

Learning Analytics Applications in the Framework of Technological Leadership in Public and Private Schools*

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Abstract

In an era where educational institutions are increasingly integrating technology to enhance teaching and learning, the effective use of learning analytics has emerged as a key strategy for informed decision-making. Technological leadership plays a critical role in fostering a culture that supports the adoption and implementation of these tools. The purpose of this study is to examine how learning analytics applications are integrated and utilized within the framework of technological leadership in public and private schools. Utilizing a phenomenological design and qualitative research approach, semi-structured interviews were conducted with 18 school administrators from diverse schools and educational levels in Istanbul over a period of six months. Data analysis was conducted using MAXQDA software. The findings indicate that the application of technological competencies and learning analytics remains limited, particularly in public schools, due to various factors. Notably, learning analytics tools are not fully understood, and there is a lack of effective software infrastructure to support their use, both of which emerge as significant barriers to their successful implementation. This study underscores the importance of enhancing technological leadership and infrastructure to facilitate the widespread adoption and effective use of learning analytics in schools.

Keywords: Technological leadership, learning analytics, school administrators

About the Article

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Introduction

The current era has ushered in a series of transformative shifts in educational technology practices. With the global job market increasingly poised to be shaped by the digital economy, alongside advancements in robotics, artificial intelligence, and automation, the education system worldwide faces the imperative to prepare for the Fourth Industrial Revolution. This evolving landscape necessitates that school leaders, including principals and teachers, remain agile and receptive to the rapid technological advancements reshaping the educational environment (Raman & Thannimalai, 2018). As posited by Chang (2012), school leaders who are proactive in adopting and integrating new roles as technology leaders will be best positioned to guide their institutions through the challenges of the future.

The global epidemic that emerged in 2020 has caused all activities, even in schools where education is provided in the most traditional ways, to be moved to digital environments such as Zoom, WebEx, MS Teams, and learning management systems (LMSs) such as Moodle, Blackboard, and Google Classroom have been adopted. This radical change marked the beginning of a period in which digital educational content was used more after the pandemic. Today, in many schools, online platforms are preferred in both education and management processes and much data is processed there. However, since such environments only provide platforms for e-interaction, effective methods that can be used to predict student behavior through online learning environments have accelerated the emergence and use of supportive tools for educators and metacognitive triggers for students (Siemens & Baker, 2019). The process that begins with obtaining the necessary evidence to make decisions by meaningfully analyzing the relationship between students and learning environments has emerged as learning analytics (Elias, 2011).

Learning analytics is broadly defined as the collection, analysis, and interpretation of data related to learners' activities and behaviors, with the aim of improving learning outcomes and optimizing the educational experience (Siemens & Long, 2022). The purpose of learning analytics is to apply the results of analyzing the data collected by monitoring and measuring the learning process. The feedback given as a result plays a very important role in organizing the learning process. Learning analytics applications enable students to find the most appropriate learning paths and provide important learning feedback in this context (Mittelmeier, Tempelaar, Rienties, & Nguyen, 2016). Analytical technologies, which are expected to become an indispensable element at all levels of education in the coming years (Alexander, Ashford-Rowe, Barajas-Murph et al., 2019), bring about the need for qualified personnel trained in this field. As a result of the technological transformation in education, school administrators need to develop their digital competencies in addition to traditional leadership skills for institutions to achieve their goals (Öz, 2020). Pardo and Teasley (2014) noted that with the transfer of learning activities to the electronic environment, how much time students spend in these environments, how effectively they use this time, where they can reach and how far they can progress, and which resources they access and benefit from being recorded.

In this way, learning analytics is gaining importance as a new field, as the relevant records can be accessed and analyzed very easily.

In recent years, there has been a growing disparity in educational opportunities and resources between private and public schools. These differences can directly affect students' learning processes and achievements. Learning analytics offers different approaches in terms of monitoring student performance, identifying individual needs, and customizing teaching methods in both types of schools. However, private schools generally have more resources and flexibility, which can make it difficult to implement equally effective solutions for students in public schools. Understanding the differences in learning analytics applications between private and public schools, which is aimed at this study, is an important step that will contribute to eliminating inequalities in education and ensuring social justice.

