subject are reproduced according to the norms of the digital world, and the algorithmic structures of platforms are also effective in this process (Ragnedda, 2017). Through these reproduced phenomena, the subject contributes to the formation of their social environment while also possessing the potential to influence and transform it (Couldry & Hepp, 2018).

When considering the actions of educational administrators, the relationship between structure and action (Giddens, 1984) cannot be overlooked. Practices that prioritize only structure or only individual action can lead to misapplication in school environments and in digitalizing management practices. Digital platforms, as an extension of physical schools, offer educational administrators' opportunities for both decision-making and content creation in areas where they can display their digital habitus. Viewed through Goffman's (2009) distinction between front stage and backstage, educational administrators project a certain institutional image to other school stakeholders by displaying their habitus and performance on digital platforms. For example, social media posts made from the school's account or announcements made through e-school can be defined as "front stage" performances, and these performances make the school's culture and the educational administrator's visibility strategy traceable. In this process, as expressed by Deleuze's (1992) concept of the "constantly modulated subject," the new digital habitus of educational administrators is shaped by the algorithmic structures of digital platforms, transforming into a new form and being reproduced. Thus, both individual and institutional identities are being reshaped.

Consequently, educational administrators have the potential to transform educational administration into the digital sphere while legitimizing and structuring their digital practices through a digital habitus (Papacharissi, 2013) that is constantly reproduced on the digital platform.

Consequently, social interactions produced in the digital sphere directly affect not only individuals' everyday life practices (Goffman, 1959) but also the network of relationships within educational institutions. In this context, educational administrators must consider both the structural and action-oriented dimensions of digitalization. This is because the habitus and types of capital possessed by administrators are reshaped in the surveillance society (Deleuze, 1992), determining their management practices both on and off stage (Goffman, 2009) within and outside the school. Therefore, education administrators must view digital platforms not only as technical tools but also as spaces where habitus and types of capital are reproduced; where algorithms, notifications, and digital platform applications transform education administrators into constantly modulated subjects (Deleuze, 1992).

Conclusion

This study discusses how educational administrators' digital habitus reproduces and transforms structures in the digital sphere. Using the concepts of Giddens (1984) and Bourdieu (1977), the study discusses how educational administrators legitimize digital structures, how their digital habitus is formed in terms of compliance with fluid norms produced on digital platforms, and how this situation is reflected in the social practices of educational administrators. In this context, the conceptual frameworks of Giddens (1984) and Bourdieu (1977) provide important arguments for discussing the impact of the digital sphere on the field of education.

Without falling into the structure-action duality found in social theories, the explainability of the position of educational administrators in digital environments appears possible on the basis of structuration and practice theory. In this regard, it can be said that the digital habitus and types of capital of educational administrators increase their agency, visibility, and front-stage and back-stage practices (Goffman, 2009) in the digital sphere. For example, educational administrators with relatively high economic capital will not experience difficulties in accessing and using the tools required by the digital sphere. Similarly, educational administrators with relatively high cultural capital will organize their content and actions according to this type of capital and increase their visibility. However, as a benefit of cultural capital, educational administrators with relatively high social capital in upper management positions will develop an agency (Giddens, 1984) that allows them to make themselves more visible by networking with ministers or policymakers. Thus, they will have a digital habitus that can serve both the physical social network and the digital space. With relatively high symbolic capital, which can be described as the combination of social capital and all other forms of capital, they will be able to achieve a privileged, status-bearing position in digital and social life. Additionally, this will enable them to increase their number of viewers, followers, or likes. With the new habitus they acquire in this digital space, their practices both on and off stage will undergo transformation, allowing them to position themselves alongside agents with similar characteristics.

