What do the school directors want to change in their school buildings? An Evaluation of Physical Competences of Primary, Secondary and High School Buildings

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Abstract

In the study, a mixed research method was used combining quantitative and qualitative data. The study group consisted of 302 school directors and deputy directors working in different schools within Hatay Province of Turkey. A data collection tool, developed according to the official standards of state schools, was used to collect quantitative and qualitative data together. In the quantitative dimention, we concluded that school administrators think that the music and fine arts classrooms, worship sections, sport fields, science laboratories, computer and technology laboratories were highly insufficient. The qualitative results also supported these findings. The participants stated that they wanted to expand the sport areas by adding indoor sports hall, football, basketball, volleyball and swimming pools. The participants also expressed that the physical deficiencies hinder the lessons being efficient, especially the lack of school gym, workshop and laboratory; moreover they stated that this situation turns the courses into more theoretical base than the practice, which are delimited between four walls of the classrooms. However, we have also observed some inconsistent findings between quantitative and qualitative dimensions of the study, as the results related to classrooms, heating and insulation were observed to be inconsistent when the qualitative and quantitative dimensions were compared.

Keywords: School architecture, School directors, Deputy directors, Physical competences of schools

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We shape our buildings; thereafter they shape us.
Winston Churchill

INTRODUCTION

Schools are institutions where education and training services are served. The physical spaces of educational institutions are constituted of school buildings and other additional sections and are of great importance for the continuation of education and training. It will be possible for the teachers to provide more effective education services in schools with adequate physical characteristics in spatial terms, and for students to receive more qualified, healthy and safe education services.

The layout of the school or physical environment as people; health, emotional worlds and performances can affect the positive or negative. This situation is of particular concern to students and teachers in school spaces. In schools where education and training activities are carried out, emphasizing this issue and making the necessary arrangements will be very effective in increasing the quality of education. Therefore, in educational institutions; Arrangements should be made taking into consideration many physical media elements, from layout, number of students, color harmony, appropriate light and heat level, cleanliness, lack of noise, to aesthetics. When designing school buildings, architects, interior designers, executives, teachers, students and other relevant experts should work together to transform school buildings into a more functional structure with a multi-disciplinary approach. Educational buildings are not places that can be built indiscriminately, because these are the environments where our teachers are working and our children who are the next generation are raised. For this reason, school buildings should be organized in a way that facilitates the education and training activities and increases the efficiency, as well as students and teachers, to become family and public places (Uludağ & Odacı, 2002).

Some in-class arrangements are also needed to provide the most efficient physical learning environment for students. The quality of the education provided by both school and class improvements can be supported. As a matter of fact, features such as location, size, lighting, heat, noise and colors of the school have effects on education and people. Although the planning and construction of school buildings in developed countries has developed as a special area of expertise, in many countries this situation is not considered as a specialty. The school should have all the features that will contribute to the efficiency of education. Not only classrooms, but also common areas such as garden, canteen, gym and library should be carefully planned (Işık, 2004, cited by Akbaba and Turhan, 2016).

School buildings are also of great importance for educational safety. Indeed, the young generations that make up the future of a nation spend most of their days in educational institutions. Although the majority of the schools are surrounded by walls and iron bars, everyone can easily enter and exit school, criminal instruments can be inserted to school, administrators and teachers can face threats, beatings and violence. In addition, a limited number of especially the earthquake-related applications are tried to be taught by means of prevention (Donmez, 2001). Considering the basic issues we need to focus on in terms of building and school safety, such that the earthquake scientists often remind us of the earthquake and teacher and student killings are frequently seen in the media.

Nations pay special attention to the education of young people, parallel to social and temporal changes, educational systems, philosophies, purposes and school buildings, such as many features are constantly seeking to improve (Özbayraktar, 2002). In general, however, the school buildings are designed with the same architectural features and are far from meeting this need. As a matter of fact, school buildings should be planned at a macro level in accordance with the requirements of the day and not only at the micro level but also for the number of future students and training needs (Yılmaz, 2012). Therefore, some countries are trying to renew their school architecture with new projects according to the era. In some cities and regions for school building programs in Europe, Australia and the United States, school space projects have been implemented (Chiles, 2015: 16-20). These are:

Portugal

In 2007, the Portuguese government launched a major renovation program for secondary schools. The focus was on improving the physical environment of schools. Most of the secondary school buildings built in the last forty years have not been renovated or undergone major maintenance. In Portugal, philosophy is that every school has different needs rather than an ideal school sense. The rules are quite flexible and great importance is given to the design process through consultation with schools.

Denmark

Denmark is known for innovation in school design over the last 15 years. When the program was completed, a questionnaire was conducted to evaluate its effectiveness. The results are very positive: renewed and new facilities encourage learning, especially reading and writing skills, and allow children to be willing to go to school (96% of them express satisfaction); teachers also appreciate the new facilities. This local program created a nationwide debate on the importance of field quality in schools and increased interest in differentiated learning. As with all school projects, school principals, teachers, educators, students, parents, university professors, architects and non-governmental organizations collaborated in the development of this project. In this participatory process, all aspects of schooling were discussed. The project is expected to offer diversity and choice to children in learning environments. The design change was successful because the teachers were trained to use this new type of space differently and gave each student a personalized opportunity for learning. The main assumption of the program is that children's learning is strongly influenced by the quality of the area. Field, innovation and creativity were the main goals of the program. The strong link between educators and architects led to the construction of innovative design facilities in a transparent and inclusive process.

Finland

Education in Finland is a fundamentally egalitarian institution that offers free and equal education to all through a strong public finance system for both designing and building schools and for the training offered. Basically, therefore, the Finnish education has a reputation as extraordinary and the country is famous for architecture of new schools. Although not a specific program, the Finnish government has launched 15 architectural competitions between 2000 and 2010 for both primary and secondary schools, and this has led to some exceptional schools. Finland is unique in two ways: first, it is accepted that the education and school design offered are critical. Second, it is recognized that architectural.