The purpose of this study is to examine the learning analytics applications in the framework of technological leadership in public and private schools. The research questions that arise in this context are as follows:

1. What are the opinions of school administrators working in public and private schools regarding technological leadership?
2. What are the opinions of school administrators working in public and private schools regarding the technology use in school administration?
3. What are the opinions of school administrators working in public and private schools regarding learning analytics applications in measurement and evaluation?
4. What are the opinions of school administrators about the obstacles that arise in the process of creating a learning analytics culture in public and private schools?
5. What are the suggestions of school administrators in public and private schools regarding the establishment of a culture of learning analytics in schools?

Method

Research Design

This qualitative study is firmly grounded in the interpretive paradigm in which each participant was observed. In a unique, independent situation. Qualitative research draws attention with its in-depth investigation of "how" and "why" issues and questions (Myers, 2009) fit the descriptive and exploratory nature of this study. In this study, the phenomenology pattern, one of the qualitative research methods that is thought to reflect the nature of the research most accurately, was used. Phenomenology is based on phenomena that we encounter in various ways in our daily lives but do not have an in-depth understanding of (Yıldırım & Şimşek, 2016). The philosophy of phenomenology focuses on the experience itself and how the experience resulting from this experience turns into consciousness (Merriam & Tisdell, 2016). Phenomenological research focuses

on how people experience these experiences by limiting their experiences to a phenomenon (Creswell, 2017). For the qualitative part of the research, case sampling (Patton, 2015), one of the purposeful sampling methods, was used among the participants with whom the quantitative research was conducted. Case sampling envisages the study of a limited number of but equally information-rich situations to be subjected to in-depth examination (Yıldırım & Şimşek, 2016).

This research aims to deeply examine the learning analytics practices in private and public schools by adopting a qualitative approach. The research design is based on semi-structured interviews with 18 school administrators working in Istanbul, Türkiye and content analysis methods to obtain rich data from the participants' experiences, so that differences between practices in education can be better understood.

Participants

The participants of the research are 18 school administrators working in public and private schools in Türkiye. While 39% of the participants (7 participants) were women, 61% (11 participants) were men. While 28% of the participants are between the ages of 26-35, 66% are between the ages of 36-45. One participant is over 55 years old. 50% of the participants (9 participants) have undergraduate degrees and 50% (9 participants) have graduate degrees. 56% of the interviewed participants (10 participants) work in public schools, and 44% (8 participants) work in private schools. 11% (2 participants) of the participants are administrators at the preschool level, 17% (3 participants) at the primary school level, 33% (6 participants) at the secondary school level and 39% (7 participants) at the high school level.

Data Collection Tools

According to Patton (2015), the main goal of interviewing in scientific research is to reveal the facts that lie in the minds of the participants. Merriam (1998) states that it is not possible to observe people's feelings and thoughts and the meaning they attach to their experiences, and the only way to reveal these is to ask them questions.

In this study, a semi-structured interview form was employed for data collection, which included 6 main questions and a total of 9 questions, incorporating sub-questions. This approach was chosen to allow participants to provide in-depth responses on their experiences, perceptions and opinions regarding technological leadership and learning analytics. Pilot interview questions prepared using quantitative research results and relevant literature were presented to three experts with experience in qualitative research and technological leadership, and two pilot interviews were held within this scope. As a result of the feedback received from the pilot interviews, the interview form took its final form.

Researcher Role

In this study, the role of the researcher goes beyond just collecting data. The researcher has a constructivist perspective and has tried to discover how the participants construct their own experiences and meanings. The epistemological and ontological stance is

based on a subjective and dynamic meaning production process; in this context, the researcher has acted as a meaning co-constructor in the interactions with the participants. The care the researcher has shown to understand the experiences of the participants has also been supported by an intellectual analysis and shaped by being aware of their biases in the research process. In terms of ethics, the confidentiality of the participants has been protected, and a safe research environment has been provided by obtaining informed consent. The data obtained through semi-structured interviews reflects a role in which the researcher not only collects data but also interprets the meanings of the participants and contributes to the knowledge production process, in line with the qualitative methodology of the study.

Data Analysis

During the analysis process of qualitative research, researchers need to work with a large amount of data (Miles & Huberman, 1994). In this research, interview notes with 18 participants (108 pages in total) were obtained. The data collected through content analysis attempts to describe and reveal the facts hidden within. Thus, the obtained and similar data are brought together within the framework of certain themes and concepts and interpreted in a way that the readers can understand (Yıldırım & Şimşek, 2016).