It is assumed that educational administrators positioned in new digital spaces will reveal established relationship patterns through their digital practices, legitimize them, and transform them into structures. Actors who are present in this structure for visibility or other purposes will begin to serve the structure as constantly modulated subjects. In other words, it is thought that the practices

reproduced by educational administrators, like subjects in a surveillance society (Deluze, 1992), may lead to the legitimization of the structure in the digital sphere and the structuration of strategy-interest practices. However, it can be argued that this situation may transform educational administration from agency into an instrument of domination. Moreover, it may reveal forms of symbolic violence under the guise of visibility among educational administrators. To mitigate this risk, administrators must use digital platforms with critical awareness. It is important that they redesign their public performances not only to create an image or produce interest strategies but also to support participatory and transparent management practices. Furthermore, as Deleuze (1992) emphasizes, recognizing the constantly modulated nature of digital spaces, they must not allow algorithms and platform dynamics to unilaterally shape their decisions. In this context, education administrators can organize digital actions in a more inclusive, fair, and interactive manner, knowing that they have the potential to transform both their own digital habitus and institutional culture.

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CHAPTER 4

A NEW PARADIGM IN EDUCATION: DIGITAL PEDAGOGY

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Introduction

Digital pedagogy refers to a contemporary approach within educational sciences that focuses on the meaningful and strategic integration of digital technologies into learning and teaching processes. This concept encompasses not only the use of technical tools but also the design of a learning environment that serves pedagogical purposes, prioritising critical thinking, participatory learning, and lifelong learning. While there are different approaches to digital pedagogy in the literature, the fundamental commonality is the necessity of transforming learning processes by enriching instructional design with digital tools. Istrate (2022) defines digital pedagogy as the design and implementation of teaching activities that make intensive use of digital technologies, while Tan, Voogt and

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Tan (2024) express this concept as the use of digital tools for pedagogical purposes. Jurčević and Horvat (2023) view digital pedagogy as a structure with the potential to fundamentally transform learning processes.

At this point, digital pedagogy is considered not only a teaching approach but also a "paradigm shift" in education. Kuhn's (1970) concept of paradigm, used to explain fundamental change in scientific fields, is also applicable in education. Digital pedagogy represents a shift from the traditional knowledge transfer model to technology-integrated learning based on the active participation of the learner (Selwyn, 2016; Knox, 2019).

The fundamental characteristics of digital pedagogy include a learner-centred approach, offering flexible learning opportunities, and creating collaborative learning environments. Digital tools such as multimedia content, cloud computing systems, and productivity applications play an important role in enriching the curriculum and increasing accessibility (Dangwal & Srivastava, 2016; Väätäjä & Ruokamo, 2021). However, it is emphasised that digital pedagogy should be addressed not only in terms of technical skills but also in the context of social justice, equality, and power relations (Condie et al., 2024). The effective integration of digital tools into teaching processes can lead to meaningful improvements in learning outcomes. Indeed, Coovadia and Ackermann (2020) found that students engaged with digital pedagogies performed better in exams.

Therefore, the student-centredness, flexibility, and inclusiveness of digital pedagogy should be considered not only as a pedagogical innovation but also as a paradigmatic transformation process in education. This perspective offers a more inclusive view in understanding the social and cultural aspects of digital pedagogy (Erstad and Voogt, 2018).

Today, the understanding of digital pedagogy has been integrated with lifelong learning processes beyond formal education. Tools such as asynchronous education, online courses, and webinars support individuals in learning at their own pace and according to their interests, demonstrating that digital pedagogy permeates all areas of life (Pinchuk & Prokopenko, 2021; Undheim & Jernes, 2020). Individuals' adaptation to technological developments and transformation of their access to information have made digital pedagogy a dynamic and constantly evolving field.

The future of digital pedagogy is taking shape in a way that responds to the changing needs of educational environments. New-generation tools such as formative analytics, flipped classrooms, augmented reality (AR), virtual reality (VR), drones, and teaching with robots are determining the direction of this transformation (Herodotou et al., 2019). These approaches aim to develop critical thinking, problem solving, creativity and adaptability, which are among the 21st-century skills.

In this context, the future of digital pedagogy depends not only on technological diversification but also on the capacity of education systems to adopt new pedagogical paradigms. The sustainability of this paradigm shift will be possible through flexibility, inclusivity, and the institutionalisation of lifelong learning (Redecker, 2017).