Among the important points for the new schools are the social aspect; Eriika Johansson, a researcher at the Museum of Finnish Architecture who contributed to the Best Schools in the World exhibition, stated that the school is the only public building that can be seen locally in most places, and that schools have a special local value as a phrase. Moral values, aesthetic sensibilities and technical expertise of the era are important in school construction. Schools in Finland are expected to adapt to the changing needs of the new generations and have long-term flexibility. The strong link between educators and architects in Finland ensures the construction of facilities with innovative and well-designed designs.

Australia

In November 2006, the State of Victoria launched the Victorian School Plan, an ambitious program aimed at rebuilding or modernizing every public school by 2017. It was created to obtain more funding from the Australian government's Building and Educational Revolution (BER) program that built a $ 14.7 billion school-wide school for ten years. A significant part of the BER project is the

ull National School Pride (NSP) program: the focus is to support small developments in existing schools to increase children's sense of belonging by providing more engaging and child-friendly spaces for children. Most of this practice is related to the outdoors- the playground landscape and the external learning areas and the renovation of the dance / drama studios. In Australia, there is a clear option and flexibility is a central requirement. Because there is no focus on a single pedagogical approach. By creating reflective, creative and interactive areas, different regions need to be separated acoustically in order to prevent interference between different types of activity with a changing noise level.

United States of America

In 2006, the Los Angeles school district (LAUSD) opened 32 new schools. LAUSD's Future Vision is an all-in-one school construction repair and renovation program. With about 150 new schools, more than 70 class supplement projects and LAUSD's modernization, upgrading and restoration program for aging buildings over 800 campuses, it is the largest in nation history.

In the mid-1990s, permanent population growth rate and lack of school building plans led to overcrowding. The immediate solution was to support the existing space with bungalow-type buildings, to reduce the academic calendars to 160 days per year, and to bring some children from their neighborhoods to less crowded schools. The program aims to create facilities that host students and staff, and to improve efficiency and performance. The key to the program is to create smaller schools in large schools, to interact with students and teachers, and to create space for encouraging collaboration among teachers. The aim of urban planning was to make each school the center of its community. The principles include elements that encourage quality learning environments as well as all State policy requirements.

In line with social interests, public participation in education is encouraged by access to school, playgrounds and gym, libraries, multi-purpose rooms, auditoria and facilities for special needs. In addition, the latest technology in security, safety and communication is used. The aim is to give a definable design that is compatible with each school district. However, with the emphasis on sustainability, this program focuses on providing the required number of schools rather than good design. Also, some schools appear to be grandiose and formal.

Schools are central to the life of the local people and the country as a whole. An estimated 20 percent of the population spends most of their days in school buildings. School buildings in the country face environmental problems that negatively affect the health, well-being and productivity of students and staff (Environmental Law Institute, 2002).

It refers to the environment in which learning-teaching activities take place, and where participants are communicating / interacting with each other and with knowledge (Karaküçük, 2008). Studies show that there is a relationship between school buildings and learning. According to Vural and Sadık (2003), the physical appearance of the school building and classrooms must be in accordance with the physiological needs and teaching activities of the students. In addition, it has been determined that the student achievement level has increased with the development of the conditions of the school structure. It is stated that the aesthetic condition of the school structure has an effect on increasing student success, such that students who study in the modern school structure have a more positive attitude towards the school buildings than the students studying in the old buildings. Although the design and use of a school environment is often unnoticed, it significantly shapes the behavior of students and employees (Aydoğan, 2012).

The school should create an environment that allows for the development of mutual communication, discussion, sharing experience and enabling participant individuals to grow. A school environment that is suitable for child psychology and appeals to the eye and emotion should be arranged by avoiding all kinds of structures that children will be alienated and dissipated. School should be considered with facilities such as; garden, multipurpose hall, laboratory, swimming pool,

sports area. Schools should be equipped with modern teaching and learning tools, and the tools and equipment previously available should be used efficiently. At the same time, physical arrangements (ramps, elevators, desks, playgrounds, wash basins, etc.) required for special needs in the school building should be done for pre-school and advanced age levels. Training environments; with its architecture, style and wide range of activities, it should encourage students to innovate, explore, experiment, experience, discuss, play, socialize, and develop their imagination and thinking abilities. It is also necessary to take into account the user psychology and needs while organizing places to be used for people. Regardless of how the training programs are developed, the places where they will be implemented are school buildings. (Atabay, 2019).

The basic requirements for future school buildings are clarity, clarity, transparency, diversity and flexibility. School buildings are not buildings consisting of plaster and bricks, but they are the symbol of education. As Jonathan Kozol puts it in his book Savage Inequalities, if the children are forced to come and go to school buildings that kill their souls, the school reforms made are worthless. It should also be noted that physical conditions can motivate people or, on the contrary, reduce their motivation. Many schools are built as places where students sit back to back, look forward, and learn from textbooks. In addition to improving the conditions for existing school buildings, it is very important to design new school buildings in a suitable way for the future. Of course, it is not possible to know exactly how the future technology will be. However, if the school buildings are constructed with an architecture open to innovation, they are prepared for possible future changes in technology, educational objectives and curriculum programs. School design needs to be taken into account the conditions of the school environment. Physical design, visual factors, auditory factors, touch and physical arousal, taste and odor, aesthetic innovations, innovations for disabled students, hygiene innovations, social innovations, construction safety and quality of school construction are the features to be taken into consideration in the construction of the school building (Aydoğan, 2012).