The data analysis process was carried out through content analysis using MAXQDA software. First, all interview records were converted to digital text, and then these texts were transferred to the MAXQDA program. This software facilitated the systematic coding and thematic analysis of the data, allowing the researcher to see common connections among the data more clearly. The MAXQDA program was preferred because it provides ease of use to the researcher and also helps the researcher in organizing the data and viewing the data with a common code in a holistic manner (Işık, 2010). The total duration of the research process was 6 months. The interview durations with participants ranged from 40 minutes to 70 minutes. In some cases, additional interviews were conducted with participants when the desired results were not achieved in the first session.

Credibility and Ethics

Before this research, research questions were sent to the relevant official institutions and permissions were obtained. Additionally, the questions were presented to the relevant committee and ethics committee approval was obtained. "Long-term interaction, depth-oriented data collection, detailed description and negative situation analysis", which are among the strategies used to increase the validity and reliability of the research, were used extensively throughout the research (Strauss and Corbin, 1998). In this study, in order to ensure validity, the data obtained from the participants were diversified to provide different perspectives and an in-depth analysis was conducted on the themes generated during the data collection process (Creswell & Poth, 2022). In addition, in order to increase the variability of the study, data were collected from different schools and student groups, considering the diversity among the participants (Patton, 2015). In addition, the researcher confirmed objectively how applicable the points expressed

during the interviews were in real life by asking the participants to give examples of how they practiced them in their professional lives.

Findings

In this section, the main findings will be presented in light of the data obtained during the research process, in line with the experiences and opinions of the participants. The findings will be analyzed within the framework of the research questions and discussed in detail.

Analysis results of opinions of school administrators working in public and private schools regarding technological leadership

Table 1

| <i>Public School Code</i> | <i>Private School Code</i> |
|--------------------------------------|--------------------------------------|
| Ability to use technological devices | Being open to change and innovation |
| Being open to change and innovation | Ability to use technological devices |
| Data analysis skills | Vision |

According to Table 1, most of the participants stated that the school administrator, as a technological leader, should use the technological devices in the school very well. One of the participants, K5, expressed his views on the subject as follows: *"Starting with computers, phones, mobile applications, some websites on the computer, such as YouTube, Zoom, Google meet-style programs, and Microsoft Teams are among them."* While K1 said, *"I think being able to use information technology networks actively, that is, Web 2 tools, the EBA system, the E-school system, being able to follow the students in these, and being able to develop new studies are the characteristics of a technological leader."*

The private school administrator on the other hand primarily emphasized the point of being open to change and innovation and also touched upon the concept of being able to use technological devices and vision. Most of the participants stated that the school administrator, as a technological leader, should closely follow the changes and innovations brought by the age. P14 expressed his views on the subject as follows: *"I think it should be dynamic. I think that someone who researches, questions and wonders should also be extremely open to innovations."* K16 expressed his views as *"he/she is the one who can follow educational models all over the world, who can apply personalized teaching models, who makes educational programs that make it easier for every child."*

Analysis results of opinions of school administrators working in public and private schools regarding their technology use in school administration.

Table 2

| <i>Public School Code</i> | <i>Private School Code</i> |
|-------------------------------------|---|
| E-school system | Whatsapp groups |
| EBA (education information network) | Parent information system |
| Smartboard | Paid platforms other than the e-school system |
| Google forms | Language education |

According to Table 2, in response to the question, they frequently used the concepts seen in the codes. One of the school administrators working in public schools P5 claimed: "When we look at the reporting system in e-School, it is very serious and there are such beautiful analyzes and graphs available." P6, who also works at a public school, said the same issue: "The Ministry of National Education has some sites and infrastructures in this sense. There are some educational sites such as EBA or some private ones. Our teachers and students use these sites intensively and provide information to their students."

Private school administrators, on the other hand, expressed their opinions as follows. In this regard, P12 said, "We have used WhatsApp extensively for parent and student groups." and P11 stated, "We use an application similar to Instagram, but you can take attendance from there and these attendances are sent to the parents. Here, you can instantly rate the student's performance in the course, and it reaches the parents at the same time." P18 said "In the paid platform we can advantageously see the student's development at home, at school, relationships with friends, exam scores, academic progress at work, and guidance service meeting records extensively." P12 said, "There is a system that is used very intensively in our English branch. Therefore, our students can actually think of it as a kind of thing, this virtual book in English, a virtual library. Our English teachers use it very intensively."