The COVID-19 pandemic has made the importance of digital pedagogy more visible; remote and hybrid learning environments have gained a permanent place in education. In this context, it is crucial for teachers to develop digital pedagogical competencies. By combining technological knowledge, pedagogical understanding, and content knowledge, teachers can meaningfully use digital tools to reconfigure learning environments (Dhakal, 2023; Sailin & Mahmor, 2018). High self-efficacy, peer support, and continuous

professional development are fundamental factors that ensure the sustainability of digital pedagogy.

In conclusion, digital pedagogy holds great potential in terms of developing the digital literacy skills required by the modern age, providing personalised and accessible learning environments, and ensuring equal opportunities in education. The balanced integration of digital and traditional methods, enhancing teachers' skills, and expanding access to digital resources are among the priority steps for effectively utilising this potential.

The Concept of Paradigm

The concept of paradigm is a fundamental framework that expresses the methods used in scientific knowledge production, accepted assumptions, values, and research traditions. The concept was used by Thomas Kuhn in his work The Structure of Scientific Revolutions (1970) to explain the nature of scientific revolutions. According to Kuhn, a paradigm represents the shared beliefs and research practices of a community of scientists. In this context, a paradigm encompasses not only specific theories but also the norms, methods, and values that guide scientific practice (Kuhn, 1970).

Paradigm shift, in Kuhn's words, constitutes the process of "scientific revolution." This process occurs when existing theories prove inadequate, leading to the emergence of a new framework. Paradigm shift is not merely a technical change; it is also a fundamental transformation in how scientific communities perceive and interpret the world (Bird, 2018). In the social sciences, the concept of paradigm is frequently used to understand different theoretical approaches and research methods. For example, positivist, interpretivist, and critical paradigms represent different epistemological and methodological stances in educational research (Guba & Lincoln, 1994).

Paradigm debates in the field of education are closely related to the historical development of learning and teaching processes. The traditional paradigm, which prevailed for many years, positioned the teacher at the centre of knowledge and viewed the student as a passive recipient. From the second half of the 20th century onwards, the constructivist paradigm came to the fore, approaching learning as a process of meaning construction through the active participation of the student (Fosnot, 2013). Today, with the impact of digitalisation, there is talk of a new paradigm shift. The student-centredness, flexibility, and technology integration offered by digital pedagogy represent a paradigmatic shift in education (Selwyn, 2016; Erstad & Voogt, 2018). At this point, the concept of paradigm is important in understanding that digital pedagogy is not merely a technical innovation but creates a profound cultural and structural change in education systems. Evaluating digital pedagogy as a paradigm allows for a holistic approach to its social, pedagogical, and cultural impacts. This perspective demonstrates that digitalisation in the future of education is not merely an instrumental element but forms the basis of a new culture of learning and teaching (Knox, 2019; Redecker, 2017). Therefore, digital pedagogy redefines paradigm discussions in education not only at a theoretical level but also as a transformative tool that guides practice (Selwyn, 2016).

Digital Pedagogy

Digital pedagogy is a field within educational sciences characterised by its own specific objectives, methods, and principles. Various definitions of digital pedagogy exist in the literature, and these definitions address the role of digital technologies in education from different perspectives. Istrate (2022) defines digital pedagogy as the implementation of teaching activities that involve the significant use of digital technologies in their design, implementation, and evaluation, while Tan, Voogt, and Tan (2024)

express this concept as the pedagogical use of digital technologies or teaching using digital technologies. According to another definition, digital pedagogy is the current and future teaching activities in which technology is used as a tool to enhance the learning process (Kellsey and Taylor, 2016; Väätäjä and Ruokamo, 2021). Marcelo and Yot-Domínguez (2018) emphasise the flexibility of digital pedagogy, defining it as the use of digital tools and technologies to facilitate teaching and learning in order to provide flexibility in hybrid learning environments. Jurčević and Horvat (2023), on the other hand, address digital pedagogy in a broader context, emphasising the potential of digital technologies to transform learning processes. They focus on researching new methods to enrich course curricula. Howell (2013) defines digital pedagogy as the determination of teaching methods using digital technologies. Among these definitions, Condie et al. (2024) stand out with their approaches that evaluate digital pedagogy in the context of social justice. Condie et al. (2024) define digital pedagogy as using educational strategies to critically examine digital technologies and their socio-economic impacts, often aiming to address issues such as equality, power, and justice in digital spaces.

