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Improving the supervisory competence of future teacher trainers with the help of innovative technologies

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Abstract

The purpose of this research is to obtain the opinions of prospective teachers about increasing the supervisory competencies of teacher candidates with the help of innovative technologies. The study group of the research consists of 125 teacher candidates studying at various universities in Almaty, Kazakhstan. Research data were collected through a semi-structured interview form developed by the researchers. As a result of the research, it has been revealed that the majority of teacher candidates have moderate supervisory competence. The pre-service teachers stated that the course content for increasing their supervisory competencies in the education they received was moderately sufficient. The vast majority of teacher candidates have a positive perspective on increasing their supervisory competencies with the help of technology. The pre-service teachers presented the ability to use technology in supervision; to gain learning skills with technology support; and to gain the ability to understand students' interests, abilities and expectations with technology support as suggestions for increasing their supervisory competencies through technology. In addition, providing the ability to use technology in supervision with online education applications and organising teacher training programmes in accordance with the use of technology in supervision competencies are among the suggestions developed by pre-service teachers.

Keywords: Teachers of the future, supervisory competencies, innovative technologies;

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1. Introduction

Today, rapidly developing technological and scientific innovations force societies to raise active individuals who are open to changes. The education of individuals who know the requirements of the information society and can improve themselves plays a leading role in the development of societies. Raising qualified individuals is possible with qualified teachers. Therefore, in order to meet today's educational needs, teachers are expected to have certain skills and competencies. It is extremely important that these skills and abilities are acquired by teacher candidates before stepping into the teaching profession.

1.1. Theoretical and conceptual framework

Classroom management is defined as the realisation of activities that provide students' academic, emotional and social development. In other words, it is the expertise of the teacher in arranging the learning environment of the classroom according to the developmental characteristics of the students and providing high-level learning. A teacher's classroom management competence is associated with students' ability to understand their interests, abilities and expectations (Stronge, Tucker, & Hindman , 2004). In order to increase the quality of educational institutions and for students to achieve the desired level of success, teacher qualifications and competencies must be high (Köksal, 2008) because the proficiency of the teacher directly affects the quality of education and training (Darling-Hammond, 2006). In the most general sense, the state of being competent is defined as the special knowledge and competence that provides the power to do a job. Competence is the characteristics such as professional knowledge, skills and attitudes that are expected to exist in the individual in order for the individual to take responsibility for doing a job and to perform his profession properly (Pillay, Goddard, & Wilss 2005).

Similarly, teacher competencies are explained as 'the knowledge, skills and attitudes that teachers must have in order to fulfil their teaching profession effectively and efficiently'. Teacher competencies are related to teachers' professional knowledge, skills and value judgments. A teacher's professional performance is explained by the link between his professional competence and student success (Kulshrestha & Pandey, 2013).

An effective classroom management and supervision is one of the competencies that teachers should have (Emmer & Evertson, 1980). Classroom management is to provide and maintain the most suitable environment for learning by arranging the resources available together with the physical structure of the classroom. In this context, the processes of establishing order in the classroom, arranging the physical environment, realising the teaching process with a logical flow, using time effectively, motivating students and establishing teacher leadership and authority should be carried out (Savage & Savage, 2010).

Classroom management is a factor that directly affects the teaching–learning environment and student success. However, the fact is that the process is quite complex and the human factor makes classroom management and supervision one of the most common causes of anxiety for teachers and teacher candidates (Christofferson & Sullivan, 2015). For this reason, it is necessary for individuals to be equipped with the necessary knowledge and skills on classroom management through in-service training, both during the teacher training process in the faculty and after starting the profession (Eisenman, Edwards, & Cushman , 2015).

1.2. Related research

When the studies in the field are examined, it is seen that there are many studies determining the extent of the competencies of teachers and teacher candidates (Altynikova & Muzaev, 2019; Bahmannia, Malaki, & Khosravi 2020; Dervenis, Fitsilis, & Iatrellis, 2022; Gichobi, 2022; Irawan, Wahyudin, & Yanto 2018; Ross & Bruce, 2007; Shook, 2021; Shidiq, Promkaew, & Faikhamta, 2022; Weinstein, Curran, & Tomlinson-Clarke, 2003).

Rawlings Lester, Allanson, and Notar (2017) aimed to reveal management routines that will contribute to classroom management by scanning the current literature on classroom routines and their effects on classroom management and control. In the study, it was concluded that classroom routines form the basis for effective classroom management and support teachers in different dimensions. They advocate the idea that using certain managerial routines is an important supporter, especially for children, to gain the right habits.