In our age, schools are defined as a learning place and learning in schools is expected to be realized effectively. When all the necessary setting and conditions are met, all schools can provide an appropriate education and training service, and achieving an effective and successful learning through improvements in their internal and external environment (Atabay, 2019). It is necessary to examine the physical spaces of the school buildings that have achieved quality in education and to be taken a sample from these areas. In this context, the school projects and buildings in the countries with advanced level of education can be examined (Yıldız, 2016).

Increasing the welfare of a society is through improving the quality of education of that society. One element of improving the quality of education is to strengthen the physical equipment of educational institutions in the country. The school, which is an educational medium, needs to be specially designed in a way that best serves the purpose unlike any building construction (Kursunlu, 2018). Creativity is very important in learning. Being isolated from society also makes it difficult to be creative. Designing multi-directional free-flowing spaces to provide opportunities that facilitate creativity and learning will prevent one broad audience from entering into separate spatial relationships. It will also provide a rich learning environment that stimulates the brain and emotions (Yıldız, 2016).

National Education Basic Law Article "51" in Turkey, it is stated that "Buildings and facilities belonging to educational institutions at all levels and types are planned and built by Ministry of Education according to the characteristics of the programs to be implemented and environmental needs". For this purpose, Ministry of National Education has prepared a minimum design standards guide for educational structures. This manual contains many details such as physical and climatic features in the construction of school buildings. Spatial standards such as administrative spaces, classrooms, laboratories, cafeteria, canteen, conference hall, gymnasium, public areas, staircases, ramps, wet areas, technical spaces are introduced (Ministry of National Education Department of Construction and Real Estate, 2015). In accordance with these standards, educational institutions are organized and constructed as suitable places for education and training.

The study aims to evaluate the physical qualifications of school buildings which are planned and built in line with standards set by the Turkey's National Education Ministry in accordance with the opinion of the school directors and deputy directors. This study is likely to be one of the unique study carried on school building standards in Turkey, and by means of this study, it is also ecpected that study will guide the creation of new standards towards physical qualifications of the schools in Turkey.

METHODOLOGY

Research Model

In the study, a mixed research method was used which combines the quantitative and qualitative data. The mixed method provides a better understanding of the problems and questions of the research by using the quantitative and qualitative research methods together or by blending in harmony (Johnson and Turner, 2003; Creswell, 2006). Considering that quantitative data used first and then the qualitative data was used in this research, the design of this research has been determined as explanatory sequential mix method (quantitative-qualitative). The explanatory sequential mix method takes place in two separate interactive steps. The research question starts with collecting and analysing the quantitative data first, and then, it is carried out by collecting and analysing the qualitative data in order to monitor the results of the quantitative phase. The researcher uses the qualitative results to explain quantitative results in the first stage (Creswell, 2008; Creswell and Plano Clark, 2015). Considering this situation in mixed research, the physical competences of primary, secondary and high school buildings are thought to be determined more comprehensively.
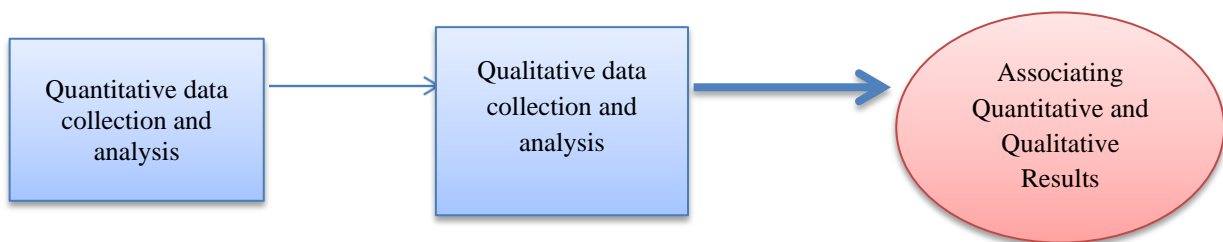

Figure 1. Explanatory Sequential Mix Model (Creswell and Plano Clark, 2015, p. 77).

Research Group:

The study group of the study consisted of 302 school directors or deputy school directors working in different schools within Hatay Province of Turkey. While 111 of these participants (36,76%) were employed in the rural (village-town) schools, 191 (63,2%) were employed in the schools of district centres.

Data Collection Tools

In the study, we used a data collection tool which was designed to collect both the quantitative and qualitative data via survey and open-ended questions. The data collection tool was formed by three sections. The first part consists of six questions to collect demographic data about the school's construction date, the number of classrooms, the number of students and teachers, the location of the school and the type of school. The second part was formed by a questionnaire consisting of 23 items that helped to collect data on general physical characteristics and sufficiency levels of the school buildings. And the third part consists of two open-ended questions to reveal how the inadequacies in school buildings affect educational activities and what changes the participants want to make in buildings. In the preparation of the data collection tool, the researchers made a literature review via official school construction standards and interviewed with the field experts and produced the final part of the relevant sections of the data collection tool.

Data Analysis

Since the data collection tool was designed to collect both the quantitative and qualitative data, different methods were followed to analyse the collected data. The quantitative data obtained from the first and second parts of the tool were analysed by using the SPSS (Windows Package for Social Sciences for Windows 22.0) program. Number, percentage, means, standard deviations were used as descriptive statistical methods in the evaluation of the data. For the qualitative data collected from the third part of the tool, descriptive content analysis was performed. As a result of the qualitative data analysed, the categories were determined and the direct quotations of the participants were also included. In order to validate the qualitative findings, sample groups, data collection, coding, common themes creation and resolution processes were explained in detail. The findings are presented by tables and graphs to make the studies easier to be understood by the readers. Expert opinion was applied to increase consistency among the coders. No changes were made within the citations and direct quotations were displayed by different writing style. In this way, measures have been taken for the validity of the research (Yıldırım and Şimsek, 2016).

