Evaluation of the Leadership Qualities of Principals Regarding the Prevention of Noise Pollution in School: A Case Study

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This study was prepared based on literature and data collection tools in the project nr. Scientific and Technological Research Council of Turkey (TÜBİTAK 1001) 114K738 named as "Noise Pollution at School: Causes, Effects and its Control". View project

Evaluation of the Leadership Qualities of Principals Regarding the Prevention of Noise Pollution in School: A Case Study[*]

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The purpose of this study was to reveal the leadership qualities of school principals in solving a noise problem at school. A single case study was selected as the research design. The study group consisted of primary and secondary school principals, one female and three males, working in the schools where the project was conducted. The main data collection tool of the study was interviews with the school principals. In addition, the study was supported with researcher observations and documents. The data were analyzed with inductive thematic analysis. The data were analyzed with a descriptive, explanatory and interpretive perspective in the context of noise prevention at schools. Four main themes emerged from the interviews with principals regarding noise at schools: "the noise problem," "administrative leadership," "educational leadership," and "solution suggestions," The results show that participating in a project to prevent noise at schools has increased principals' awareness of noise and improved their leadership qualities in solving the noise problem. Principals think that their schools are quieter than before and that the average academic success of their schools has increased. As a result, it has been determined that acoustic improvement, noise awareness training, rulemaking, discipline, value creation, and culture formation are needed to create a quiet learning environment at schools.

INTRODUCTION

Turkey's 2023 Education Vision is "Happy Kids, Powerful Turkey". It is an internationally shared vision of education for children to be healthy, successful, and happy at school. However, in a project addressing noise at schools in Turkey, students have expressed their frustration towards the noise made inside the school building especially during recess as " it disturbed me enough to put in ear plugs" (Bulunuz, Orbak & Bulunuz, 2018). Another student said, "…I'm distracted by the noise, I can't paint, play, I have headaches constantly and my ears are ringing too". In the same study, teachers expressed themselves as " ... I feel tired as if I have come out of a great war " and "All I want is to leave this noisy school as soon as possible" when the teachers finished their classes and left the school (Bulunuz, Orbak & Bulunuz, 2018). Similarly, in a study conducted by the Institute of Interdisciplinary School Research at the University of Bremen, Germany, it was concluded that one of the most important negative experiences in the teaching profession is noise. More than 80% of the teachers who participated in the research with more than a thousand teachers reported that noise is a significant burden and distress for them (Buch & Frieling, 2001; Schönwälder, 2001). Teachers who teach in classrooms with poor acoustics at Edinburgh Heriot-Watt University in Scotland have received more medical reports than those in classrooms with favorable acoustics (Mackenzie & Airey, 1999). Noise, which exhausts the teacher physically and removes the sense of professional belonging, is perhaps the biggest problem to be taken into consideration at schools.

In Turkey, people found out that children spend more than 2,000 hours a year at schools with no acoustic designs whatsoever (Bulunuz, Orbak & Bulunuz, 2018; Orbak & Aydın, 2020). The negative consequences of getting an education or teaching under these circumstances are numerous. Because approximately 35 critical effects of noise have been defined in the literature. Some of the critical effects that directly affect education or teaching are being listed as fatigue, communication difficulties, reduced comprehensibility of speech, a decline in reading-comprehension-writing and learning levels, regression in mental activities, weakening in terms of thinking power, getting distracted, delay in learning to read and write and the negative effect on long-term memory (Berg, Blair, & Benson, 1996; Evans, & Lepore, 1993; Jewell, 1980; Hetu, Truchon-Gagnon, & Bilodeau, 1990; Mackenzie, 2000; Shield & Dockrell, 2008; Skarlatos & Manatakis, 2003; Tüzel, 2013; Zental, 1983).

Neuropsychology research has revealed that two of the most important environmental stimulus affecting learning are visual and auditory stimuli (Hardiman, 2003). Approximately 90% of the stimuli the brain receives are visual stimuli. The eye can record 36,000 images per hour (Jensen, 2000). The brain's large

visual capacity enables it to continuously scan new stimuli in familiar environments. Therefore, new and eye-catching visual materials should be brought to the classroom to support the learning outcomes. Otherwise, it was observed that the students were disconnected from the lesson and they started looking for extra stimuli by moving from one place to another in the classroom and misbehaving (Hardiman, 2003; Zental, 1983).

Based on the contribution of numerous interesting and new visual stimuli to learning, we might think that the same situation may be true for auditory stimuli. However, the opposite is true for auditory stimuli. The effects of excessive auditory stimulus on learning are generally negative because the excess of auditory stimulus or noise conflicts with the processes of the brain such as processing auditory information and thinking. The extent of the harmful effects of noise depends on the severity, the duration of exposure, the extent of speech, the difficulty of the task, and the number of students in a classroom (Cohen, Evans, Krantz & Stokols, 1980; Glass & Singer, 1972; Hockey, 1970; Kryter, 1950). There is a belief that the use of background music in classrooms relaxes students and increases motivation and evokes positive emotions. However, while students are doing tasks that require thinking and attention, such as solving math problems, writing an essay, or reading a book, the environment should be calm (Klatte & Shick, 2007). Background music can be used while doing everyday tasks that do not require attention, focus, or thinking (Howard, 2000). It has been determined that children who attend school in a quieter and calm physical environment are more successful in reading, listening, language development, and mathematics (Berlyne, 1960; Bowers & Burkett, 1987; Hardiman, 2003; Hebb, 1955; Zental, 1983).

Unlike visual stimuli, it is very difficult to control auditory stimulus input. For example, when an ambulance passes by, we don't see it, but we keep hearing the siren. Therefore, noise is easily perceived as an insolvable problem and can lead to learned helplessness (Cohen et al., 1980; Hiroto, 1974; Hiroto & Seligman, 1975). In societies that are aware of the destructive power of noise, noise is defined as "unsustainable pollution" rather than "high intensity, interfering disturbing sounds" (Henny, 2014). In addition to the negative effects of noise on hearing and learning, it's the primary cause of many forensic cases that result in many injuries or deaths in public life (Göktepe, 2016). Numerous forensic case reports such as neighbors fighting in the apartment due to noise, getting shot for honking in traffic, loud school bells, and residents cutting of their cables can be seen on social media such as TV and Youtube. To understand how noise causes forensic cases, it is sufficient to take a look at the psychological effects in the literature. Some of them are listed as depression, fear, sudden outbursts, intolerance, nervous breakdowns, communication weaknesses, being tense, decrease intolerance or a pleasant appearance, increased conflict tendency, anger, and aggression (Bayazıt, Küçükçıfçı & Şan, 201; Güney, 1998; Yücel & Altunkasa, 1999). This problem is even reflected on the big screen. For example, in the movie "Noise" starring Oscar-winning Actor Tim Robbins, the forensic cases committed by a man who went crazy because of the noise in the city are the subject. For a healthy and peaceful social life, starting from preschool, being quieter, calm, and more serene should be taught to children as important life values.

In 2010, the Turkey Ministry of Environment and Urban Development has made mandatory acoustic insulations in all buildings. In this regulation, the acceptable background noise for a school with the lowest C class acoustic performance is determined as 39dB. Unfortunately, the measurements show that the average sound level in classrooms is over 65 dB during the lesson and over 85dB during recess (Bulunuz, 2014; Bulunuz, Ovalı, İri-Çıkrıkçı & Mutlu, 2017; Güremen, 2012; Yalılı-Kılıç & Adalı, 2020; Polat & Buluş-Kırıkkaya, 2007; Savcı-Özgüven, 2015; Tamer-Bayazıt, Küçükçıfçı & Şan, 2011). The detected noise levels are neither suitable for lecturing nor for resting during recess. When the reasons behind the loud noise at schools are questioned, students are immediately shown as responsible with an easy-going attitude (Bulunuz, Bulunuz, Orbak, Mutlu & Tavşanlı, 2017). However, children are individuals who have not yet completed their development. Their power and ability to make choices regarding noise and control the acoustic environment are very limited (Babisch et al., 2012). According to the World Health Organization (2016), children do not know what dangerous noise sources are and cannot think about the negative effects of noise on health. Children also don't know how to protect themselves from noise, and some may even tend to underestimate the noise. For these reasons, children are a vulnerable group at risk to noise exposure and in need of protection.