As a result of the study conducted by Drang (2011), which examined the beliefs, knowledge and practices of teachers regarding classroom management, it has been revealed that teachers' classroom management beliefs and practices are compatible with each other. In their study on 'Classroom management styles, classroom climate and school success', Djigic and Stojiljkovic (2011) stated that teachers' classroom management style is a very important variable for effective teaching and academic success. In addition, as a result of the research, it was revealed that teachers who exhibit interactive classroom management style are more effective on the climate and success in their classrooms than other classroom management styles.

Soheili, Alizadeh, Murphy, Bajestani, and Ferguson . (2015), in their study titled 'Teachers as leaders: The impact of Adler–Dreikurs' classroom management techniques on students' perceptions of the classroom environment and on academic achievement', applied classroom management techniques suggested by Adler and Dreikurs to students' classroom environment. They aimed to examine how it affects their perceptions and academic achievement. The prominent finding of the study was that the use of Adler–Dreikurs classroom management techniques enabled students to get more satisfaction from the classroom environment and increase their academic success.

Koutrouba, Markarian, and Sardianou (2018), in their research evaluating the understanding of classroom management, revealed that teachers, who aim for an instructional management, tend to exhibit an interactive classroom management approach. In addition, as a result of the research, it was revealed that teachers who aim at a behaviourist management tend to exhibit a more intrusive classroom management approach.

1.3. Purpose of the research

The purpose of this research is to obtain the opinions of pre-service teachers on increasing their supervisory competencies with the help of innovative technologies. In this direction, the following sub-objectives have been established:

1. How do prospective teachers evaluate their supervisory competencies?

2. Do the pre-service teachers find the course content sufficient to increase their supervisory competencies in the education they receive?

3. What are the opinions of pre-service teachers on increasing their supervisory competencies with the help of technology?

4. What are the suggestions for teacher candidates to increase their supervisory competencies with the help of technology?

2. Method and materials

In this section, information about the research method, data collection tools, participant group and data analysis are given.

2.1. Research method

This study was designed in the phenomenology pattern, which is one of the qualitative research methods. The qualitative research model is also explained as the researcher's attempt to determine the meaning of a phenomenon in line with the opinions of the participants (Creswell, Hanson, Clark Plano, & Morales, 2007). Phenomenological research refers to a qualitative approach in which one or

more phenomena are examined in depth through data collection tools and the themes are revealed (Creswell & Poth, 2016). In this direction, the opinions of teacher candidates participating in the research on increasing their supervisory competencies with the help of innovative technologies are discussed in the phenomenology pattern.

2.2. Participants

The study group of the research consists of 125 teacher candidates studying at various universities in Almaty, Kazakhstan. The pre-service teachers constituting the study group were selected from among the pre-service teachers who voluntarily agreed to participate in the research. The demographic distribution of the study group is given in Table 1.

Table 1. Demographic distribution of teacher candidates

Gender	*F*	%
Female	68	54.4
Male	57	45.6
Sum	125	100
Department		
Primary school teaching	51	40.8
Math teaching	33	26.4
Foreign language teaching	22	17.6
Preschool teaching	19	15.2
Sum	125	100
Class		
1.Class	27	21.6
2.Class	21	16.8
3.Class	45	36
4.Class	32	25.6
Sum	125	100

The demographic distribution of teacher candidates participating in the research is given in Table 1. 54.4% of the teacher candidates participating in the research are female and 45.6% are male. 40.8% of the pre-service teachers participating in the research study in classroom teaching, 26.4% in mathematics teaching, 17.6% in foreign language teaching and 15.2% in preschool teaching departments. 21.6% of the teacher candidates are studying in the first year, 16.8% in the second year, 36% in the third year and 25.6% in the fourth year.

2.3. Data collection tools

Research data were collected through a semi-structured interview form developed by the researchers. The researchers first carried out a literature review and examined the studies in the field. Then, they formed semi-structured interview questions and sought the opinion of two experts. After receiving expert opinions, the semi-structured interview form was applied to four pre-service teachers and the clarity of the questions was tested. After the pilot application, the semi-structured interview form was given its final form. Pre-service teachers who participated in the pilot study were excluded from the study group of the research. The semi-structured interview form is given in Table 2.