Analysis results of opinions on digital tools used in assessment and evaluation in public and private schools

Table 3

| <i>Public School Code</i> | <i>Private School Code</i> |
|---|----------------------------|
| E-school platform | Paid platforms |
| Web2 tools | Trial exam analysis |
| Trial exam analysis | Online assignment/study |
| There is no effective measurement and evaluation system | Keeping inventory records |

According to table 3, P4 claimed that *"E-School is already in the works, in fact, we do not use it very effectively, but it can give us many statistics at school, including student absences and grade entries, but does not present us many detailed graphs"*. P1 stated the following about other measurement and evaluation tools they use at school *"using Web2 tools, we use game programs and quiz programs such as Quizlet out. And here in our school, we organized quiz competitions in accordance with the inter-class level."* K3 explains his experiences about trial exams: *"Our students can see their results online on the trial exams we hold regularly every month. We can prepare an Excel spreadsheet and see the child's scores in detail."*

Some administrators working in public schools complain about the lack of an effective measurement and evaluation system. P4 and P7 respectively explained their opinions on this topic: *"The e-School system, but is it enough? Of course not. In the e-School system, there should be many sections and tabs related to social-emotional skills for children, as well as social activities and guidance initiatives and career studies. For example, parent-teacher meetings, etc., could be accessed there."*

"Unfortunately, sir, there was no effective measurement and evaluation system. This bothered me quite a bit. You know, I want to have data. In which grade do I start at the beginning, and at what position in the mathematics course, such as pre-test and post-test? What did it look like after the first exams? Then, I wanted to have data such as what the situation was in the second exam."

Private school administrators expressed their opinions as follows. In this regard, P13 said, *"In addition, of course, there is a student-parent information system used in many private schools and even in some public schools. From their daily meal lists and their attendance to the assignment of homework, which day it will be followed, from which book, and from which page it will be given. After they were checked, we gave feedback to the parents. P18 emphasized the advantages of using a paid platform: "Within the scope of guidance services, we can apply many tests and inventories and evaluate them quickly. This takes a serious workload off of us, and in general, I can say that the success rate increases slightly as the task of creating something special for the child accelerates"*.

P12, one of the private school administrators who constantly monitors the students' levels with regular trial exams, emphasized the situation as follows *"For example, if sixty to seventy percent of that class have not done something about a topic in the class, we put forward such analyzes to the whole class regarding that learning outcome with the inferences we get from the measurement and evaluation system and direct the teacher accordingly. Thus, we create a dynamic structure."*

The other private school administrators have given examples of the digital infrastructure used in assessment and evaluation as follows:

"For example, today was very good. You have a notification that all questions were accompanied. When you click, the parent can see his child's performance in mathematics class. You can check your homework from here and deliver it to the parents." (P11)

“Let me check the K12 level of the student. Have I been given homework? You can look at it from there, download it, solve it and check your homework. Homework is given using technology. It is checked there and recorded in the system. (P 15)

Analysis results in the opinions about the obstacles that arise in the process of creating a learning analytics culture in public and private schools.

Table 4

| <i>Public School Code</i> | <i>Private School Code</i> |
|--------------------------------------|--|
| Organizational resistance | Dysfunctionality of existing platforms |
| Insufficient budget | Organizational resistance |
| Lack of technological infrastructure | Workload |
| Inequality of opportunity | Bureaucratic obstacles |

According to Table 4, the administrators' statements on this subject are as follows: P2 *“We must eliminate inequality among teachers, especially our older colleagues. If necessary, everyone will receive in-service training programs again and again....”* P4 *“Our organization resists innovations. There is such a mass, there is a problem of incompetence of the authorized people, there are many such problems in our country.*

Administrators' opinions regarding the insufficiency of budget and technological infrastructure are as follows. *“I think funds should be provided for this useful software... These should be provided to schools free of charge ”(K1), “As long as we have administrators who value learning analytics and bring technology into our lives, I think that we can use it very well within educational institutions, with their contributions, in terms of budget, organization and coordination.” (P9)*

P1 and P4 respectively emphasized the inequality of opportunity in schools. *“... Fighting this inequality takes us away from the point of how we can improve education. We are trying to provide normality right now.” (P1). “In our country, there are incredibly disadvantaged schools in terms of achievement differences between schools, application differences, equality of opportunity... (P4).*

Private school administrators expressed their opinions as follows. P3 explains the opinions as *“I'm not very obvious on this issue right now, especially in public schools. The current systems, methods and platforms used are far behind this issue. We have to keep up with time and develop applications accordingly.”* P14 mentions the dysfunctionality of the existing platform as *“Normally, in an e-school platform there is a record of what grade the student received, but I know that we do not have the chance to see the details of which subject in terms of achievement. After that, while the attendance was taking*

place, the students just came to the sections and did not come. But on the platform we use, a message is sent to his family about the reason he is on leave, whether his family knows about it or not.