As seen, digital pedagogy is a multidimensional concept that seeks to explain the effects of digital technologies on teaching and learning processes. The common point of these definitions is that digital pedagogy is an innovative learning model that incorporates both pedagogical principles and digital tools (Bentri and Hidayati, 2023; Istrate, 2022). In this respect, digital pedagogy represents a paradigm shift that is not merely about the integration of technological tools, but also fundamentally transforms the structure of learning processes, teaching strategies, and student interaction. This transformation enables learning environments to become more flexible, participatory, and personalized. Such flexibility not only

supports diverse learning needs but also promotes greater equity and inclusion within educational contexts.

Contributions of Digital Pedagogy to Education

The foundation of digital pedagogy is based on a student-centred approach. It encourages active participation, collaborative learning, and knowledge construction through students' own experiences (Vygotsky, 1978). This approach shifts the focus from traditional teacher-centred approaches to empowering students to take responsibility for their learning processes. In this process, digital pedagogy provides continuous support and adaptability. Among the fundamental principles of digital pedagogy is the use of digital tools that provide support when students need it most. These tools can be adapted to individual learning speeds and provide continuous feedback by meeting students' individual needs (Marcelo and Yot-Domínguez, 2018).

Digital pedagogy utilises multimedia tools such as videos, interactive simulations, and artificial intelligence to create richer and more engaging learning experiences. These tools not only make learning more interactive, but also allow for personalisation based on different learning styles, developing students' comprehension and problem-solving skills (Greenhow et al., 2021; Kyllönen, 2019). Digital pedagogy's ability to equip students with fundamental digital competencies such as problem solving and self-directed learning is increasingly vital for success in an increasingly digital and interconnected world (Kyllönen, 2019; Mishra and Koehler, 2006).

One of the contributions of digital pedagogy to education is the creation of flexible learning environments through hybrid learning models. Hybrid learning models combine face-to-face education with digital tools to create flexible learning environments both inside and outside the classroom. These models diversify and simplify the learning experience by offering students a balance

between traditional and digital approaches (Flores and Gago, 2020; Yang, 2020). In this context, digital pedagogy promotes inclusivity by offering a variety of learning materials and alternative flexible learning environments, making education accessible to students with different abilities and needs. This includes resources such as language learning tools and assistive technologies (Greenhow et al., 2021).

In conclusion, it is an undeniable fact that digital pedagogy contributes to education in various ways. These contributions point to an educational approach that is compatible with the digital paradigm, which places the learner at the centre of the process, unlike traditional knowledge transfer paradigms. Digital pedagogy can be explained by its student-centred approach, which is appropriate for the requirements of the 21st century, its flexibility, its ability to provide more engaging learning experiences, its development of students' comprehension and problem-solving skills, and its capacity for individualisation.

Digital Pedagogy in Lifelong Learning

Lifelong learning is a student-centred approach. It refers to a continuous process through which individuals acquire knowledge and skills throughout their lives. Lifelong learning emphasises the individual's ability to participate in self-directed, self-determined, and self-regulated learning (Lock et al., 2021). It encompasses activities that encourage personal development, creativity, and adaptation to new situations, enabling individuals to gain new expertise and adapt to evolving conditions (Koper and Tattersall, 2004; Laal and Salamati, 2012).