Table 2. Semi-structured interview form

Characteristics of teacher candidates
Gender:
Department of Education:
Class of Study:
Questions Regarding Supervision Competencies of Teacher Candidates

1. At what level do you find your supervisory competence? Very high ( ) High ( ) Mid ( ) Low ( ) Very low ( )
2. Do you find the course content sufficient to increase your supervisory competencies in your education process? Very enough ( ) Enough ( ) Mid ( ) Insufficient ( ) Very inadequate ( )
3. How do you evaluate the enhancement of your auditing competencies with the help of technology?
4. What are your suggestions for increasing your auditing competencies with the help of technology?

In Table 2, the semi-structured interview form prepared for the collection of research data is presented. In the form, there are three demographic questions regarding the gender, department and class distribution of the pre-service teachers. In the form, there are four questions in total, two closed-ended questions and two open-ended questions, regarding the supervisory competencies of teacher candidates and increasing their supervisory competencies, respectively.

2.4. Data collection process

In the process of collecting research data, pre-service teachers were contacted via email and a research information form was sent to them. The research information form contains information about the purpose and method of the research, data collection tools, target study group and ethical principles. A semi-structured interview form was sent to the teacher candidates who voluntarily agreed to participate in the research by reading the research information form and returning to the researchers by email. The data collection process was completed after the semi-structured interview forms were filled and sent back to the researchers by the pre-service teachers. The period from the information process to the acquisition of all data is approximately 9 weeks.

2.5. Data collection analysis

Content analysis method was used in the analysis of the research data. Content analysis is a method frequently used in data analysis and qualitative research. Since content analysis is an inductive analysis type, it focuses on the origins of the investigated phenomenon or event. Through coding, the concepts underlying the data and the relationships between these concepts are revealed (Merriam & Grenier, 2019). In this direction, the answers given by the teacher candidates participating in the research to the questions in the semi-structured interview form were coded separately by the researchers. Compatibility was evaluated by comparing the data coded by the researchers. Then, categories were created by the researchers for open-ended questions. The answers given by the pre-service teachers were transformed into themes under these categories. In order to ensure the confidentiality of the identity information of the teacher candidates, a code was determined for each teacher. These codes are Code-1, Code-2, Code-3 …. The answers of the pre-service teachers were given by creating frequency and percentage tables. In addition, below the tables created from the data obtained from the open-ended questions, examples from the direct answers of the teacher candidates are given.

3. Results

In this section, the answers given by the pre-service teachers to the questions in the semi-structured interview form are given in tables.

In Table 3, the evaluations of the teacher candidates participating in the research regarding their supervisory competencies are given.

Table 3. Supervision competencies of teacher candidates

Category	***F***	**%**
Very high	7	5.6
High	16	12.8
Mid	68	54.4

Low	23	18.4
Very low	11	8.8
Sum	125	100

In Table 3, the opinions of the prospective teachers participating in the research on their supervisory competencies are categorised. 5.6% of teacher candidates stated that their supervisory competencies were very high, 12.8% high, 54.4% medium, 18.4% low and 8.8% very low.

In Table 4, the evaluations of the teacher candidates participating in the research regarding the adequacy of the course contents for increasing their supervisory competencies in the education they received are given.

Table 4. Opinions of pre-service teachers on the adequacy of course content to increase their supervisory competencies in the education they receive

Category	*F*	%
Very enough	5	4
Enough	18	14.4
Mid	63	50.4
Insufficient	26	20.8
Very inadequate	13	10.4
Sum	125	100

In Table 4, the opinions of the teacher candidates participating in the research on the adequacy of the course content for increasing their supervisory competencies in the education they received are categorised. While 4% of the pre-service teachers who participated in the research stated that they found the course contents to increase their supervisory competencies in the education they received, 14.4% of the pre-service teachers stated that they found it sufficient.

In Table 5, the evaluations of teacher candidates participating in the research on increasing their supervisory competencies with the help of technology are given.

Table 5. Evaluations of teacher candidates on increasing their supervisory competencies with the help of technology

Category	**Theme**	***F***	**%**
Positive	It is positive in terms of both technology use and building audit competencies.	71	56.8
	It is positive in terms of sharing the problems encountered in audit competencies.		
	It is positive in terms of offering solutions to overcome obstacles in audit competencies.		
	Positive in terms of obtaining theoretical knowledge		
Similar to formal education	Equally useful with applications in the classroom setting	36	28.8
	Equal approach in solving problems experienced in classroom practices		
	Equal sharing in terms of theoretical knowledge		
Negative	Lack of learning by doing	18	14.4
	Lack of classroom environment		
	Lack of communication		