FINDINGS

Findings on quantitative data

General Information about the Schools

The general information gathered from the participants about the schools are displayed in Table 1.

Table 1 Information about the Schools

	Range	f	%
Number of Teachers at school	0-20	105	34,8
	21-40	75	24,8
	41-60	66	21,9
	61-80	27	8,9
	81- and over	27	8,9
Number of Students at school	0-320	95	31,5
	321-640	84	27,8
	641-960	56	18,5
	961- and over	63	20,9
Number of classrooms at school	0-8	79	16,6
	9-16	50	16,2
	17-24	55	18,2
	24- and over	117	38,7
Date of construction of the school building	0-10 Years	81	26,8
	11-20 Years	99	32,8
	21-30 Years	52	17,2
	31- and over	65	21,5
School types	Primary	99	32,8
	Lower Secondary	113	37,4
	Upper Secondary	79	26,2

When Table 1 examined; it is observed that the participants work at primary, lower secondary and upper secondary school levels, and according to the school type, majority of the participants (37.4%) work in lower secondary schools. The majority of the school buildings are older than 10 years and this helped us to collect data from more institutionalized schools.

When the number of classrooms examined, the small, medium and large-scale schools are seen to use as main data collection area in the research. This can be regarded as data richness in the study. Among these schools, it is seen that the highest number of participants (f = 117) is from those schools with 24 or more classrooms.

When the number of students considered, it was found that the participants working in the schools with 320 or more students was the majority (70%). When the number of teachers examined, a significant number of the participants (f=105; 34.8%) work in those schools with the staff number between 1-20 teachers.

Findings Related to Physical Competence of the Schools

The opinions considering the physical competence of the schools are displayed in Table 2.

Table 2 Participants opinions on the physical competence of the schools

Items	N	Mean	Sd	Sufficient		Somewhat Sufficient		Insufficient	
				f	%	f	%	f	%
1. Executive rooms	300	1,60	,77	171	56,6	76	25,2	53	17,5
2. Teacher rooms	300	1,60	,75	169	56,0	82	27,2	49	16,2
3.Guidance-Consulting services room	300	1,81	,86	141	46,7	69	22,8	90	29,8
4. Rooms for other staff	295	2,10	,89	103	34,1	57	18,9	135	44,7
5. Classrooms (classes)	299	1,76	,83	148	49,0	73	24,2	78	25,8
6. Music classrooms	290	2,58	,76	49	16,9	23	7,9	218	75,2
7. Fine art classrooms	288	2,58	,78	52	17,2	29	9,6	207	68,5
8. Physical education and sports fields	294	2,33	,82	66	21,9	64	21,2	164	54,3
9. Science laboratories	292	2,30	,82	69	22,8	65	21,5	158	52,3
10. Computer and technology laboratories	290	2,29	,83	70	24,1	64	22,1	156	51,7
11. Library	293	2,23	,84	78	25,8	68	22,5	147	48,7
12. Entrances and exits	300	1,56	,70	170	56,3	92	30,5	38	12,7
13. Hallways	300	1,51	,69	180	59,6	86	28,5	34	11,3
14. Heating and insulation	298	1,55	,67	164	54,3	103	34,1	31	10,3
15. Canteen	292	1,85	,83	126	41,7	83	27,5	83	27,5
16. Worship Section	288	2,34	,86	74	25,7	41	14,2	173	60,1
17. School Garden	300	1,79	,83	142	47,0	77	25,5	81	26,8
18. The playgrounds and recreation areas in the garden	296	1,99	,81	98	32,5	102	33,8	96	31,8
19. Auto parking spaces	296	2,35	,71	69	22,8	52	17,2	175	57,9
20. Toilets and sinks	300	1,54	,71	175	57,9	86	28,5	39	12,9
21.Eligibility for disabled people	299	1,98	,78	93	30,8	117	38,7	89	29,5
22. Compliance with emergencies	297	1,91	,75	98	32,5	126	41,7	73	24,2
23. Aesthetic appearance and architectural suitability of the school buildings.	288	1,89	,78	104	34,4	109	36,1	75	24,8

According to Table 3, the participants responded to 23 items related to physical qualifications of the schools. The participants' opinions on items vary and were found to correspond with the average values.

According to these views, the participants found that the hallways (59,6%); toilets and sinks (57,9%); executive rooms (56,6%); entrance and exits (56,3%); teachers' rooms (56%); heating and insulation (54,3%) were sufficient. Despite the participation rate was lower than the sections explained above, the classrooms (49%); guiding and consulting service room (46,7%); other staff rooms (44,7%); compliance with emergency situations (41.7%); canteen (41.7%) and school garden (47%) were also found to be relatively sufficient by the participants.

On the other hand, the frequencies and percentages of some of the items were rather high in the level of "insuffient" which indicates that those sections in the schools were found to be rather insufficient. We concluded in the study that the music classrooms (75,2%), fine arts classrooms (68,5%), worship sections (60,1%), autoparking areas (57,9%), physical education and sport fields (54,3%), science laboratories (52,3%), computer and technology laboratories (51,7%) were found to be rather insufficient.

Findings on qualitative data

Findings on how the physical deficiencies and inadequacies of the school buildings affect the general education and management activities in the school

Of the 302 participants in the study, 261 responded to this question and 41 participants left this section unanswered. Table 3 shows the findings of the participants about how the deficiencies in the fields of science and technology laboratories, library, and music room, painting workshop, physical education room, guidance room, canteen and places of worship in schools affect education and school management.