Developing digital skills is fundamental to lifelong learning, and the digital pedagogy approach supports digital skill development through individual learning strategies and personalised learning (Grimus, 2020). By providing technology-supported learning, it

empowers individuals to access, analyse, and transform information into personal knowledge . In this context, it can be said that digital pedagogy aims to develop individuals' self-directed skills through the effective use of technology in learning design (Lock et al., 2021). This represents a shift from the traditional paradigm, which views learning as a limited activity of formal education, to a dynamic and digitally supported paradigm that permeates the entirety of an individual's life (Selwyn, 2016; Erstad & Voogt, 2018).

Digital pedagogy provides the necessary tools and frameworks to encourage lifelong learning by creating accessible, adaptable, and engaging educational experiences (Toktarova and Semenova; Väätäjä and Ruokamo, 2021). Digital tools such as computers, tablets, and mobile devices promote access to information by supporting lifelong learning strategies (Mohammed and Kinyó, 2020). Through these, individuals are enabled to engage in social learning and collaborative work (Koper and Tattersall, 2004; Laal and Salamati, 2012). The integration of digital pedagogy into lifelong learning can contribute to the creation of an information society (Pattnayak, 2020).

Digital Pedagogy in Formal Education

Adapting digital pedagogy to formal education is crucial, particularly to ensure that teaching and learning processes are aligned with the modern requirements of the 21st century. Technological tools have been used to increase interaction inside and outside the classroom, improve student achievement, and develop skills such as critical thinking (Coovadia and Ackermann, 2021). Thus, teaching processes have undergone a transformation from "knowledge transfer" to "active research and experiential learning" (Weis et al., 2002). Students' active participation through their own experiences encourages collaborative learning and knowledge construction (Vygotsky, 1978). In this context, it can be said that

digital pedagogy is implemented through student-centred learning . This makes the learning process more meaningful and effective (Coovadia and Ackermann, 2021).

In addition to enabling students to develop skills such as problem solving, critical thinking, and self-directed learning, the dimension of equipping students with basic digital competencies is also important. It ensures the development of students' digital literacy. In today's technology-focused educational environment, digital competence is vital for success (Kyllönen, 2019; Mishra and Koehler, 2006).

Digital pedagogical approaches can provide all these skills and competencies, while also implementing them through flexible and personalised learning programmes tailored to individuals' different learning styles. They provide adaptive learning experiences tailored to individual learning styles and paces, enabling students to learn more effectively and reach their full potential (Dhakal, 2023; Vanderburg, 2024). Studies have found that adaptive learning experiences in education contribute to enhancing student learning (Kucirkova, Gerard, and Linn, 2021).

In summary: digital pedagogy can be said to support student-centred approaches by modernising teaching and learning processes in formal education. With the help of technological tools and digital platforms, it can be said that it increases classroom interaction and learning efficiency by supporting customised content according to individuals' learning needs. It stands out as an approach that enables students in formal education to develop 21st-century skills such as critical thinking, problem-solving, and digital literacy. In this way, digital pedagogy empowers learners to actively construct knowledge rather than passively receive information. It also encourages interdisciplinary learning experiences that mirror the complexity of real-world challenges. Ultimately, this approach prepares students to

adapt to rapidly changing social and technological environments with confidence and resilience.

Future Perspectives of Digital Pedagogy Transforming Education

The future of digital pedagogy is a rapidly evolving field that aims to integrate technology into educational practices to improve learning outcomes . Considering the advantages that digital pedagogy offers in lifelong learning and education, it is intriguing to see how it will evolve in the future and what new opportunities it will offer. In this context, as education systems adapt to the digital age, there is an increasing emphasis on developing skills such as critical thinking, problem solving, and digital literacy. Blending pedagogy and digital technology with teacher support effectively transforms education, promotes the development of core competencies, and develops digital literacy skills (Makarova and Makarova, 2018). Digital transformation in education makes educational activities more interactive and engaging through factors such as gamification, augmented reality, new educational applications, and the Internet of Things (Leahy, Holland, and Ward, 2019; Zain, 2021). Innovative pedagogical approaches such as formative analytics, flipped classrooms, place-based teaching, and learning with drones and robots have the potential to guide teaching (Herodotou et al., 2019). In this context, digital pedagogy can solve the problems of traditional education, shape innovative learning processes, and support a curriculum that is increasingly oriented towards digital technology (Chernova, Nemesh, & Togachynska, 2023; Jurčević & Horvat, 2023). In summary, digital pedagogy is not merely about using technology in classrooms; it is also about rethinking how education is conceptualised in the digital age (Selwyn, 2016). This rethinking process can be seen as heralding a fundamental paradigm shift in education, as the traditional understanding based on knowledge transfer is being replaced by a