In Table 5, the evaluations of the teacher candidates participating in the research on increasing their supervisory competencies with the help of technology are categorised. The positive category is divided into four themes in total: positive in terms of both the use of technology and the creation of audit competencies; positive in terms of sharing the problems encountered in auditing competencies; positive in terms of providing solutions for overcoming obstacles in supervisory competencies; and positive in terms of obtaining theoretical knowledge. The similar category with formal education is divided into three themes: equal benefit with the practices in the classroom environment; equal approach in solving the problems experienced in the classroom environment; and equal sharing in terms of theoretical knowledge. The negative category is divided into three themes as lack of learning by doing; lack of classroom environment; and lack of communication. 56.8% of the teacher candidates expressed a positive opinion about increasing their supervisory competencies with the help of technology. While 28.8% of the pre-service teachers found their supervisory competencies increasing with the help of technology similar to formal education, 14.4% of the pre-service teachers stated that they found it negative.

The opinions of some pre-service teachers participating in the research on increasing their supervisory competencies with the help of technology are given below.

Code-22: *It is very important for a teacher to have technology usage knowledge as well as supervisory competence. For this reason, I think that online training will improve us in many ways.*

Code-47: *I think that a technology-supported training can be beneficial in terms of sharing and producing solutions to the problems that we may encounter regarding auditing.*

Code-4: *I think it would be useful to talk about the problems we may encounter and to share case studies.*

Code-86: *I think it will be very useful. I think it will be productive in terms of transferring theoretical information.*

Code-121: *I do not think that a technology supported education can be more advantageous than a classroom education.*

Code-102: *In my opinion, it does not provide a significant advantage in terms of conveying what can be done in theory.*

Code-69: *I think it is more advantageous to give such training in a classroom setting. Because learning by doing has some effect on the acquisition of supervisory competencies. In online applications, we may encounter both a lack of communication and a lack of practice.*

In Table 6, suggestions for increasing the supervisory competencies of the teacher candidates participating in the research are given with the help of technology.

Table 6. Suggestions of teacher candidates to increase their supervisory competencies with the help of technology

Category	**Theme**	***F***	**%**
Gaining the ability to use technology in control	Gaining the ability to use technology	92	73.6
	Using technology to solve audit problems		
	Using technology to maintain control		
	Gaining the ability to build audit competencies with technology		
Teknoloji desteği ile etkili öğretim becerisi kazanma	Creating effective teaching skills with the help of technology	69	55.2

	Acquiring sustainability in education with the help of technology		
Teknoloji desteği ile öğrencilerin ilgi yetenek ve beklentilerini anlama becerisi kazandırma	Discovering student interests and abilities in supervision with technology support	51	40.8
	Developing student interests and abilities in supervision with technology support		
	Awareness of student expectations in supervision with technology support		
	Meeting student expectations in supervision with technology support		
Çevrimiçi eğitim uygulamalarıyla teknolojiyi denetimde kullanma becerisi kazandırma	Gain auditing skills with online applications	36	28.8
	Developing online solutions with online applications		
	Learning new methods and practices in auditing with online applications		
Öğretmen yetiştirme programlarının denetim yeterliklerinde teknoloji kullanımına uygun şekilde düzenlenmesi	Increasing the course content related to technology-supported supervision competencies in teacher training programmes	23	18.4
	Organising seminars for the development of technology-supported audit competencies at universities		

In Table 6, the views of pre-service teachers participating in the research on increasing their supervisory competencies with the help of technology are categorised. The category of gaining the ability to use technology in supervision is divided into four themes: to gain the ability to use technology; to use technology in the solution of audit problems; to use technology to provide auditing; and to gain the ability to create audit competencies with technology. The category of gaining effective teaching skills with technology support is divided into themes of creating effective teaching skills with the help of technology and acquiring sustainability in teaching with the help of technology. The category of providing students with the ability to understand their interests, abilities and expectations with technology support consists of the themes of discovering student interests and talents in supervision with technology support, developing student interests and abilities in supervision with technology support, realising student expectations in supervision with technology support and meeting student expectations in supervision with technology support. The category of gaining the ability to use technology in supervision with online education applications consists of the themes of gaining auditing skills with online applications, developing online solutions with online applications and learning new methods and applications in auditing with online applications. Finally, the category of regulation of teacher training programmes in accordance with the use of technology in supervision competencies is devoted to the themes of increasing the course content related to technology-supported supervision competencies in teacher training programmes and organising seminars for the development of technology-supported supervision competencies in universities. 73.6% of the pre-service teachers who participated in the research suggested that they gain the ability to use technology in supervision. 69% of teacher candidates suggested that effective teaching skills should be gained with technology support. While 40.8% of pre-service teachers suggested gaining the ability to understand the interests, abilities and expectations of students with technology support, 28.8% of pre-service teachers suggested gaining the ability to use technology in supervision with online education

applications. On the other hand, 18.4% of teacher candidates stated that teacher training programmes should be arranged in accordance with the use of technology in their supervisory competencies.