Table 3 Participants views how physical conditions at schools' effects education and school management

Participants views	f(n=261)	%
The physical deficiencies and inadequacies in school buildings; prevent the healthy and efficient processing of the lessons	103	39,5
prevent students from transforming their education into practice and as a result of which the student has only a theoretical level of education	20	7,6
hinder the social, cultural, artistic and sporting activities from being done properly	17	6,5
cause distress to students and staff with special needs	16	6,1
hinder the students' having enough rest, relaxation and concentration at school	14	5,3
hinder the students' revealing their individual abilities	10	3,8
cause risks for school safety and cause accidents	9	3,4
have a negative effect on the school guidance activities	9	3,4
negatively affect teachers' work and motivation	9	3,4
hinder students' healthy nutrition and create health risks	8	3
take great time of the managers to eliminate the deficiencies	7	2,6
prevent students from using their free time effectively and efficiently and also negatively effects their personal development	7	2,6
make the management and control of the school difficult	7	2,6
hinder students' enjoying their time at school	6	2,2
have a negative impact on school success	5	1,9
negatively affect the physical development of students	3	1,1
cause behavioural disorders in students	2	0,7

The most expressed view (f = 103; 39.5%) by the participants was that the lack of physical conditions and inadequacies at schools hinder the healthy and efficient processing of the lessons. The participants stated that having inadequate number of classrooms, and other educational sections such

as workshops, canteens, and laboratories limited the education to the classes and this situation prevented the healthy and efficient processing of the courses.

Participant complaints mainly focused on having crowded classes (D-20; D-243; D-251; D-256; D-295) and therefore inadequate number of classrooms. Having crowded classes in Turkey makes double shift schooling a compulsory situation. Many participants also clearly stated that double shift schooling had a negative effect on the physical conditions in their schools and accordingly the educational activities (D-56; D-67; D-75; D-203).

"...because of double shift schooling, the students start at 07.00 in the mornings so they cannot sleep enough as well as not have proper breakfast" (D-56);

"Since the inadequate number of classrooms, we do double shift teaching. This negatively affects the quality of education. It last from 6.50 in the morning until 18.20 in the evening. At least two or three courses of students are inefficient due to the fact that the time is early or late." (D-203);

In addition, the participants expressed that the lessons requiring laboratory and special fields such as science, sports, fine arts and music cannot be efficiently done due to the physical inadequacies at schools (D-6; D-70; D-87; D-89; D-110; D-111; D-113; D-132; D-133; D-134; D-138; D-141; D-149; D-150; D-152; D-155; D-165; D-179; D-179; D-183; D- 187; D-197; D-201; D-222; D-226; D-247; D-250; D-251; D-257; D-265; D-276).

"Lack of laboratories (music, science, technology design, and sports room) creates negativities in terms of efficient processing of courses. Lack of children's eating areas is likely to cause health problems" (D-6);

"...Inadequate classrooms, laboratories and library reduce the students' success rate" (D-70);

"For students, the school should be attractive and motivating. When there are no recreation and sports facilities, there are big shortcomings in the absence of a painting and music workshop and the school will be a boring area for the students. Multi-purpose halls are also necessary for social events. Such areas and studies transform the school into a living space and motivate the student. This also makes it easier to manage the school" (D-87);

"Since we do not have indoor gym at school, we are unable to process physical education courses on rainy days." (D-111);

"The lack of visual arts rooms has a negative impact on learning by doing. The lack of a multi-purpose hall affects the theatre, drama, sports activities and exercise activities." (D-132);

"In the applied courses, there are serious problems especially in visual arts, music and physical education and computer classes. The absence of the science laboratory and the lack of experimentation during these lessons have negative implications for learning." (D-134);

"The places where students will be physically trained outside the course provide them to be relaxed and energetic in many ways. However, there is a lack of space. In addition, our school was built as a primary school and was transformed into a high school. As the physical structure is not suitable for high school, as a result, we have lots of inabilities." (D-141);

"In particular, the inadequacy of school units (sports hall, visual arts class, etc.), which will affect the personal development of students, also puts managers in serious difficulties." (D-149);

Some of other opinions on this topic are also as follows.

"As our school is in the old structure, education and training are adversely affected. The school has no side to keep." (D-21);

"Due to the technical and physical inadequacies, education and training cannot be made student-centred." (D-39);

"In order to adapt 1300 students into a school which has the capacity of 850 students, each room was converted into class and so the number of the classrooms was increased. There used to be a library but now, it does not exist, converted into classroom. The inadequacy of the canteen has a bad effect on nutrition" (D-54);

"...Educational activities are a whole. The failure and deficiency of any part of this whole affect the whole itself. For example, it cannot be fully productive if the teachers, who are part of the whole, are considered to be excellent and work in a non-physical school. Likewise, if an inadequate teacher is assigned to a school of excellent capacity, success will not come again. All of these parts need to work properly (Teacher-parent-physical conditions-student) for a complete educational activity" (D-176);

"... physical inadequacies reduce the quality of education. I think that having laboratory and sports fields will have a positive impact on children's learning by doing." (D-276);

Participants stated that the education at school was limited only to the theoretical dimension and did not allow the student to convert their education into practice due to the deficiencies and inadequacies in the school's physical structure (D-1; D-5; D-31; D-39; D-43; D-45; D-51; D-53; D-64; D-109; D-133; D-134; D-135; D-146; D-153; D-168; D-177; D-177; D-265; 276; D-301).

"...such shortcomings do not allow students to turn education into practice but only in theory. As a result, the students learn by memorizing rather than learning by doing." (D-1);

"The lack of our laboratory prevents the full provision of our education. Some theoretical information cannot be transferred to the application." (D-45).

The participants stated that the deficiencies in the physical structure of the school prevent social, cultural, artistic and sporting activities from being properly done. (D-33; D-42; D-115; D-130; D-133; D-141; D-150; D-165; D-177; D-187; D-216; D-218; D-219; D-250; D-251; D-257; D-267).