Teachers are also greatly annoyed by the high levels of noise in their schools. It is understood that noise, besides causing many physiological and psychological health problems, is a problem that can destroy the sense of occupational belonging and cause early retirement (Arıcı, 2020; Bulunuz, Bulunuz, Tavşanlı, Orbak & Mutlu, 2018). Noise is the leading environmental factor that poses a risk to schools. (Öztürk, 2018). Consequently, keeping calm at school is a primary need for both teachers and students. Well, who will meet this need? Undoubtedly, it is the principals who should take the first-degree initiative here. Therefore, school administrators have a great role in increasing the quality of education by providing a peaceful learning environment and climate. School administrators can increase the motivation of everyone involved in solving this problem by leading teachers, students, and parents.

Problem Status

There are many different types of leadership that principals exhibited in educational institutions in the literature. Research focuses on the sustaining, instructional, transformational leadership characteristics of principals (Buluç, 2009). In sustainable school leadership, the priority is to keep things running. These school administrators do not have any goals such as making school reforms or making extraordinary changes. Teachers working at schools do not behave like they're devoted to their profession or they own the school, they just follow the rules (Yüksel-Şahin & Sarıdemir, 2017). No extra effort is made for improvement or development (Çimili-Gök, 2010). They don't care about the teachers' feelings. The important thing is that they fulfill the given responsibility smoothly. Managers with transformational leadership characteristics set an example to their surroundings, inspire people, provide intellectual stimulation and provide individual support (Eraslan, 2004). Transformational leadership is a type of leadership-oriented towards innovation, change, and improvement. Therefore, the transformational leader must have a vision (Fasola, Adeyemi & Olowe, 2013; Riggio, 2014) and impose its vision on stakeholders (Çelik & Eryılmaz, 2006; Yurdakul, 2007). The primary task of principals, who are defined as instructional leaders, is to make observations at the school and to ensure that teaching can take place as specified in the program (Çelik, 2000; Şentürk & Sağnak, 2012).

School administrators can increase the motivation of students and teachers and the efficiency of education by leading the formation of a suitable school climate. An appropriate learning environment provides a learning climate that supports students' academic, spiritual, and behavioral development (Çelik, 2000). School administrators should take responsibility and show leadership to create a good learning environment. The common point of the research results examining instructional leadership behaviors is the topics of improving the instructional climate and solving the instructional problems of the school staff (Tanrıöğen, 2000; Smith & Andrews (1989; cited in Çelik, 2013). School climate is an organizational feature that affects and influences everyone, including administrators, teachers, students, and parents (Çalık & Kurt, 2010). To gain the desired behavior of the student, there must be a healthy school climate. In this context, if the school is mostly silent, it can expect its students to develop this behavior (Şentürk & Sağnak, 2012). In other words, silence, calmness, and tranquility must be shared values at schools. Students' adaptation to social rules and values is only possible with the existence of an educational process and discipline (Yayla, 1995). Salk (1995) emphasizes that there will be no compromise in the lack of values and discipline, and confusion will prevail. However, discipline can be achieved without fear (Cüceloğlu, 2002: 2019). For example, if calmness is something valued at school, it may be possible to provide discipline to sustain it. According to Cüceloğlu (2019), human beings live in an ocean of cultures, where many behaviors, beliefs and value patterns are unknowingly passed down over time from generation to generation. It is very difficult for individuals growing up in a noisy school and society to perceive noise as a problem.

The first step of coping with the noise problem at school is that administrators perceive and become aware of the problem. Being aware of something is defined as being conscious (Hashim & Ramadhan, 2019). The change in the consciousness of individuals leads to change in perception, thoughts and behaviors, respectively (Cüceloğlu, 2002; 2019). Cüceloğlu (2019) defines three types of awareness according to the situation of the individual. In the first, the individual is not even aware of his situation. In the second, the individual is aware of his situation but does not know why. In the third, the individual is aware of both the situation and the reason. Cüceloğlu (2019) emphasizes that awareness is the essence of life and people can only choose from the things they are aware of. Therefore, school administrators must first know that the

noise level is high and the reasons for this. They should then be consistent in helping other stakeholders in the school to be aware of noise pollution and take appropriate action.

The Importance of Research

School principals being effective managers cause them to be a source of important developments in the school. For example, it has been demonstrated that school administrators have a role in shaping children's values (Berson & Oreg, 2016). When school principals are not effective leaders, there is a decrease in the motivation of teachers as well as in the quality of education. School principals must meet the expectations and needs of teachers (Mitchell & Castle, 2005). It should ensure that school rules are followed regularly by all stakeholders and it should also be inspected whether the rules are being followed or not (Kartub, Taylor-Greene, March & Horner, 2000). "Leadership" is the conscious and systematic guidance of people to achieve the determined goals or objectives (Ugar, 2019). School principals must be open to innovations. Principals are the people who mobilize and direct stakeholders in order to achieve the goals set within the school (Ugar, 2019). Improving the learning environment of the school and solving the educational problems of the school is one of the leading instructional leadership behaviors. The noise phenomenon experienced in schools has been an ongoing problem for many years. However, in the literature review, no qualitative research was found that examines the views, attitudes and behaviors of school principals to prevent noise at school. Studies dealing with this problem mostly focus on physical conditions (Rosenberg, 2010; Bayazıt & Aşcıgil, 2008), negative consequences of noise (Tüzel, 2013; Zental, 1983; Cohen, Evans, Krantz & Stokols, 1980), and noise measurements (Abakay & Aşcıgil, 2008). Find, 2018; Orbak & Aydın 2020; Özbıçakcı, Aydoğdu, Ersin & Kissal 2012; Yalılı-Kılıç & Adalı, 2020). In fact, in a study conducted with teachers, it was seen that the noise problem in the school was not taken seriously by the administrators and no studies were conducted to solve this problem (Kenber-Çiftçi & Kıral, 2020). In this study, the leadership qualities and behaviors of school principals regarding the solution of noise pollution in schools were examined. In this respect, the research is a unique study in that it contributes to filling the gaps in national and international literature. This study aims to reveal the leadership qualities, and behaviors of school principals in solving the noise problem at school.

RESEARCH DESIGN and METHOD

The noise problem at school is multidimensional. In this study, the noise problem, which has an important place in education, and the meaning of this problem were tried to be examined qualitatively (Creswell, 2020). In this context, the views of school principals were discussed in-depth and in detail. In the context of preventing noise in schools, the approach of principals to the situation was put forward from a descriptive, explanatory and interpretative point of view, and the quantitative data has been deepened (Patton, 2018). In addition, data such as observations and documents were included in the study. In this study, a case study from qualitative research methods was selected. Creswell (2020) defines a case study as a qualitative approach that reveals the problem created by a case or system encountered in life in depth and detail with the help of various data collection techniques such as observation, interview, various reports, audio-visual materials, and documents. In this study, a single case study design was used. The principals who experience the noise phenomenon at school and their approach to noise are limited to the only element of the research.

Study Group

A homogeneous sampling strategy was used in the study. The purpose of homogeneous sampling is to explain a specified group in depth (Patton, 2018). Homogeneous groups are groups of people with similar backgrounds who have gone through the same experience. The qualities that make principals homogeneous in this study group can be listed: 1) being disturbed by noise at school, 2) having a certain level of perception and awareness regarding noise at school, 3) participating in a common educational process within the scope of the project, 4) having an average managerial experience of 30 years or more. In this research, the study group consists of school principals of 4 schools where the project is conducted. Two of the schools are primary schools and the other two are secondary schools. One of the principals is female and the other three are male. School principals have voluntarily agreed to participate in the project aimed at controlling the noise in the school. School principals personally participated in the noise awareness training organized for

teachers and students in the school building within the scope of the project and supported the project team and stakeholders. Code names are used for the principals in this article.

Table 1: Demographic characteristics of school principals participating in the study

Principal Code Name	Name of the School and Acronym	Gender	Number of information meetings they attended
Ayşe	Private Primary School (Ü.M)	Female	(3+3)
Hasan	Public Primary School I (M.M.O)	Male	(3+3)
Nazım	Public Secondary School I (S.T)	Male	(3+3)
İlhan	Public Secondary School 2 (D.Ö)	Male	(3+3)

Data Collection

The data collection process of the project named "Noise Pollution at School: Causes, Effects and Control", supported by TÜBİTAK, numbered 114K738 (Table 2), started at the beginning of the fall semester of the 2016-2017 academic year. The full text of the project report is available as an e-book (Bulunuz, Orbak ve Bulunuz, 2020). The administrators, teachers and students were informed about the aims of the project and entered the education process during the 2016-2017 academic year. The research team first visited each principal in their school and held a general information meeting about the research. School principals attended informative meetings held for students and teachers in their schools during the Fall and Spring semesters. In this case, school principals participated in 6 awareness training, at least 3 of which were organized by the research team each term.