The suggestions of some pre-service teachers who participated in the research on increasing their supervisory competencies with the help of technology are given below.

Code-2: *I think it is important to gain technology skills first of all in acquiring audit competencies. Without the ability to use technology, I think it is not very possible to increase auditing competencies with the help of technology.*

Code-55: *It is necessary to teach how to use technology in supervision in the classroom environment.*

Code-70: *I think it is possible to reveal students' talents or meet their expectations by using technology. This will also have an increasing effect on the teacher's supervisory competencies.*

Code-100: *Online applications should be made. Thus, it is possible to increase both online technology use and audit competencies.*

Code-122: *Online competencies should be increased with the help of technology in the curricula of universities. Seminars to be given at regular intervals can also be effective.*

4. Discussion

As a result of the evaluations of the teacher candidates participating in the research on their supervisory competencies, it was determined that the majority of the prospective teachers had moderate supervisory competency. When the views of the pre-service teachers on the adequacy of the course contents to increase their supervision proficiency in the education they receive are evaluated, it is seen that the majority of pre-service teachers find the educational content to increase their supervision proficiency at a moderate level. As a result of the evaluations of the pre-service teachers participating in the research on increasing their supervisory competencies with the help of technology, it was revealed that the majority of the pre-service teachers had a positive perspective. The pre-service teachers who participated in the research developed suggestions for increasing their supervisory competencies with the help of technology. These recommendations are to gain the ability to use technology in supervision, to gain effective teaching skills with technology support, to gain the ability to understand the interests, abilities and expectations of students with technology support, to gain the ability to use technology in supervision with online education applications and to organise teacher training programmes in accordance with the use of technology in supervision competencies. There are studies that are similar to the findings of this study and that include the management supervision competencies of teachers and teacher candidates in the field and evaluate their competencies in technological pedagogical content knowledge. Koh, Chai, and Tsai (2010) investigated pre-service teachers' technological pedagogical content knowledge and revealed that teachers have moderate proficiency in technology knowledge, content knowledge and knowledge of teaching with technology. On the other hand, Çubukçu and Girmen (2008) revealed in their research that teachers find themselves sufficient in field dominance and insufficient in planning. Rosas and West (2009) concluded in their study that teacher candidates' perceptions of classroom management control skills were lower than teachers' perceptions. Ritter and Hancock (2007), on the other hand, revealed that there is no significant relationship between teachers' level of classroom management control skills and their professional seniority. In his study, Zoulikha (2014) included the handling of the supervision of primary school teachers with an analytical approach. According to the study, inspections bring additional stress when teachers' workload is high. The same situation can be extended for school administrators. It has also been revealed that the oversight of school principals over workload can cause stress. In their research, Unlu and Pekkan (2019) stated that teachers receiving well-planned and appropriate training contribute to their classroom management skills.

5. Conclusion

The traditional understanding of education has started a new era with the use of technology in education. The importance of teachers' supervisory competence is as old as the history of education. However, with the use of educational technology, a new understanding has emerged in the development of teachers' supervisory competencies. Accordingly, in this study, it was aimed to obtain the opinions of pre-service teachers about increasing their supervisory competencies with the help of innovative technologies. As a result of the research, it has been revealed that the majority of teacher candidates have moderate supervisory competence. The pre-service teachers stated that the course content for increasing their supervisory competencies in the education they received was moderately sufficient. The vast majority of teacher candidates have a positive perspective on increasing their supervisory competencies with the help of technology. The pre-service teachers presented the ability to use technology in supervision; to gain learning skills with technology support; and to gain the ability to understand students'' interests, abilities and expectations with technology support, as suggestions for increasing their supervisory competencies through technology. In addition, providing the ability to use technology in supervision with online education applications and organising teacher training programmes in accordance with the use of technology in supervision competencies are among the suggestions developed by pre-service teachers.

6. Recommendations

As a result of the findings obtained from the research, the need to develop the supervisory competencies of teacher candidates arose. In this direction, universities have important duties. Technology-supported course contents should be created in order to develop the supervisory competencies of teacher candidates. Technology and supervision competencies of teacher candidates should be developed through online courses. Seminars should be organised with the support of technology use at regular intervals in the university environment in order to develop the supervisory competencies of teacher candidates.

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