P15 and P17 express their views on organizational resistance as follows “Now robot people, perhaps artificial intelligence needs to get in schools somehow. It needs to be integrated somehow. We insist on ignoring this, perhaps we are resisting as a community”. “I think the important thing here is how much importance people characteristically attach to this work. Because some people can use everything as an excuse to make it seem like this is not my job. So, unfortunately, let me say that it is a bit of a plague on our teaching profession.”

Opinions about workload, which is among the most complained about obstacles in private institutions, are as follows.

“And apart from that, of course, working hours need to be reduced. In other words, it would be difficult to expect such learning from a teacher who teaches thirty-five hours a week... Frankly, it is difficult to expect an outcome such as learning analytics and data analysis” (P17)

P12 explained private school administrators' opinions about bureaucratic obstacles as follows, respectively. “Now, I think there is a problem in our country, even though I don't know much about National Education, I have no idea whether the system changes every year or not based on data. You know, there is data out there. There is a learning problem. And does it change at the point where we have developed a solution to that learning problem or does it change to a different logic”.

Analysis results in the opinions of school administrators regarding the establishment of a culture of learning analytics in schools.

Table 5

| <i>Public School</i> | <i>Private School</i> |
|-----------------------------------|----------------------------------|
| Increasing teacher qualifications | Using a more functional platform |
| Using a more functional platform | Adopting a data-driven system |
| Budget support | Changing the national policies |
| Changing the national policies | |

The results of content analysis on the opinions of school administrators regarding the establishment of a culture of learning analytics vary in public and private schools. P7 expresses his opinions on teacher qualifications as “Teachers say, ‘I go to class and leave’, this is not enough, teaching is hard work. It is to develop, transform, change.

That's why, first of all, I think the teacher training part should be reconsidered." P5 explained the same topic as "So, there is nothing stopping learning analytics. Just not knowing this, we call it in-service training. So, for example, I may know more or less about learning analytics, but a teacher friend, for example, may not know this. If he has not improved himself in this regard..."

School administrators generally expressed their suggestions regarding using a more functional platform and budget support. P1 and P2 express their opinions on this issue as follows, respectively. *"Apart from that, as I said before, for example, in my opinion, these are useful software that can be used in a school. I think extra funding should be provided. (P1)*

"The Ministry does not have a very clear policy on this issue, there is no software or program developed, we only have e-school. E-School is something that I cannot see all the data about anyway. Therefore, we cannot even use it very effectively, so I think we need to go much further in this regard first" (P2)

Finally, the issue that administrators frequently mention is the need to introduce changes to existing policies. P2 expressed his opinions on this issue as follows, respectively: *"Of course, these are very natural in a community of one million people, but if the ministry develops a serious policy, why not? Of course, it should be more systematic, overcoming all obstacles, and of course, technology should be invested in technological infrastructure in schools".*

Private school administrators expressed their opinions as follows. P11 explains his opinions as *"I think that in the future, the child should be provided with a new learning environment based on this previously processed data. Data is important to us. I think this article is very valuable in terms of giving importance to data entry and then providing an environment that every student can understand."* Moreover, the administrators emphasize the importance of adopting data-based systems in schools as follows: P11 *"All teachers believe that this is important, and everyone needs to contribute to this process in terms of creating data at the data point."* On the same subject, P12 expresses the situation as follows: *"Now, I think there is a problem in our country, even though I don't know much about national education, the change of the system every year is based on data or what. You know, there is data out there."*

Results and Discussion

The research findings suggest that school administrators working in public schools evaluate technological leadership more in terms of "being able to use technological devices". When these findings obtained from the interviews are associated with the detailed definitions of technological leadership made by Sahlberg and Sahlberg (2021), in the literature and the characteristics of the technological leader. It is seen that school administrators do not mention many dimensions when defining technological leadership. Particularly the features such as the fair use of equipment and resources,

which are frequently mentioned in the definition of technological leadership, policies based on information and communication technologies, and creating easily accessible technological environments that can be created throughout the school. It indicates that school administrators have a very superficial knowledge of technological leadership and try to explain technological leadership with concepts related to their own lives and experiences. This highlights a gap between the expected and actual understanding of technological leadership, a finding that is consistent with the findings of recent studies by Friesen et al. (2020), which emphasize the underdeveloped awareness of technological leadership in educational settings.