Table 2. Training Given in the Project and the Data Collection Process

Project Training Events	Date	Participants	Data Collection Tools
"An Information Seminar about Raising Awareness against noise"	2016-2017 Fall (1)	Teacher Principals	Observation
"Provincial information seminar and introduction of the integrated training book"	2016-2017 Fall (1)- Spring Bahar (1)	Teachers Principals Students	Observation Document Review
"All primary and secondary school seminars in the province"	2016-2017 Fall (1) Spring (1)	Principals	Observation
"Noise Awareness Workshops"	2016-2017 Fall (1)	Teachers Principals Students	Observation Meeting (4 times) Document review

Interview

An interview is preferred for information that the researcher could not obtain in his observations. Since it is not possible to understand people's thoughts, feelings, and intentions through observation, it is thought that they can be known by making sense of and revealing their perspectives through interviews (Patton 2018). For this purpose, structured interviews were conducted with school principals who experienced the phenomenon of noise at school. The interviews with school principals, which are the subject of this study, were carried out at the end of the second period(Spring) of the data collection process. Thus, principals were able to evaluate the project activities carried out in their schools during the Fall and Spring semesters as a whole in their answers to the questions asked to them. The principals were asked about the project implementations in their schools for two semesters. In addition, as a school principal, they were asked to objectively evaluate the work they did or could not do on this subject. The questions posed in the interviews are included in the research annexes (See Appendix 1.)

Observation

One of the most commonly used data collection methods in case studies is observation. This method is a method that the researcher can choose in a social field or institution by his subject. It has been frequently used in educational researches since the 1950s (Yıldırım & Şimşek, 2018, p.174-175). In this study, observation data were collected through forms prepared on how principals show their instructional and managerial leadership roles in the school environment (see Appendix 2).

Document Analysis

Documents in a study can be listed as public records, personal documents, popular culture documents, visual documents, physical material, and documents produced by the researcher (Merriam, 2018). Document analysis is the analysis of all written materials that include the information obtained for the researched situation and which documents are important according to their content and which are distinguished (Yıldırım & Şimşek, 2018, p.189). Documents that provide an opportunity for creative work for researchers are ready-to-use information depending on the researcher's skills and imagination (Merriam, 2018). In this study, we focused on visuals showing the practices of principals in schools as a guide of the noise phenomenon in administrative and educational aspects. Banners on noise pollution in schools, photographs and visual documents were obtained from the meetings held with the principals about the project. A project book (Bulunuz, Bulunuz & Kelmendi, 2021) containing all the details, activities and instructions was written and this book was used as a reference book during the studies (see Appendix 3).

Data Analysis Process

The data obtained in the study was analyzed thematically with an inductive approach. While conducting thematic analysis, various coding studies are carried out. At the beginning of the coding study, raw data was coded (Creswell, 2017). By trying to re-sense the encoded data, the themes in the highest dimensions have been reached. Four themes were obtained in the research. The categories and codes under the theme are presented with a patterned understanding by explaining them with data. It is aimed to provide credibility by addressing the details of the processes; to provide transferability by giving examples from the forms and provide reader generalization by using direct quotations and documents.

Validity and Reliability of the Study

Since involuntary studies resulted in the collection of inefficient and unqualified data, participation in the research project and the interview were completely voluntary (Miles & Huberman, 2019). Also, to prevent the hierarchical situation from directing or hindering the research, relationships based on mutual respect and trust at every stage of the research were established. An appointment was made with the principals to ensure that the interview was not interrupted and reliable information was collected, and the voice recordings were made in a quiet environment. Data triangulation was needed as it would be insufficient to understand and solve a multidimensional problem such as noise at school using only one type of data (Miles & Huberman, 2019) because each data set is beneficial for the research by revealing a different aspect of the situations of the problem (Patton, 2018).For this purpose, data were collected by using three different methods: interviews, observation, and documentation. The main data source is the thematic analysis of the interview data. It was made by the research expert and the first author. The match rate of the first interview data codes is 86%. In the second encoding, the match rate is fully achieved. Code names are used in all quotations obtained from the interview findings. Since noise at school requires multidimensional and interdisciplinary studies, opinions were taken from different field experts such as qualitative research, acoustics, visual arts, and educational scientists.

RESULTS

Interview data, which is the primary data source, was used as a basis for the evaluation of the educational leadership qualities of the principals in the prevention of noise pollution. In addition, visual materials used in schools, photographs, and observations of the researchers were also included to strengthen the research. The themes, categories, and codes that emerged from the analysis of the interview data with school principals are presented below.

Table 1: Themes and categories obtained from the analysis

Themes	Categories
Noise Problem	Causes of Noise, Effects of Noise, Acoustic Comfort Barriers
Managerial Leadership	Personality Characteristics of Managers, Management of Stakeholders
Educational Leadership	Noise Awareness Training, Cognitive Acquisitions of Tranquility, Social Gains of Tranquility
Solution Suggestions	Using Authority, Creating a perception against noise, Calmness as a value at school, Creating a calm school culture

The Noise Problem

According to the Turkish Language Association, the word "problematic" is defined as "something or someone that causes problems and an uncertain solution" (Turkish Language Institution). Noise has become problematic for schools today. School noise is a complex problem with many dimensions, such as acoustic design deficiencies, noisy behavior of stakeholders, and noise from the school environment. Therefore, principals do not know how to solve the problem. In the observations made by the project team before the applications started, it was observed that none of the public schools used sound-absorbing materials on the floors, ceilings, and walls. There is a suspended ceiling application in only one secondary school. Walls are covered with paint over plaster, floors are covered with hard surfaces such as tiles or faience. Only in private schools, the ceilings of the classrooms are covered with sound-absorbing acoustic panels. As a result, it has been observed that school buildings have many acoustic deficiencies. It has been observed that the behavior and communication styles of the stakeholders of the school inside the building are quite noisy. While students show behaviors such as talking loudly, screaming, running, slamming doors, pulling rows, it has been observed that administrators consider loud bells and announcements as normal practices for schools. It was determined that the teaching and communication styles of the teachers were generally loud and shouting. When all these are combined, noise at schools has emerged as an important problem that needs to be resolved as soon as possible.

After the project implementations to solve the problem, meetings were held with school principals. From these interviews, the categories of "reasons for volunteerism", "effects of noise" and "auditory comfort barriers" were created and explained through codes.

Table 2: Categories and codes related to the noise problem theme

Causes of Noise	The Effects of Noise	Acoustic Comfort Barriers
Sound Insulation Deficiencies Traditional Communication Habits	Effects on Teachers	Regulation Inadequacy
	Effects on Students	Change takes time.
Ignoring noise		
Socio-economic environment		
Depending on the official curriculum		

Causes of Noise

To find a solution to any problem, first of all, it is necessary to determine the problem and to know the causes of the problem. Regarding the causes of noise pollution in schools, it was observed that even private schools included in the project had deficiencies in sound insulation and the acoustic structure of the school. This is the first reason why even the "best schools" are disturbed by noise. The opinions on this issue are gathered under the name of "Sound insulation deficiencies". As a good example, Mrs. Ayşe's words have been quoted: "Children yelling and running in the corridors creates noise. They cannot go out to the garden in the winter. Noise is created inside the closed building as they run and shout. Buildings are also not constructed in an acoustically correct way. "If the acoustics were done properly, there wouldn't be that much noise even if the children shouted or ran." (Ü.M., Interview, p. 1). Noise originating from social culture and family is coded under the name of "Traditional communication habits". Mr. Hasan made a long speech on this subject. "It is a habit of discipline for our students to speak loudly with their families at home, and to be warned in the family by shouting and scolding" (M.M.O., Interview, p. 1). Frequent repetitions of unpleasant things eventually mean getting used to and being unresponsive. "Getting used to the noise" is the acceptance of the noise originating from the building and the environment by the stakeholders in the school. Mr. İlhan stated the following regarding this code. "It is a problem that we do not think about what the harmful effects of noise might be to the human health and that these did not come to the forefront. As a result of our attitude, living in a noisy environment as if it is normal. Situations are arising from complacency and not realizing the damage caused by noise." (D.Ö. Interview, p. 2). It was found that there was a common belief that the noise problem in the school could not be solved when the project was initiated. First of all, it was emphasized that a quieter, calm school and learning environment is possible. The "socio-economic environment" code is related to the income and education levels of the families in the region where the school is located. School principals expressed the view that noise pollution at school is related to the socio-economic environment of the school. A typical example of this is stated as follows. "…The general physical structure and location of the school is a noise factor. The problem is that our students do not know noise. Speaking loudly is an education that comes from the family" (Mr. İlhan, D.Ö., Interview, p. 1). The researcher's observations are that at the beginning of the project there is no difference between the schools in the region with high socioeconomic levels and those with low socio-economic levels. However, towards the end of the project, it was observed that the improvement in auditory comfort was greater in schools with a good socio-economic environment. It was observed that in these schools, the project was taken to heart and continued for a long time. For example, the private school has covered the renovated areas of the school with sound-absorbing suspended ceilings after the project. Starting from the construction phase of the new high school building, acoustic sound absorbing materials have been used on the floor and the ceiling. The code "dependence on the official curriculum" refers to a traditional education that is overly dependent on syllabus and textbooks. During the implementation phase of the activities prepared for raising awareness and consciousness against noise, some teachers showed resistance in practicing noise activities, citing the justification of staying behind the curriculum. It has been observed that many teachers lose their enthusiasm and excitement to try new things. Mrs. Ayşe said, "Obviously, we couldn't do much except what you said. As we are a private school, parents have very high expectations from us. We can't go beyond the curriculum too much. Frankly, we cannot devote much time to studies on noise. "(Ü.M., Interview, p. 1).