"The inadequacy of sports halls and visual arts class in our school causes students' sports activities and artistic activities to be negatively affected." (D-150);

"Our school has a large garden, but the volleyball field, basketball court, etc. are not enough for sport activities, so sports activities cannot be very efficient. In addition, there are problems in the course work as the classrooms are crowded." (D-251);

The participants stated that physical inadequacies at school caused distress to students and staff with special needs (D-18; D-36; D-37; D-89; D-92; D-124; D-128; D-130; D-153; D-183; D-193; D-202; D-206; D-246; D-294; D-303). It is also observed that this situation is still continuing in the new buildings. A participant in this direction stated that (D-124)

"Our school has been newly built and generally complies with the project, but it has shortcomings for disabled individuals. Although we have ramps and elevators, there is no disabled toilet and improvements can be made in this regard."

The participants stated that physical inadequacies at the school prevented students from having enough rest, relaxation and focus on the school. (D-55; D-89; D-110; D-170; D-177; D-192; D-201; D-205; D-234; D-250; D-294; D-297; D-301; D-303)

"Lack of playgrounds and such other arrangement in the garden create problems both hinder the processing of physical education courses and also hinder students moving comfortably during the breaks." (D-170);

In addition, the participants stated that those physical inadequacies at schools negatively affect school guidance (D-19; D-28; D-57; D-58; D-89; D-128; D-195; D-199); negatively affect school success (D-5; D-55; D-70; D-75; D-179); negatively affect the physical development of students (D-17; D-36; D-60); negatively affect the teachers' work and motivation (D-45; D-117; D-142; D-143; D-218; D-186; D-219; D-247; D-258); negatively affect the parent-school relations (D-220); hinder the students' revealing their individual abilities (D-19; D-23; D-90; D-91; D-92; D-130; D-149; D-168; D-177; D-265); hinder the students' using their free time efficiently and achieve personal development (D-15; D-130; D-141; D-149; D-175; D-185; D-192); hinder the students' enjoying their time at school (D-18; D-87; D-92; D-114; D-130; D-215); hinder the students' healthy nutrition and create health risks for students (D-6; D-54; D-55; D-130; D-177; D-286; D-202; D-264); cause behavioural disorders in students (D-75; D-203); cause risks for school safety and cause accidents (D-85; D-116; D-218; D-186; D-264; D-294; D-301; D-64; D-303); make the management and control of the school difficult (D-101; D-126; D-144; D-145; D-177; D-204; D-217) and take too long time for the managers to eliminate the deficiencies (D-3; D-97; D-106; D-174; D-178; D-292; D-196).

Some of the prominent views are as follow.

"...The lack of a guidance room or, in short, the selection of a narrow room as a guidance room, disrupts the works..." (D-89);

"Due to the lack of sufficient space in the school for the artistic activities, our students cannot choose a career according to their abilities." (D-23);

"....gyms, workshops, canteen, laboratory etc. are missing. In many cases, we have to limit the education to classes." (D-5);

"...We cannot allocate time for education in schools, because of dealing with deficiencies or with repairs." (D-97);

"...most of these departments do not exist in our school. Therefore, the lessons are taught in a monotonous way in the classrooms. Students don't like school because it is boring for them." (D-130);

"...Although our teachers perform more, they get less of it, and this causes the teacher to waste energy." (D-218);

"...The inadequacy of the canteen has a bad effect on nutrition." (D-54);

"...lack of play grounds in the garden makes students more aggressive." (D-264);

"...The school areas are risky. In case of natural disaster, it is likely to have maximum damage. Teacher and guest vehicles present danger for the student." (D-302);

"...The existence of two school blocks is difficult for management and control." (D-101);

"...these deficiencies also hamper the communication of parents. Any kind of family education to be given cannot be made due to the absence of the hall." (D-220).

Findings about the changes the participants want to make in the schools' physical conditions.

Of the 302 participants in the study, 271 responded to this question and 31 participants left this section unanswered. Participant opinions and findings on the subject are shown in Table 4.

Table 4 Views on what the participants want to change in physical conditions of their schools

Participants views	f (n=271)	%
Reorganizing the garden and play grounds by adding indoor sports hall, football, basketball, volleyball, table tennis fields and other areas such as chess room, swimming pool and indoor playground	103	38
Increasing the number of classrooms by adding other educational areas such as laboratories, workshops	84	30,1
Rearrangement of heating system as well as building thermal and sound insulation systems.	52	19,2
Expansion of the green areas in the garden by afforestation and creating sports, play and social activity areas with sports equipment, toys and hobby gardens.	48	17,7
Reorganizing the corridors and stairs in a more colourful way	32	11,8
Building indoor gym	24	8,9
Making arrangements for disabled people in the school buildings	21	7,7
Expanding and modernizing the school libraries.	13	4,7
Reducing the number of floors and preferring low-rise structures	11	4,0
Reorganizing and securing access and exits	10	3,7
Construction of multi-purpose hall	7	2,6
Building emergency exit and fire ladders for students and staff	7	2,6
Constructing a conference hall or reorganizing existing ones	7	2,6
Decoration of garden walls and fences by painting	6	2,1
Arranging managerial and teacher rooms	4	1,5
Construction of the classrooms to the south side, more to benefit from the sun	4	1,5
Reduction of the number of the students in the classrooms	3	1,1
Making worshiping sections more spacious and comfortable	3	1,1

When Table 5 examined, a significant number of the participants (38%) stated that they wanted to have the garden and play areas in their schools expanded and rearranged, and the section such as indoor sports hall, football, basketball, volleyball, table tennis fields, chess room, swimming pool and other playgrounds should be built. Based on this finding, the schools can be said to have some deficiencies in playgrounds and especially in sporting areas, and managers want to overcome these shortcomings.