Accordingly, as mentioned in the literature, learning analytics, which has a wide range of applications and components, is only partially understood by school administrators and its application areas are still very limited in Türkiye. As Chatti et al. emphasized (2012), the fact that learning analytics applications do not yet have a solid pedagogical foundation, and the problems experienced in the technological, financial and human resources required for their widespread use in learning environments (Tsai et al., 2020) support this situation. The fact that school administrators working in public schools evaluated this situation only in terms of the practices notified to them by the state and that they were obliged to use shows that they did not do any separate research or reading on this subject. As stated in the literature, learning analytics applications, which include a wide variety of learning management systems and variables, are perceived as a very new field that has not been fully understood by school administrators in Türkiye. In addition, administrators often emphasize that there are many systemic obstacles to learning analytics applications. This situation is similar to the findings obtained in King's (2017) study conducted in England. It is seen that school administrators working in Türkiye, like their British counterparts, face problems such as a lack of time to learn and apply learning analytics, a culture of resistance, problems related to change, and inadequate professional development, training and incentives.

The title of technology use regarding learning analytics is where the difference between private and public schools is most outstanding. In the interviews with education administrators, it is clearly seen that the culture of learning analytics in private schools is established both at the administrative level and in the context of teachers and students. Thanks to the software used in private schools, it is seen that all kinds of personal data of the student (social activities, guidance meeting records, parent information tab, course/subject success analysis and report cards, language level) can be recorded. Evaluating and recording data regarding students' social and emotional development, together with variables such as attendance and grade information, provides serious advantages for individualizing education. Furthermore, it can be seen that private schools are one step ahead in predicting future problems and taking precautions, which is one of the important stages of learning analytics platforms.

In the interviews with school administrators, most of the administrators in public schools emphasize that measurement and evaluation activities in the school are carried out with the classical method and the data is processed into the e-school system and all follow-

up is done in this way. Reducing the measurement activities to a superficial result based only on the exam grade results in the feedback process, which is one of the most important outcomes of learning analytics applications, being inadequate. This finding supports the findings of the study conducted by Aktaş (2019), which noted similar challenges in the implementation of learning analytics, particularly in public schools.

Another obstacle mentioned in public schools is the inadequacy of budget and technological infrastructure, which results in inequality of opportunities. This finding was also highlighted by K.G. and Kurni (2021), who identified infrastructure and funding as significant barriers to the effective use of educational technologies, including learning analytics.

During the interviews with school administrators of public schools, the most frequently mentioned obstacle to learning analytics was organizational resistance. Many practices that are quite new for public schools are practices that most teachers have not received training in the faculty of education and claim that they are very new to them. For this reason, placing learning analytics applications on a pedagogical basis is quite challenging for both school administrators and teachers. This finding is supported by the studies of Tsai and Gašević (2017), who touched upon the inadequacy of pedagogy-based approaches in learning analytics applications and the lack of equipment of users in this field. Dollinger et al. (2019) emphasizes that the inadequacy of teachers' technical knowledge is among the greatest obstacles in this regard. Another obstacle mentioned in public schools is the inadequacy of budget and technological infrastructure and the resulting inequality of opportunities. This finding was reported by K.G. and Kurni (2021), the issues revealed in the research show similar characteristics to the obstacles to learning analytics. Kis's research (2022) similarly shows that administrative support in the digitalization processes of schools is inadequate, and teachers' digital literacy is limited, making the integration of advanced technologies such as learning analytics difficult. When the same topic is analyzed in terms of private schools, it is seen that the issue of organizational resistance, although less frequent, is also perceived as an obstacle by the administrators.