The Effects of Noise

The category is divided into two as "Effects on teachers" and "Effects on students". These codes include the physical and emotional problems experienced by teachers and students from the principals' perspective. These problems are mostly tiredness and burnout. It has been observed that high noise levels in the school cause extreme fatigue and diminish the teachers' sense of belonging to their school and profession. Some teachers have therefore expressed themselves to the project team that they even consider early retirement. For example, a school principal said: "Although teachers work half a day, they are tired when they go home. Being in a noisy environment and lecturing too loudly causes fatigue because talking loudly also gets people all tuckered out. Many of our teachers are thinking of retiring just because of the noise. "(Mr. Hasan, M.M.O., Interview, p. 6). About the "Effects on students" code, Mrs. Ayşe said to the director: "Children, on the contrary, get tired of the noise during the breaks, which is the time when they should rest. They can't rest. " (Ü.M., Interview, p. 1). Acoustic comfort barriers. Three main codes were determined in the category related to the reasons why the desired point in ensuring calmness in schools could not be reached. The first one is "Regulation insufficiency" which covers legal regulations. The administrators here stated that the noise problem cannot be solved by using the excuse of inadequate practices and legal regulations in the past. An example of this is provided below. "If you associate it with the legal legislation, you can only take some things to a certain point." (Mr. Nazım, S.T., Interview, p. 6). Given that there are millions of schools in the country, for acoustic improvement, every principal needs to take the initiative and act for their school. The problem is not simple enough to be solved with the change of laws and regulations. The code "Change takes time" is a code that symbolizes that the solution to the noise in the school cannot be solved suddenly and that development will be slow. One of the best examples of this code is as follows. "In the last 2 years, many studies have been carried out within the scope of this project. Although noise awareness has been established, I think the noise level is still not at the desired level in primary and secondary school buildings. "(Mrs. Ayşe, Ü.M., Interview, p. 1). It has been observed that some administrators expect that the noise level at the school will decrease rapidly. However, it has been understood over time that this is not a realistic approach, that the project team from the outside can only guide them on this issue, and the solution of the problem depends on the efforts of the school's stakeholders.

Managerial Leadership

The Managerial leadership theme includes managers' competencies, attitudes, and behaviors that they anticipate to be carried out with stakeholders. The answers given to the interview questions are grouped as "personality traits" and "stakeholder management".

Table 3: Categories and codes related to the managerial leadership theme

Personality Traits	Stakeholder Management
Being faithful	The leader role
Being open-minded to new things	Creating Collective Awareness
Team spirit	The integrity of the Stakeholders
Objective attitude	Parental Support
Becoming a symbol	
Being able to self-critique	

Personality Traits

It is very important that school principals strive for a positive school climate and set a good example to other stakeholders in the school. First of all, it is necessary to believe that a positive school climate can be achieved. The code "to have faith" expresses the beliefs of principals in this matter. For example, Director Nazım said, "Are we involved in something we do not believe? I'm not because that's how I am. If I didn't believe it, I would not be in this business. "(S.T., Interview, p. 1), he expressed his belief in the project to prevent noise at school. It was determined that all school principals participating in the project believed that

noise in the school is high and should be prevented. One of the important qualities of leadership is to be open to innovations. It has been observed that almost all school principals participating in the project are open to innovations. Only one principal left the project at the end of the first year. As a justification, he said that he believed that it would not be possible to teach children to behave calmly in primary school. Regarding the code of "being open to innovations", Mr. Nazım said, "There have been 20 projects from this school recently." He said (S.T., Interview, p.13). Nurturing teamwork is one of the main duties of corporate managers. It has been observed that the relationships of the principals involved in the project with the stakeholders in the school are capable of teamwork. However, there were also teachers in public schools who did not want to take part in any study and did not attend meetings, although their number was not very high. Regarding the code of "team spirit", Manager İlhan said, "I didn't come out and say that I did this job. As a team, we did this "(D.Ö., Interview, p. 3). Mr. Hasan said, "We will set the general rules that we have to set during the seminar period and present it with our teachers and students. Our teachers will tell their students in classrooms "(M.M.O., Interview, p. 3). These statements show the importance they give to team spirit. A good example of acting as a team by adding the ideas of teachers to the work done is Mr. Nazım's words: "I'm calling the visual arts teachers after buying the noise posters. I'm asking them where should we install the posters? Which place of the school should we attach these to be more effective in delivering the message? For example, a suggestion by a physical education teacher friend; Let's move them to different places every month. For example, it worked, it was effective "(S.T. Interview, p. 10). Managers must demonstrate objective attitudes towards the progress and success of the organization. Manager Nazım Bey's statement saying "… I am telling both the beautiful sides and the troubling sides of things that I see in the practice" (S.T., Interview, p. 12) is an example for the code "exhibiting an objective attitude". School principals are obliged to act as an example to all of their stakeholders. Regarding the code of "being a symbol", Mr. Nazım said "… I see that there is again noise in the classrooms and in the corridor. As I walk through the corridor, the students start talking about the noise pollution project "(S.T., Interview, p. 11). It was observed that the principals participating in the study made an effort to meet the students' needs for silence, calmness and tranquility. Finally, each individual needs to be self-critical to improve himself. The code of "being able to self-critique" emerged from the positive and negative evaluations made by the principals on behalf of themselves and their institutions. This code can be supported by Mr. İlhan's following words, "We have shortcomings. We may also have administrative deficiencies. So here, yes, I did this job completely, it is not possible to say that I am not at fault. "(D.Ö., Interview, p. 3). It was observed that all of the directors who took part in the study had the self-confidence to make self-criticism, as they had over 30 years of management experience.

Stakeholder Management

It has been observed that during the implementation phase of the project, the awareness of the principals to lead the project of controlling the noise in the school has increased. In the beginning, it was observed that the researchers who organized the project expected that they would solve the problem for themselves. However, over time they realized that this expectation was not correct and the problem could not be solved unless they took an active role. The most striking example that can be given that the directors should assume as the "Leader role" are the statements of Director Nazım. "You know, the quality of an institution is only as high as the quality of its contents. If you make an effort to increase your quality, if you engage in effective activities then you can make an extra contribution to your environment "(S.T., Interview, p. 2). It is among the responsibilities of school administrators to motivate teachers and increase positive student attitudes and behaviors. It was observed that three of the school principals were successful in uniting the teachers in common goals in the noise control project, while one of them had trouble in this regard. The code of "creating collective awareness" is aimed at raising the level of consciousness of the teachers, of the principals to prevent noise in the school. To give a great example Mr. Hasan, one of the directors, said the following words in this regard. "It will be necessary to raise the awareness level of our teachers about noise a little bit… These reminders must be repeated and embedded in their minds so that it is not forgotten. We need to reinforce the belief in teachers that we are disturbed by the noise and that this must be resolved. Only then will they be ready to do anything" (M.M.O., Interview, p. 6). Employees must act in unity and integrity to train in quality and peaceful environment and be efficient. The same integrity should be protected against the factors that disturb the school. The "Stakeholder integrity" code is also created from the thoughts of the managers on this issue. Regarding the subject, Mr. Hasan said, "We asked

our teachers and students to take the responsibility to solve the noise problem. They supported us and in about 15-20 days we created such a culture. We started an application that says 'Keep your class clean, keep the next one clean'. This has been very successful. While we are cleaning our school with three staff, we can now do the same cleaning jobs with 2 staff. Of course, all of our teachers and students who are a part of this culture have to protect it completely ”(M.M.O., Interview, p. 3). The parent dimension has been included in the project of controlling the noise in the school because the parents' attitude affects the students' attitudes and behaviors. In this context, a two-page accordion brochure was designed, printed, and distributed to parents to inform them (see Appendix 4). In the interviews with the students, positive feedback was obtained from this application. One student said, "After reading the brochure, my father turns the TV's volume down or mutes it while I study." School principals expressed the need for parental support. The "Parental support" code expresses the support that school principals expect from parents. Mr. Nazım 's following statements, “Three out of eight hundred parents come to school. Where are the others? We need positive energy, more parental support. The support of the parents is not as much as we want. ”(S.T., Interview, p. 10-11) is striking.