" I wish to rebuild a primary school with separate classes. In addition, schools should be in university campus style, with gyms, workshops, dining halls, classrooms and even swimming pools. (D-5);

"...I would like to set up volleyball and basketball fields in the garden" (D-12);

" I would like to have a laboratory and a library, in this case the education could be better. I would organize the garden so that our students could rest in a better way, and play games." (D-47);

"...Garden and play areas must be grounded not to have accidents and injuries. (D-100);

"I would like to have indoor playgrounds for children." (D-104);

A significant number of the participants (30,1%) stated that they wanted to add educational sections to their schools such as laboratories, workshops, gyms and playgrounds.

"...In addition to classrooms, I wish to get the application classes and playgrounds in the garden." (Y-1);

"I wish to see the reconstruction of insufficient areas and also workshop sections for educational applications which are used by the students. I would like to ensure that students benefit more from practical education, rather than the theory education." (D-33);

"I would definitely like to have a workshop-lab and a gym." (D-134);

"We would like to close small classrooms on each floor and convert these classes into equipment and training rooms, and dining hall." (Y-202);

"In addition to classrooms in the school, there must be workshops, guidance rooms, special support rooms and units." (D-299);

A significant number of participants (19,2%) stated that they wanted to eliminate the problems related to heating and insulation in their schools.

"I'd like to do the heating with natural gas ...." (D-40);

"Our school is heated with the stove. It's dangerous and not healthy." (D-72);

"Heating loss should be prevented and building insulation should be made." (D-74);

"...I would like to do heating with natural gas or fuels that pollute the environment less" (D-302);

A number of participants (17,2%) also stated that they wanted the expansion of the green areas in the garden by afforestation and creating sports, play and social activity areas with sports equipment, toys and hobby garden.

"The green areas in the garden need to be enlarged. The playgrounds are inadequate as they were not taken into consideration when the building constructed" (D-15);

"I would like to have a larger garden and green areas" (D-93);

A part of the participants (11,8%) stated that they wanted to widen corridors and staircases and also wanted to organize these sections in a more colourful way.

"I wanted corridors to be brighter." (D-10);

"I would create a playground and repaint the corridors and provide an environment where students could both enjoy and have fun." (D-18);

Some of the participants (8,9%) also wanted to have gyms in their schools

"...*I would like to have a gym and a meeting room at school" (D-31);*

"I think that having a sports hall will be beneficial for education and also for children's' promotion to sports" (D-89);

Some of the participants (7,7%) wanted to make arrangements for the disabled in the buildings.

"I would organize all parts of the school as accessible to people with disabilities." (D-98);

"I would make the school suitable for disabled people, and we need a lift for disabled" (D-257);

In addition, expanding and modernizing the school libraries; reducing the number of floors and preferring low-rise structures; reorganizing and securing access and exits; construction of multi-purpose hall; building emergency exit and fire ladders for students and staff; constructing a conference hall or reorganizing existing ones; decoration of garden walls and fences by painting; arranging managerial and teacher rooms; construction of the classrooms to the south side, more to benefit from the sun; reduction of student numbers; making worshiping sections more spacious and comfortable are the other issues stated by the participants.

Some of the participant's opinions are as follows.

"I would love to enrich the sources of the library; I would like to make additional classrooms." (D-92);

"I wouldn't like to have physically multi-storey building, would like it to be maximum two storey." (D-75);

"The input outputs must be wide enough to prevent accumulations." (Y-128);

"...I would like to have a multi-purpose hall and conference room." (Y-145);

"...opening windows of our school on the side facing the sun" (Y-266);

DISCUSSION AND CONCLUSIONS

The study focus on the competencies related to physical and architectural characteristics of the primary, lower secondary and high schools. The study has quantitative and qualitative dimensions and the results which we concluded from both dimensions are as follows:

In the quantitative part of the research, we found that school directors and deputy directors think that the music classrooms; fine arts classrooms; worship sections; auto parking areas; physical education and sport fields; science laboratories; computer and technology laboratories were highly insufficient. The answers of the participants to the open-ended questions also support these quantitative data. The significant number of the participants (38%) stated that they wanted to expand the sport areas by adding sections such as indoor sports hall, football, basketball, volleyball, table tennis fields, chess room, swimming pool and other playgrounds. The participants also expressed their negative opinions that the lack of physical conditions and deficiencies hinder the lessons from being efficient enough, especially the shortage and deficiencies of the school gym, workshop and laboratory, moreover they stated this situation turns the courses into activities depend on more theoretical base than the practice, which are delimited between four walls of the classrooms.

In addition, depending on the views of the participants, we concluded that the crowded classrooms which are not enough to meet the number of current students and other inadequacies in the physical structure of the schools hindered the social, cultural, artistic and sportive activities. Furthermore, a significant number of the participants stated that they would like to increase the number of classrooms, and they would like to add other sections such as laboratories, workshops and dining areas, apart from the current classrooms.

We observed that our conclutions in the study were also supported by the results of a number of previous studies conducted on schools' physical conditions. For example, in the study of Akbaba and Turhan (2016) on problems related to physical conditions in primary schools, it was found that the number of classrooms was inadequate, the excess of classrooms had a negative effect on education and training, the school libraries and classroom infrastructure were inadequate, and the schools were physically old, did not have enough technological equipment and computers; It was observed that there was no green area and was not enough for students, there was no special convenience for disabled individuals and the findings that the lavobos were not sufficiently hygienic. Karaküçük (2008)'s research on preschool buildings also revealed that the conditions provided for the observation rooms, the number of toilets, the garden, the play equipment and the fire safety were insufficient and the physical / spatial conditions did not fully meet the criteria of pre-school education institutions, and showed differences between schools.