new learning paradigm shaped around digitalisation and personalised learning (Redecker, 2017; Knox, 2019).

Another aspect shaping the future of digital pedagogy is its contribution to personalised learning. Emerging technologies in education support individualised teaching and learning methods for personalised learning (Almufarreh and Arshad, 2023). For example, adaptive technologies powered by artificial intelligence enable teachers and students to meet individual needs. Studies show that artificial intelligence-supported adaptive learning platforms are successful in analysing student data and delivering personalised content, thereby achieving positive outcomes in student development (Holmes, Bialik, and Fadel, 2019).

However, despite all these positive aspects, it is likely that digital pedagogy applications will bring with them certain challenges and issues that need to be addressed with care in the future. In particular, access inequalities, differences in digital literacy levels, and ethical concerns may pose obstacles to developments in this field. In terms of equality of access to digital education, while digital pedagogy promises inclusivity, studies warn educators and policymakers about the potential for a "digital divide" that could exacerbate existing inequalities (Selwyn, 2016). Therefore, educators and policymakers must work together to ensure that all students have access to the necessary technologies and resources.

Differences in digital literacy levels are important in terms of developing teachers' skills in this area. This is because the successful integration of digital technologies into teaching requires teachers to possess technological and pedagogical knowledge (Sailin and Mahmor, 2018; Väätäjä and Ruokamo, 2021). Redesigning teachers' professional development programmes to include digital pedagogy is an important step.

Finally, as mentioned above, the rapid spread of digital pedagogy applications brings ethical concerns such as data security and privacy to the fore. The increasing use of digital methods in education raises concerns about privacy and the ethical use of student information (Williamson, 2017). The future of digital pedagogy must address these challenges to create a secure and equitable learning environment.

In summary, the future of digital pedagogy lies in its ability to adapt to technological developments while improving the quality of education and addressing the diverse needs of students. However, addressing inequalities, differences in digital literacy levels, and ethical concerns is crucial in shaping digital pedagogy. As digital tools become more integrated into educational practices, digital pedagogy is expected to maximise its potential to transform learning experiences (Volkova, Lizunova, & Komarova, 2021; Jurčević & Horvat, 2023; Kapoor, Kaur, & Kaur, 2023). In the future, digital pedagogy is likely to be effective in restructuring education by promoting personalised learning, flexible models, and inclusivity.

Conclusion

Digital pedagogy represents not merely the integration of technological tools into educational processes, but a fundamental transformation of the ways in which learning, teaching, and accessing knowledge occur. When evaluated within the framework of Kuhn's (1970) concept of paradigm, digital pedagogy emerges as an indicator of a new paradigm shift in education. In this context, digital pedagogy is noteworthy for its student-centred approach, individualised learning opportunities, and support for lifelong learning (Erstad & Voogt, 2018; Selwyn, 2016).

The opportunities offered by digital pedagogy in formal education and lifelong learning processes indicate a shift from the traditional paradigm based on knowledge transfer to a new paradigm

focused on participation and interaction (Knox, 2019; Redecker, 2017). However, this transformation also brings challenges such as access inequalities, differences in digital literacy , and ethical concerns (Selwyn, 2016).

Consequently, digital pedagogy can be regarded as a fundamental paradigm representing the transformative power of 21st-century education. The sustainability of this paradigm will only be possible through the capacity of education systems to adapt to technological developments and to internalise and implement these new approaches in an inclusive manner (Redecker, 2017; Sailin & Mahmor, 2018).

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