Educational Leadership

This theme clarifies the dimension of ensuring tranquility in school through education and what needs to be done in this regard. The theme created for the responses of the managers is in itself; divided into three categories as "Noise Awareness Training", "Cognitive Acquisitions of Tranquility" and Social Achievements of Tranquility.

Table 4: Categories and codes related to the theme of educational leadership

| Noise Awareness Training	Cognitive Gains of Tranquility	Social Gains of Tranquility
Creating Visual Perception Against Noise	Contribution to academic success	A quiet school
Editing Visual Stimuli	Measurement reliability	Ease in communication
Continuity of noise education	Increase in concentration	Benefits of acoustic comfort
Once you learn something when you're young, you just never forget it.		Serenity is contagious
Creating a peaceful generation		
Setting rules		

Noise Awareness Training

Noise awareness training for school principals focused on using and regulating visual stimuli in creating perception against noise. Perception comes from being aware of something, by directing attention to it. Visual posters were hung on the entrance and corridor of the school to raise the awareness of the stakeholders in the school against noise. By attracting the attention of stakeholders, these posters will be able to contribute to the value of tranquility and approach towards it. Two codes have been developed to create students' perceptions of noise in school. "Creating a visual perception against noise" refers to visuals that pay attention to the noises in the spaces in front of them. As an example, Mr. Hasan said, “Be quiet! When they say that to the children, they speak in a whisper between themselves. However, they understand that they do not open their mouths when I say 0, which means being silent. Before, they didn't know the difference between saying “Be quiet!” and speaking quietly. In that respect, I think the Sound Levels poster is effective ”(M.M.O., Interview, p. 5). The poster referred to here is the Sound Levels poster within the scope of the project (See Visual 1).

Visual 1: A poster about sound levels.

The code for "editing visual stimuli" includes the use of new visuals and their duration of use. Mr. Hasan said the following about this situation. "I think posters are effective. But the children were taken for granted according to the posters. The posters need to be moved for the message to be impactful. The posters in the hallway and classrooms can be switched from time to time. "(M.M.O., Interview, p. 5). 19 posters were produced within the scope of the project. One of them is the poster titled "Noise is the enemy of learning!" (See Figure 2).
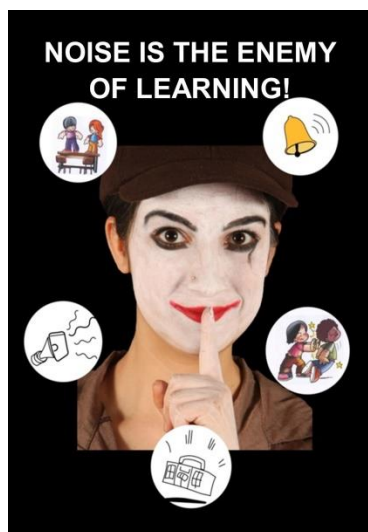
Visual 2: Noise is the enemy of learning!

This code, "Continuity in noise education" indicates that continuity should be taken as the basis in noise education. The principals emphasized the continuity and importance of the training and work done. While İlhan Bey emphasized the need for continuous education regarding educational practices, another expressed the effects of visual education materials used in education. "As stakeholders, we need to continuously educate the student group. When the noise measurements were made, we saw that the noise level was not normal. We thought this problem should be solved through education. Of course, we say that the result has been obtained "(Mr. Nazım, D.Ö., Interview, p. 3 and 1). Mr. İlhan said, "… Education dimension against noise should continue. Since the student group constantly changes school, this education should continue every year. Even if the project is over, school administrators should continue to do so or act to keep the calm in the school "(D.Ö. Interview, p. 5). It is important to provide noise pollution training from an early age. From the analysis of the interviews, the code "Once you learn something when you're young, you just never forget it." has been reached. Secondary school principal Mr. İlhan said: "… students have habits from primary school. We are already working as administrators to break them and minimize them. The university has support. The project stakeholders coming from there constantly trained our children and the results

changed "(D.Ö. Interview, p. 3) and these statements support the code. To prevent noise pollution in educational institutions, the code "setting rules" covers the behaviors of the discipline that is desired to be acquired. For example, Mr. Hasan made self-criticism on this issue during the meeting. "We realized that we did not determine the general rules of the school in a disciplined way. We hung "School Rules" on walls in our corridors. We think we will do it more easily this way. We put it in plastic-coated clip frames to be protected. Our teachers pointed at them and made the children lower their voices a little more. "(MMO, Interview, p. 3,5. Mrs. Ayşe's following words " We remember before every break, right? Today is a quiet day! Yes what were we doing on a quiet day? Yes, Come on now, you can go out. "(Ü.M., Interview, p. 4) can be shown as another example. Mr. Hasan's words about organizing the students' habitual noisy attitudes and behaviors and directing them to the right are as follows. "We say that they can speak freely in the garden, but in order not to disturb the students who have lessons in the schoolyard, we have to say that they should speak in a low tone or they can speak loudly in an area far from the classroom "(MMO, Interview, p. 2).

The theme of "creating a serene generation" includes the hopes and beliefs that a quieter, calm, and tranquil school and even social life await future generations by continuing this education against noise at school. It refers to a cultural change that spreads in waves, starting with children, affecting more than just one person. Regarding this code, Mr. Nazım said: "If these children believe in the importance of tranquility, they will be 60-70 years old like me in the future. They will raise two generations. They will pass down their knowledge and beliefs to new generations "(S.T., Interview, p. 11).

Cognitive Gains of Serenity

Neuropsychology research shows that silence has very positive effects on learning and brain development. The brain can perceive and process information better in quiet and calm environments. One of the codes related to the cognitive effect of silence is "Concentration increase". Nazım said, "… one can concentrate more comfortably in a quieter and calm environment" (S.T., Interview, p. 7). Noise is the primary environmental factor affecting the validity of the measurement. It is emphasized that silence must be ensured for the scores obtained by the students in the exams to be valid with the code of "validity of measurement". As an example, Mr. Nazım said, "In terms of exam safety, when students take the trial exam, if there is noise in the environment, we remind them of the noise pollution project. Students say okay, yes I remembered. Thank you, I will not speak. "(S.T., Interview, p. 7) sentences can be given as examples. In the category of "Contribution to academic success", Mr. Nazım stated that after getting acquainted with the project, the overall success of the school increased. "Our school's High School Entrance Exam average score increased from 361 to 397. The school noise project also affects on this "(S.T., Interview, p. 7). For students to be successful in the exams, they should be informed about the impact of environmental factors.

Social Gains of Calmness

This category, which explains the contributions of tranquility to our social life, has been classified under four codes. The first of these is the "Calm School" code. This code points to the peaceful and quality business environment created by silence. One of the best examples of this code is İlhan Bey's statement. "Now, if we need to make an assessment compared to the day the project against noise in the school started 2 years ago, the project achieved a certain success, not 100%, in our school. We feel and see this by working in a less noisy environment "(D.Ö., Interview, p. 1). The code "ease of communication" is related to communication problems caused by environmental noises. İlhan Bey said the following words on the subject. "While it was impossible to hear what was spoken in the corridors before, or what people were talking about in my room with my door closed, to make a phone call, these are possible today. Telephone calls can be made in the hallway, albeit difficult. I am no longer disturbed by the noise in my room. In this context, the project has achieved its purpose in our school "(D.Ö. Interview, p.1). The "benefits of acoustic comfort" code include the problems that noise gives to individuals mentally and physically. As an example, Mr. İlhan, the following sentences can be given. While I was wandering around the corridors during breaks, my head was swelling from the noise. We would wish that the bell would ring so that the children would attend the lesson, and we could rest our heads. In fact, before this project, when I went home I felt as if a ton of weight had been removed from my shoulders. I don't feel like that anymore (D.Ö., Interview, p. 2). "Calm is contagious" code relates to the positive attitudes and behaviors of stakeholders in the school, their potential for interaction and

spreading. For example: "We feel the tranquility more especially during the ceremonies in the older classes. We enrolled 240 new students in the fifth grade. Since these are not trained in noise awareness, they disturb the tranquility here a bit. But I hope they will change in a month or two, too "(İlhan Bey's D.Ö., Interview, p. 4).