The most frequently expressed suggestion by the administrators is to increase teacher qualifications. Especially teachers working in public schools are not very proficient in the use of technology and digital applications, which creates a serious workload for school administrators and reduces their motivation to do more qualified work. The most basic conclusion that emerges here is this: In order for a culture of learning analytics to be established in an institution, sufficient data must be collected at that school and this data must be sorted in a more organized manner on a single platform. The result obtained from the observations is that the investment in professional development has a very positive effect on student success.

Finally, observations show that teachers are actually open to innovations in different applications and digital software, but their work life balance does not allow personal development due to different reasons. It is outstanding that factors such as the number of students in public schools, the reflection of students' problems outside of education

on schools, limited parent-teacher cooperation and high bureaucratic workload, significantly reduce the motivation of school administrators. Similar problems, which have been frequently mentioned in the literature in recent years, Bozkurt, (2023), Keman, (2019), Usta and Boğa (2021) show similar characteristics with the findings of this study. In this context, school administrators generally make suggestions such as improving teachers' incomes, providing space for school administrators to deal only with education by employing separate personnel for technical issues.

The strength of this study is that the dataset, which was analyzed in depth using qualitative research methods and MAXQDA software, provides a comprehensive and detailed understanding of learning analytics practices in private and public schools over a long period of time. However, the limited number of participants in the study may limit generalizability. In addition, the limited nature of the interviews with the participants limited the opportunity to observe educational practices that may change over time.

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Genişletilmiş Türkçe Özet

Eğitim alanındaki verilerin her saniye, hızlı bir şekilde arttığı günümüzde bu veriyi yönetebilmek, ayıklamak ve eğitim niteliğinin geliştirilmesi amacıyla kullanabilmek okul yöneticileri için gerekli olan temel bir beceri haline gelmiştir. Bu bağlamda öğrenme sürecini dijital olarak takip ederek öğrenci davranışlarının analizi ve kişiselleştirilmiş geribildirimlere imkan sağlayan öğrenme analitiği ülkemizde yeni bir alan olarak ortaya çıkmıştır. Öğrenme analitiği uygulamalarının okullardaki uygulayıcıları olan okul yöneticilerinin verimli olabilmeleri için teknolojik liderliğe ilişkin yeterliklere sahip olması beklenmektedir. Ancak ülkemizde bu alandaki yeterlikler konusunda kurumsal bir politika olmamasından dolayı eğitim yöneticilerinin teknolojik liderlik düzeyleri ve okullarda öğrenme analitiği uygulamaları konusunda kurumlar arasında farklılıklar görülmektedir. 21. Yüzyılda ülkemizin ihtiyaç duyduğu insan gücünün nitelikleri düşünüldüğünde bu farklılıkların bu kurumlardan mezun olan öğrenciler arasında ciddi bir farklılık oluşturacağı öngörülmektedir. Bu bağlamda okullarda eğitim yöneticilerinin liderliğinde standart bir öğrenme analitiği kültürü oluşturulmasına yönelik uygulamaları incelemek, olası farklılıkları ve çatışmaları azaltmak ve eğitim verilerini daha nitelikli takip edebilmek açısından önem arz etmektedir.

Bu çalışmada araştırmanın doğasını en doğru şekilde yansıttığı düşünülen nitel araştırma yöntemlerinden biri olan fenomenoloji deseni kullanılmıştır. Fenomenoloji, günlük yaşamımızda çeşitli şekillerde karşılaştığımız ancak derinlemesine bir anlayışa sahip olmadığımız olguları temel alır (Yıldırım ve Şimşek, 2016). Fenomenoloji felsefesi deneyimin kendisine ve bu deneyimin sonucunda ortaya çıkan deneyimin nasıl bilince dönüştüğüne odaklanır (Merriam ve Tisdell, 2016). Fenomenolojik araştırma, insanların deneyimlerini bir olguyla sınırlandırarak bu deneyimleri nasıl deneyimlediğine odaklanmaktadır (Creswell, 2017). Araştırmanın nitel kısmında nicel araştırmanın yapıldığı katılımcılar arasında amaçlı örnekleme yöntemlerinden durum örnekleme (Patton, 2015) kullanılmıştır. Durum örnekleme, sınırlı sayıda ancak aynı derecede bilgi açısından zengin durumların derinlemesine incelemeye tabi tutularak çalışmasını öngörmektedir (Yıldırım ve Şimşek, 2016). Araştırma kapsamında 18 eğitim yöneticisi ile derinlemesine görüşmeler yapılmıştır.