Similarly, in Yıldız's (2016) PhD thesis on evaluation of physical spaces in high schools in terms of ministry of education design standards, it was concluded that the classrooms in high schools were partially in compliance with the standards, and there were deficiencies in the school laboratories. In the study it was also stated that wet floors were not in accordance with the standards, that sporting and social areas were not enough in school yard, the entrances and exits were not adequate for school security, and there were insufficient measures for emergency evacuation. The classrooms' designs were not in conformity with standards of ministry of education, and other areas in schools, such as painting, sports, laboratory, dining hall, places of worship were not present or generally did not meet the standards. School gardens did not have any specific characteristics, especially in terms of disabilities.

Participants stated that physical inadequacies at school caused distress to students and staff with special needs. We concluded that the participants' responses to the questionnaire were also relatively compatible, and also the qualitative and quantitative data supported each other. Participants found their school building's eligibility for disabled people somewhat sufficient (38,7%) and rather insufficient (29,5%). As educators, we should be kept in mind that education services are not only for physically and mentally healthy individuals but also for individuals with disabilities, and the schools should provide architectural facilities for disabled individuals as well. This result was also supported by the study of Akbaba and Turhan (2016) as they also concluded in their qualitative study on physical problems of primary schools that there was no special convenience for disabled individuals in the primary schools. Similarly, Aydoğan (2012) also emphasized the necessity of considering the students with disabilities while designing the new school buildings.

In addition, the participants stated some negative opinions that the physical inadequacies in the school negatively affected the school guidance studies; prevent the students from revealing their individual abilities; negatively affect the success of the school; prevent the students from using their free time efficiently; hinder their personal and physical development, hinder the healthy nutrition of the students and cause health risks. Such views can also be interpreted that "the student" should be the basic and core element of the physical and architectural design of the schools.

Schools should offer both recreation and motivation-enhancing opportunities for both learners and teachers. However, the participants think that the school's physical inadequacies prevented students to relax and focus on the courses. This finding is also supported by the fact that the playgrounds and recreation areas in the school garden are found to be somewhat sufficient (33,8%), moreover, music classrooms (75,2%), fine arts classrooms (68,5%); physical education and sport fields (54,3%) were found to be rather insufficient by the participants in the quantitative dimension of the study. These results in quantitative dimension were also consistent with the qualitative results since the participants obviously stated that such inadequacies in the school buildings hinder the educational activities and therefore they want to add new sections for sports, music and fine arts. The schools are socially living institutions, and they should provide the individuals with the means, areas and identities which make them feel ease and comfortable at schools as if they were at home themselves. Considering that this situation has a positive effect on personal and academic development

of the students, the schools in the study are found to be quite poor in this regard as they have deficiencies. However, we found that participants were well aware of the shortcomings in their schools and what could be done. In the participating schools, indoor sports hall, football, basketball, volleyball, table tennis fields, chess room, swimming pool and other playgrounds such as indoor playgrounds have deficiencies. Still, the participants are well aware of those shortcomings in the sporting fields, they believe that the garden and playgrounds should be expanded and rearranged. By means of this result, the school directors and deputy directors also underlines that they are well aware of this situation which is also important for cooperating culture within their institutions and the success of the students as well as sustainable development. The participants, in quantitative dimension of the study, found the libraries (48,7%) and rooms for other staff (44,7%) relatively insufficient. The qualitative findings also revealed that some participants stated that they wanted to enrich and modernize their school libraries.

Uludag and Odacı (2002), in their study on the importance of physical space in education activities, also emphasized that arrangements should be made considering the many physical environment elements, from the layout, number of students, color harmony, appropriate light and heat level, cleanliness, lack of noise, to aesthetics.

We have also observed some inconsistent finding between quantitative and qualitative dimensions of the study. The first inconsistent finding was that the heating and insulation (54,3%) systems of the school were found to be sufficient by the participant in quantitative dimension, however, the qualitative findings didn't support such a finding since the participant stated that they wanted to eliminate the problems related to heating system, thermal and sound insulation in their schools (19,2%) and some of them stated that they wanted to use natural gas for heating instead of stoves and have insulation in their school building. Such a result may have been due to the widespread use of gas for heating and modern insulation during the last decade in Turkey. When the construction date of the schools in the study considered, the majority of the school buildings are older than 10 years and do not have modern heating and insulation system. Although the schools have current heating system and this is found to be sufficient by the participants, most of them expect to have a better system and therefore they might state different views in quantitative dimension. Still it may be interpreted that the participants expect more modern heating system and insulation.

However, the sound insulation was found to be insufficient by some of the participants in the study. Findings on the importance of the insulation presented in the study are also supported by results of the study conducted on the effect of noise in the education-teaching environment for schools by Polat and Kirikkaya (2004) as they concluded that environmental noise reduction measures were insufficient in Turkey and was above the standards of noise levels when compared with the desired standards in the world. Thefore the students were adversely affected by the lack of sound insulation.

The second inconsistent finding was that the classrooms were found to be sufficient by the participant in quantitative dimension (49%), however, the qualitative findings didn't support this finding since the participant stated that they wanted to increase the number of classrooms by adding other educational areas such as laboratories, workshops (30,1%). When these result reviewed, although the participants find the number of classes sufficient, they also wish to add new subject classes such as laboratories, workshops especially for science and fine arts courses. The qualitative finding revealed that the participants wanted to improve the qualitative functions of the classrooms by adding labs and workshops, rather than increasing the quantitative number of the classrooms.

RECOMMENDATIONS

1) A new school building standards which will focus on physical and social needs of the student should be presented and followed. The qualitative functions of the classrooms at scholls should be improved by adding labs and workshops as well as other additional sections for music, sports, science and fine arts courses.

2) Schools buildings should be rearranged towards students with special needs and disabled students and staff.

3) More modern heating systems and insulation should be provided for schools.

4) The school libraries should be enriched and modernized according to needs of education and trainings.

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