Solution Suggestions

The theme of "Solution Suggestions " was obtained from the views on the measures that can be taken for noise pollution in schools and three categories were created. The categories and codes for this theme are given in Table 5 below:

Table 5: Categories and codes regarding the solution suggestions theme

Managerial	Education on values and tranquility	Creating a quiet school culture
Using authority	A quiet day	Minimal sounds
Planning the budget	Noise brochure	Calmness control
Informing the stakeholders	towards a school without a bell	The "quiet school" image

Administrative

This category covers what school administrators can do individually to reduce noise pollution. "Using authority" is the school principal assigning tasks to the stakeholders. For example, the managerial initiative that Mr. Nazım implemented in his school is presented below as an example. "I commissioned the deputy principal for the school group project. In addition, I notified all teachers and parent-teacher associations officially. In particular, I assigned five teachers as practitioners in the project. "(S.T., Interview, p. 3). The code "planning the budget" means creating resources and planning for acoustic improvement. Effective and efficient use of school resources is among the duties of the principal. Creating a different ambiance in a school in the project, it was seen that they had to paint the corridors by spending a lot of money. It was observed that a luxurious suspended ceiling was built in a multi-purpose classroom in another school. Resources like this could be spent covering the school's corridors with sound-absorbing panels. It has been observed that even the school with the most limited resources is painted almost every year. As an example of the schools where the researcher works, Mrs. Ayşe's quoted saying: "Whatever will prevent noise pollution in physical terms, its cost should be investigated and the budget should be planned." (Ü.M., Interview, p. 2). "Informing the stakeholders" involves school principals sharing the path they follow, the tasks to be given and the meetings to be held with the teachers. Teachers should be aware of every activity carried out in the school. The application conducted by Nazim teacher presented as an example. "We met with our friends who wanted to contribute to the project occasionally to either drink tea or by an official letter. We shared the developments "(S.T., Interview, p. 6).

Education on Values and Calmness

It has been observed that researchers' awareness of noise education evolved into values education in the process. As examples of educational studies, students can design posters about sound and noise in the visual art class, and work on compositions of poetry studies about noise in the school. From the opinions of the principals that will contribute to the prevention of noise in the school, the category of calmness being a value at school has been reached. Three codes were found from the main ideas in this category. Below is an example of the code-named "A silent day": "We can be a quiet school for 1 day or until noon to raise awareness. But the whole school, from its clerk to its principal shouldn't talk at all. Several posters or announcements can be posted up ahead of time. We can wear costumes or t-shirts. We can put on makeup. "(Mrs. Aylin, Ü. M., Interview, p. 3). In addition to this, Mrs. Aylin's words "… we applied it during the reading time. On the reading time banner, it is written that these are reading time hours, please do not knock on the door of any employee until the end of the reading time. Everyone was aware of that silence "(Ü.M.) can be given as an example. The "Noise brochure" is another example of the code. "Children prepare a leaflet. Inside: "I am a contemporary student. "I know and am aware of noise pollution. Today I am a part of the silent day project. Things like "I will do my best" can be written. "(Mrs. Ayşe, Ü.M., Interview, p. 6).

Finally, the code " Towards schools without bells" is an example of the principal's effort to cut off unnecessary bells. "We significantly reduced the school bells. We also had a bell in the teachers' room, and we got rid of it. Teachers watch the lesson time on the screen. There are no longer loud conversations and loud lectures in the classrooms. At this point, we think we have achieved our goal. " (Mr. İlhan, D.Ö., Interview, p.4)

Creating a Calm School Culture

The category, which includes the efforts of principals to create a different image compared to and innovate more than other schools, such as the "Serene School" project to add value to the vision and mission of the schools, is classified in three categories. The first of these, "Minimal sounds", means to minimize or eliminate the sounds used in the school. Mr. Ilhan's action regarding this is presented below. "In our school, the bell only goes "Ding!" to indicate recess, when it goes"Dong!", the lesson continues. We installed digital screens in all of our corridors to see when the recess will end or the lesson bell will ring. The hour counter runs on all the screens. "(D.Ö., Interview, p. 3). Continuous supervision is necessary to ensure permanent tranquility in the school. The code of "calmness control" is a good example of creating a culture in the school on this subject. "It needs to be followed. For this, certain rules should be imposed, if the student speaks loudly, all teachers should warn the student when they hear the noise in the hallway, whether on duty or not. I believe that we will ensure permanent tranquility this way. "(Mr. Hasan, M.M.O., Interview, p. 3). Finally, the following statement of a principle is presented as an example of creating a "quiet school image" to create high-quality education, training environment, and a peaceful working environment. "We are planning to review the strategic use of our school in the vision, mission, values, and principles section. Our school is known as a clean school. In addition, we aim to create the image of "we are a calm school". We plan to do studies on this. "(Mr. Hasan, M.M.O., Interview, p. 2).

DISCUSSION and CONCLUSION

In this section, the themes obtained from the main data source interviews are integrated with the observations, comments, and inferences of the researcher and presented as results, discussions, and recommendations respectively. As given in the findings, the themes are the noise problem, managerial leadership, educational leadership, and solution suggestions, respectively. First of all, the results, discussions and suggestions regarding the "noise problem" theme created in the school regarding noise are presented below.

Noise Problem in Schools

In the school, noise has been named problematic because it is a multidimensional problem such as acoustic design deficiencies, noisy behaviors of stakeholders and noises originating from the external environment. The categories and codes consisting of the observations of the researchers and the opinions of the principals on the main causes of noise in the school overlap. The lack of sound insulation in the buildings, the prevalence of noisy communication, and behavior patterns, the awareness of the noise in the school by the stakeholders, the dependence of education on the official curriculum and textbook are the main reasons for the noise in the school. The noise caused by the acoustic design and equipment deficiencies of the school was also expressed by the school principals. The need for acoustic improvement has also been highlighted in other studies (Avşar & Gönüllü, 2000; Bulunuz, 2014; Özbıçakçı, 2012; Polat & invention-Kırıkkaya, 2004: 2007; Tamer-Bayazıt, Küçükçifçi & Şan, 2011; Tüzel, 2013). Noisy student behaviors, loud bells, and announcements in the building are common when the project is started. It has been frequently stated that the noisy behaviors of students in the school are due to the children's manners, a traditional communication habit they acquire from their families. Some school principals have tried to justify the noisy school by pointing out the low socio-economic levels of the families in their region. However, the observations of the researcher at the beginning of the project do not confirm this view. On the contrary, it has been determined that the noise level caused by the students in the private school with a high economic level is equal to or higher than the noise level in other public schools. It has been observed that children do not obey the school rules and the words of their teachers, possibly due to the over-trust and pampering of their families. For example, the researcher asked a student screaming in the classroom, "Why are you

screaming?" the student then retorted saying, "who are you?" It has been observed that he can easily ask questions. This event is an example that the rules based on fear culture do not work in schools with high socio-economic levels (Cüceloğlu, 2002; 2019).

Getting used to the noise in the school is another very common problem. School principals stated that being in a noisy environment is now normal for teachers, they accept it as a part of their profession and they are complacent. It has been emphasized in the literature that noise can easily lead people to learned helplessness due to it being invisible pollution (Cohen et al., 1980). To break this vicious cycle, it is necessary to explain that it is possible to create a quieter, calm, and serene learning environment starting from the principals and the ways to do this. Finally, it was observed that the curriculum and teachers' excessive dependence on the textbook created obstacles to effective education on the sound and noise at school. Although they were involved in the project, some teachers avoided implementing the educational activities developed on sound and noise, citing that they would fall behind the lesson plan. It was observed that some teachers lost their enthusiasm and excitement to try new things. In this case, support was received from teacher candidates from the education faculty to get these activities done by students.

High levels of noise in the school threaten the health of teachers, both physiologically and psychologically. School principals stated that the high noise level in the school caused extreme fatigue and burnout. It is very difficult for teachers, who are tired and worn out due to the noise, to provide effective education to students who get mixed up due to the noise at school. The principals participating in the research stated that the breaks do not turn into a period of time when students get tired due to excessive noise. The principal of the public primary school said that many teachers suffer from different health problems due to noise and that many teachers want to retire early because of this problem alone. This result is similar to the results of the study in which 35 negative effects of noise are listed (Arıcı, 2020; Bayazıt, Küçükçıfçı & Şan, 2011; Bulunuz, Orbak & Bulunuz, 2018).