Araştırmanın katılımcıları Türkiye'deki kamu ve özel okullarda görev yapan 18 eğitim yöneticisidir. Katılımcıların %39'u (7 katılımcı) kadın, %61'i (11 katılımcı) erkektir. Katılımcıların %28'i 26-35 yaş aralığındayken, %66'sı 36-45 yaş aralığındadır. Bir katılımcı 55 yaşın üzerindedir. Katılımcıların %50'si (9 katılımcı) lisans, %50'si (9 katılımcı) ise yüksek lisans mezunudur. Görüşülen katılımcıların %56'sı (10 katılımcı) devlet okullarında, %44'ü (8 katılımcı) ise özel okullarda çalışmaktadır. Katılımcıların %11'i (2 katılımcı) okul öncesi düzeyde, %17'si (3 katılımcı) ilköğretim düzeyinde, %33'ü (6 katılımcı) ortaokul düzeyinde ve %39'u (7 katılımcı) lise düzeyinde yönetici bulunmaktadır. seviye.

Bu çalışmada katılımcıların teknolojik liderlik ve öğrenme analitiğine ilişkin deneyimleri, algıları ve görüşleri hakkında derinlemesine bilgi edinmek amacıyla yarı

yapılandırılmış görüşme formu kullanılmıştır. Literatür incelemesi yapılarak hazırlanan pilot görüşme soruları, nitel araştırma ve teknolojik liderlik konusunda deneyimli üç uzmana sunulmuş ve bu kapsamda iki pilot görüşme gerçekleştirilmiştir. Pilot görüşmelerden alınan geri bildirimler sonucunda görüşme formuna son şekli verilmiştir.

Nitel araştırmalarda analiz sürecinde araştırmacıların büyük miktarda veriyle çalışması gerekmektedir (Miles ve Huberman, 1994). Bu araştırmada 18 katılımcıyla (toplam 108 sayfa) görüşme notları elde edilmiştir. İçerik analizi yoluyla toplanan verileri betimlemeye ve içlerinde saklı gerçekleri ortaya çıkarmaya çalışır. Böylece elde edilen ve birbirine benzeyen veriler belirli tema ve kavramlar çerçevesinde bir araya getirilerek okuyucunun anlayabileceği şekilde yorumlanır (Yıldırım ve Şimşek, 2016).

Öncelikle görüşme ve gözlemlerden elde edilen verilerin daha sistematik bir şekilde analiz edilebilmesi amacıyla tüm kayıtlar bilgisayarda yazılı metne dönüştürülmüştür. Daha sonra yazılı metinler MAXQDA programına aktarılmıştır. MAXQDA programı araştırmacıya kullanım kolaylığı sağlamasının yanı sıra araştırmacının verileri düzenlemesine ve verileri ortak bir kodla bütünsel bir şekilde görüntülemesine yardımcı olması nedeniyle tercih edilmiştir (Friese, 2019).

Araştırma kapsamında yapılan görüşmeler sonucunda özellikle devlet okullarında teknolojik yeterliklerin kullanımının ve öğrenme analitiği uygulamalarının birçok nedene bağlı olarak kısıtlı düzeyde kaldığı görülmektedir. Okullarda öğrenme analitiği uygulamalarının tam anlaşılamamış olması ve bu uygulamalara zemin hazırlayacak etkili bir yazılım sisteminin kullanılmaması, öğrenme analitiğinin önündeki en önemli engeller olarak ön plana çıkmaktadır.

Araştırmadan elde edilen bir diğer bulgu ise ülkemizde bu konuda uygulanan standart bir bakanlık politikası olmamasından dolayı her okulda farklı uygulamaların yapılmasıdır. Araştırma bulguları devlet okulları ve özel okullar arasında ortaya çıkan uygulama farklılıklarına ek olarak aynı kurumda görev yapmakta olan okul yöneticilerinin dahi kişisel faktörlere bağlı olarak farklı uygulamalar yaptıklarını göstermektedir. Elde edilen bu bulgular çerçevesinde okul yöneticilerinin bu konuda daha nitelikli uygulamalar yapması için öğrenme analitiği kavramının daha iyi anlaşılması adına bakanlık düzeyinde eylem planları oluşturulması önem arz etmektedir.

Anahtar Kelimeler: Teknolojik liderlik, öğrenme analitiği, okul yöneticileri

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