In the category of acoustic comfort barriers, which was formed from the meeting with the managers, the codes regarding the inadequacy of the regulation and the time-consuming change were created. Every school principal needs to strive for the improvement of acoustics and for tranquility to be a value in schools, without making excuses for the deficiencies in buildings built in the past or the deficiencies in the regulations. As a manager, the lack of legislation and the inability of schools and teachers to go beyond the legislation are among the principals' inferences. This means that school principals cannot go beyond the usual sustaining leadership role (Çimili-Gök, 2010; Yüksel-Şahin & Sarıdemir, 2017). It has been observed that some school principals expect the noise problem at school to be solved in a short time. For example, Mrs. Ayşe, the principal of the private primary school, said that although she was very pleased with the implementation of the project in her schools, the noise level could not be reduced to the desired level. However, change takes time. At school, noise is a deep-rooted problem with its acoustic and cultural dimensions. For this reason, the solution of the problem should be handled as a long-term project.

Managerial Leadership

There is no doubt that principals have an important managerial leadership role in creating a healthy learning environment and school climate (Çelik, 2000). From the interviews, two categories of managerial leadership were reached: personality traits and stakeholder management. Principals voluntarily participated in the noise project at the school and supported the stakeholders and researchers in the school throughout the process. As a matter of fact, in the answers they gave in the interviews, they stated that they took part in this project because they believed in the necessity of this project and how harmful the noise was for all the stakeholders in the school environment. In addition to this project, they stated that their schools have an open approach to innovations by taking part in many projects. It has been observed that the principals try to act together with the teachers to prevent the noise. They stated that when there is a decrease in the level of noise, they do not attribute success to themselves only, on the contrary, they always act with a team spirit. Researchers have frequently emphasized the need for stakeholders to act as a team during the project implementation process. The importance of conducting such studies in unity and solidarity by school principals is also mentioned in other studies (Smith & Andrews, 1989; cited in Çelik, 2013; Tanrıöğen, 2000). They stated that the principals acted objectively in different situations they encountered in the process and they became a symbol of the project in the eyes of the students in the school.

One of the most important tasks of principals in the noise project at school is to take a leadership role. In the interviews, principals stated that a successful school environment can only be created with good leadership. It was observed that the principals tried to gather teachers around a common goal throughout the project. However, it was observed that teachers sometimes forgot their duties and responsibilities. Therefore, they stated that it would be beneficial to repeat the instructions from time to time. This result is the research of entrepreneurial, transformational principals that address the importance of school success (Eraslan, 2006; Tanrıöğen, 2000); Smith & Andrews, 1989: act. Çelik, 2013). The principals mentioned that in addition to the stakeholders within the school, they also made an effort to get parents involved in the project. It was emphasized that parents especially need more support. Within the scope of the project, parent support was tried to be provided with the hand brochure prepared on noise in the school and very positive feedback was received. These results can be correlated with the results obtained from studies conducted on the same subject (Çalık & Kurt, 2010; Çelik, 2000; Salk, 1995; Şentürk & Sağnak, 2012; Yayla, 1995) Fasola, Adeyemi & Olowe, 2013; Çelik & Eryılmaz, 2006; Eraslan, 2006; Riggio, 2014; Yurdakul, 2007).

Educational Leadership

The educational leadership theme includes views on preventing noise at school through education. These categories are noise awareness education, cognitive gains of calmness, and social gains of calmness. School principals stated that they try to create a visual perception against noise and keep the perception alive. Within the scope of the project, visual stimuli consisting of nearly 25 various posters and banners were used. When the project was first started, there were no other posters designed for silence in the hospital other than the "silencing nurse" poster, which is known by almost everyone about noise in the school. This alone is an indication of how neglected noise pollution is at school in our society. It was observed that school principals were excited and motivated when they saw the posters designed for noise in the school for the first time. They thanked the researchers for their work. For example, while the students who saw the sound levels banner in their classroom were warned to be silent, it was stated that it was easily understood what they wanted to say when they said "Now there should be silence at level 0 in your classroom". It has been said that hanging posters and posters on the entrance door of the school, classrooms, and school corridors within a frame, if possible, will be effective in creating a visual perception in students. To keep the perception created by the visual stimuli alive, it has been suggested to change their places within the school at certain periods. Thus, it was said that it would be easier to draw students' attention to these visual stimuli.

It is a Turkish proverb known by everyone that when you learn something when you're young, you just never forget it. Principals stated that it is essential to give noise education at a young age at school. Secondary school principals agree to repeat noise education for new students from primary school every year. They stated that young students who are new to the school prioritize other students to create their perception of noise, and noise awareness. School principals think: "If these students are taught the perception of noise and the physical and psychological damages of noise healthily at this age, even if they get older, this culture and type of behavior will settle in them concretely and they will avoid acting noisy". From the statements of the principals, it can be said that the sooner silence training is started, the faster and more permanent the effect will be. For this, they mentioned that teachers from different branches and young students were engaged in integrated training activities to extinguish noisy attitudes and behaviors and to develop calm behavior. Within the scope of the project, educational activities covering all fields such as Turkish, science, mathematics, social studies, music, painting, and drama have been designed and implemented. It is hopeful to see that these practices improve school principals' perspectives on teaching.

The importance of continuity in noise education at school and the integration of the training given with the classroom and school rules have emerged. It was stated that if this is not done, the information given can be forgotten quickly without turning into a behavior. They stated that they tried to create a generation of tranquility by creating a sense of silence at school. They said that once a conscious generation is created about noise pollution, they will pass it on to the next generations as if they were copying themselves. This result shows that principals have a forward-looking and conscious approach to this issue. It is a very important achievement that is aimed for principals to have their visions accepted by the stakeholders in the school (Çelik & Eryılmaz, 2006; Yurdakul, 2007). The involvement of school principals in the noise project has led them to become aware of all aspects of the problem and to increase their level of awareness on this issue because the change in the consciousness of the individuals causes the perception,

thoughts and behaviors to change, respectively (Cüceloğlu, 2002; 2019; Hashim & Ramadhan, 2019). Within the framework of the project, based on the fact that educational activities aimed at creating awareness, sensitivity, consciousness, and behavioral changes in students and teachers about noise in the school are essential to reduce noise, studies in this direction should be carried out meticulously.

The views of principals about their schools being quieter and calm were gathered under the category of social and cognitive gains of tranquility. When the project started, the schools where the implementations were carried out were so loud that when the bell rang one of the project's scholars, was very scared and thought that there was an earthquake. The principals stated that their schools are now quieter than they were in the past, therefore they experience easier communication in the building and they are less tired during the breaks.

The quiet and calm school is an environment that all stakeholders, especially teachers and school principals, will want (Çalık & Kurt, 2010; Şentürk & Sağnak, 2012; Yayla, 1995). The principals belive that the project has largely achieved its purpose and their schools are quieter than before. A middle school principal who took part in the project compared this situation to 2 years ago and now they feel that they are working in a less noisy environment in their schools; He said that he can now speak on the phone more comfortably in the hallways and that there is not much noise leaking into his room from the corridors. The principal of another secondary school stated that after a while, his self-control developed so much that he could no longer sing very loudly, that he immediately noticed this when he started to sing and stopped singing. School principals talked about the cognitive achievements of a quiet school environment, said that it had a positive effect on student's academic achievements and their concentration increased. In his reply, one of the middle school principals stated that the average school success increased in the high school entrance exams and that the quieter school environment had an effect on this. This result is in line with the physical environment and other research results in which children attending school are found to be more successful in reading, listening, language development, and mathematics (Berlyne, 1960; Bowers & Burkett, 1987; Hardiman, 2003; Hebb, 1955; Zental, 1983).

Solution Proposals

In the regulations of the Ministry of Environment and Urbanization published in 2010, schools were defined as the most sensitive buildings against noise, and the upper limit of noise was determined as 39dB. For this reason, it is necessary to urgently make acoustic improvements in places such as classrooms, corridors, dining halls, and sports halls. Researchers suggested that school principals cover their ceilings with acoustic panels with high sound absorption. Almost every year we witness schools being painted from top to bottom. However, instead of painting the school every year, the walls of the classrooms and corridors can be erased. This way, the walls do not look very bright, but the effect of noise can be reduced by %50 by installing acoustic panels on the ceiling. As a result, resource creation and budget planning should be done to improve acoustics in schools. The principal of a private school ensured that the newly constructed building was constructed with acoustic design and equipment in line with the project team's suggestions. This example is Cüceloğlu's (1998, p.97) "The administrator of a school has the power to affect teachers, students, and their families" confirms his promise. School principals should demonstrate managerial leadership by informing parents and teachers to improve the school. For example, principals displayed attitudes and behaviors such as assigning teachers in the school to the noise project, informing the school-family union with an official letter. School principals should not hesitate to use their powers to improve the learning environment and climate of the school. Every year, the last Wednesday of April is celebrated as "International Noise Awareness Day". However, it has been observed that none of our schools are aware of this. In memory of this day, students can show their feelings and thoughts on noise in their schools with educational activities such as composition, poetry, slogans, and posters. All stakeholders may be asked to be silent and speak in whispers for 1 day. "Be calm!" "Don't make noise!" It can be ensured that they actively support this day by hanging their slogans like that.

Considering the high noise level in our schools (Bulunuz, 2014; Find, Ovalı, İri-Çıkrıkçı & Mutlu, 2017; Güremen, 2012; Yalılı-Kılıç & Adalı, 2020; Polat & Buluş-Kırıkkaya, 2007) Prosecutor-Özgüven, 2015; Tamer-Bayazıt, Küçükçifçi, & Şan, 2011) calmness needs to be at the top of the list of value education. In the interviews held at the end of the project, school principals suggested practical implementations such as "a

quiet day at school", students designing and distributing noise brochures and, "school without bell" to transform tranquility into an educational value. For example, organizing a "quiet day" at school, motivating students not to make noise during this day, creating leaflets about noise and distributing them to students, removing the bell at school or reducing the sound of the bell, being a follower of tranquility, checking whether the rules are followed (Kartub, Taylor -Greene, March, & Horner, 2000) and the school's vision, mission, values, and principles are among the suggestions of principals to add statements that give the image of "we are a quiet school".

School principals who took part in the project changed the long melodic cymbals played in their schools before the project started, to "shorter and low-intensity ding-dongs" at the end of the project. They have placed digital panels in the corridors showing the time to go out for recess or get back to the classroom. School principals need to talk about rulemaking, value creation, and discipline to create a peaceful learning environment. Within the framework of the aforementioned rules, one should strive to spread calmness as a value of courtesy and to transform it into school culture. Because, decreasing the noise level at school is possible by educating stakeholders, obeying the rules, and having discipline (Yayla, 1995). In a school where there are no values or discipline, noise and chaos will take over (Salk, 1995). When it comes to discipline at school, rules and fear come to mind. However, as Cüceloğlu (2002: 2019) underlines, it is possible to avoid loud behaviors in schools where tranquility is a shared value. The important thing here is to create calmness in the school as a value and to transform it into the culture of the school.

Limitations and Future Research

This study, it was tried to shed light on and add depth to many quantitative studies that reveal that the noise level in the school is high. As it is known, qualitative research is subjective research due to its nature. In this context, the responses of the school principals to the interview questions are limited to the observations, explanations, and comments of the researcher. Based on the problem situation of this research, action researches, in which some methods are directly tried for similar purposes, can be conducted. In addition, case studies and cultural studies can be conducted in different regions, with different school types and different student groups aiming to explore issues such as the causes of noise and prevention methods directly in their natural environment.

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APPENDİX

Appendix 1: Interview Questions

As an instructional leader:

• How would you rate your school in terms of noise pollution?

• What are the main reasons for noise pollution in your school?

As an individual and school principal

• How does the noise pollution in your school affect you?

• How does the noise pollution in your school affect the learning environment and school climate?

As a managerial leader

• What should be done to ensure that all stakeholders accept this as a duty?

• What have you done on this subject until today?

As an educational leader

• What should be done in order to transform the activities carried out for the control of noise at school into a quiet school culture?

Appendix 2: Observation Form

Observatıon Form

Purpose: To make observations to reveal the level and causes of noise pollution at school during lessons and during breaks. For this, observations will be made in the following dimensions and notes will be taken.
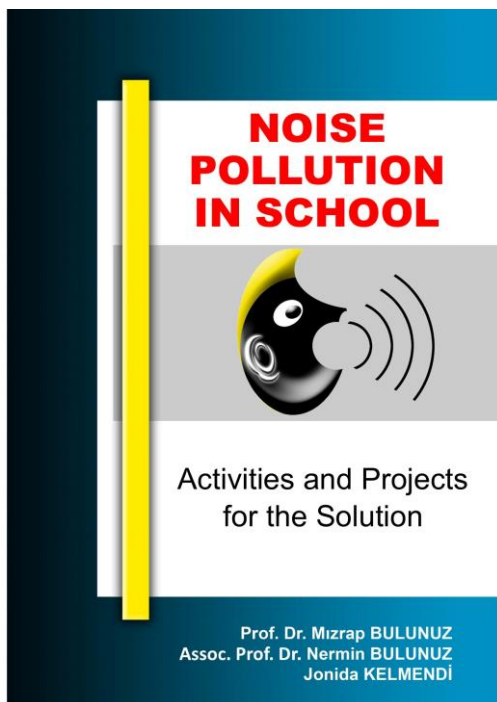
1. The Physical condition of school buildings: Information on the design and construction of the school in terms of sound absorbing properties (high ceilings, corridors and classroom walls covered with sound absorbing materials, etc.…).

2.Student Behaviors and Communication Styles: Students' behaviors inside the building (quietly going to the break time and walking in the corridors with calm steps, running from the classroom to the break time, running in the corridor playing ball or noisy games) and communication style (speaking low/loud), yelling, screaming.).

3. Teachers' attitudes and behaviors towards noisy behaviors: Noisy student behaviors (warning, ignoring, being apathetic etc…)?

4. The Communication style between teachers: (speaking low / loud in the teacher's room)?

Appendix 3: Picture of the First Page of the Project Book

NOISE POLLUTION IN SCHOOL

Activities and Projects for the Solution

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Appendix 4: Parental Noise Awareness Brochure.

How Does Noise Pollution Affect Students?

- Noise pollution causes hearing loss, tinnitus, ringing in the ears, tiredness and fatigue.

- It causes restlessness, unhappiness, stress and difficulty understanding lessons..

- Noise pollution reduces success in reading and writing.

- Noise disrupts the learning climate at school, makes the students' heads hurt, weakens a persons' ability to think, leads to distraction and lack of motivation.

- By negatively affecting the long-term memory, it decreases the success of the students especially in the standardized test.

What can be done to prevent noise in school pollution?

TALKING LOUDLY

SINGING IN THE HALLWAYS

PLAYING GAMES IN THE HALLWAYS AND CLASSROOMS

SLAMMING DOORS

SCREAMING

RUNNING IN THE AISLES AND CLASSROOMS

PULLING TABLES AND DESKS

RINGTONES AND ANNOUNCEMENTS

You can contribute to the improve the acoustics of your kids classroom. You can start a "You can help a classroom too." campaign to cover the walls, floors and ceilings of classrooms with sound insulation materials.

For students to be able to learn in class, to play and rest at recess ; and to be healthier, more peaceful, happier and successful :

"NO"

To The Noise Pollution in School

"YES"

To a quieter, calm, peaceful and tranquil school

For more information
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Youtube: Okulda Gürültü

NOISE IS THE ENEMY OF LEARNING!

NOISE POLLUTION IN SCHOOL

Causes Effects its Control

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Graphic Desing By Murat Çırpan

What's a sound?

A sound is a type of energy. Sound is generated by the vibration of objects or air. The intensity of the sound is measured with a decibel meter. Its' unit is (dB).

For the human ear:

- 05-10 dB is normal ,
- 40-60 dB is crystal clear,
- 60-90 dB is extremely irritating,
- 90 dB and above is the limit of intolerance.

When it comes to environmental pollution, the first things we think of are:
Air, soil and water pollution. But we don't think of noise pollution.

AIR   WATER   SOIL

Because noise pollution:

- İnvisible
- Odorless

- Doesn't pollute the water and soil

But its' effects take place slowly and insidiously.

Noise Pollution

is defined as high intensity, undesirable, mixed, incomprehensible and disturbing sounds.

The Main Causes of Noise Pollution in School

In classrooms and corridors:

- Poor acoustics / bad auditory environment
- Talking loudly, singing, screaming, running and playing games creates noise pollution.
- Slamming doors, pulling tables and desks also creates noise. İn addition loud school bell and announcements are also the biggest sources of noise.

What's the noise level at school?

The level of noise measured during the lesson is between 51- 83 dB, with an average of 72 'dB. This is the equivalent of the noise of a vacuum cleaner.

During the lesson, it becomes difficult to comprehend the lessons at this noise level.

During the break, the noise level in the schoolyard and inside the building is in the range of 62- 95 dB.

Its average is 87 dB '. This noise level is very close to 90dB which is accepted as the "intolerance limit".

It's not possible to rest during recess when the noise level is high.