

ANASINIFLARININ ERGONOMİK AÇIDAN DEĞERLENDİRİLMESİ: DİYARBAKIR İLİNDEN BEŞ ÖRNEK ¹

AN ERGONOMIC EVALUATION OF NURSERY SCHOOL CLASS- ROOMS: FIVE EXAMPLES FROM DİYARBAKIR

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Öz: Amaç: Ergonomik kriterler doğrultusunda kullanıcı nitelikleri ve antropometrik verilerin dikkatle ele alınması gereken mekân türlerinden biri, okul öncesi eğitim birimleridir. Okul öncesi eğitimden istenilen performansın sağlanabilmesi, eğitim programı ve personele bağlı olduğu kadar, bu eğitim kurumları için sağlanan fiziksel koşullara da bağlı olmaktadır. Çalışmada okul öncesi eğitim kurumlarından anasınıflarında yer alan donanımların ve sınıf boyutlarının çocuklara ait antropometrik veriler göz önünde bulundurularak, yapılp yapılmadığını ortaya çıkarmak ve bu tür düzenlemelerin çocukların fiziksel ve ruhsal sağlığı üzerindeki önemine dikkat çekmek hedeflenmiştir. **Yöntem:** Bu amaçla Diyarbakır il merkezinde rastlantısal olarak seçilen beş farklı anasınıfı konu kapsamında incelenmiştir. Çocuklar arasında vücut ölçüleri ve oranlarında gözlenen varyasyonlar, onlara özgü antropometrik değerlerin tespiti ve kendi standartlarının oluşturulması için kullanılan oranlar üzerinden hesaplamalar yapılarak, çalışma düzlem yükseklikleri, oturma yükseklikleri, göz hizaları, maksimum uzanma mesafeleri hesaplanmıştır. Elde edilen tüm değerler her okul için ayrı olmak koşuluyla tablolar halinde verilmiştir. Hesaplama sonucu çıkan bu değerler, sınıfların ölçümleri esnasında elde edilen değerlerle karşılaştırılmıştır. Veriler sonucunda ergonomik ilkelere bağlı olarak önerilerde bulunulmuştur. **Bulgular:** Çalışma sonucunda incelenen beş okulda, çocuklara ait masa boyutlarının anasınıfı öğrencilerinin antropometrik boyutlarına uygun olmadığı görülmüştür. Yapısal boyutta ise tasarımların anasınıfına ait Milli Eğitim Bakanlığı Standartlarına göre ıslak hacimlerde uymadığı görülmüştür. Değerlendirmede pencere kolu yüksekliklerinin standartlara uygun olmadığı, kapı kollarına ait yükseklik ve kapı genişliklerinin ise yeterli olduğu bulunmuştur. **Sonuç:** Tasarım aşamasında anasınıfı olacak birimlerin, başlangıçta belirlenmesi, bu birimlerin dönüştürülmüş mekânlar olmaması gerekmektedir.

Anahtar Kelimeler: Antropometri, Eğitim, Donanım

Abstract:Aim: Ergonomic criteria require user characteristics and anthropometric data to be precisely considered in preschool education units. Achieving the desired performance from preschool education depends on not only educational programs and staff, but as well as optimal physical conditions. This research is intended to investigate whether the equipment and classroom sizes in nursery schools consider children's anthropometric data and to draw attention to the importance of these arrangements on the physical and mental health of children. **Method:** Five different randomly selected nursery schools in the city of Diyarbakır were examined. The working plane heights, sitting heights, eye alignments, and maximum reach distances were considered by calculating the variations in the body measurements and proportions of the children and determining their anthropometric values. All the data are shown in separate tables for each school. The data were compared with the values obtained during the measurement of the classrooms. As a result of these data, this study makes suggestions based on ergonomic principles. **Findings:** As a result of the study, it was seen that the table sizes of the children in the five schools were not suitable for the anthropometric dimensions of the nursery school students. In the structural dimension, it is seen that the wet volumes' designs are not suitable according to the standards of the Ministry of National Education of nursery schools. It has been found that the height of the window handles do not conform to the standards but the height of the door handles and door widths are sufficient. **Results:** Nursery classrooms should be designed from the start according to ergonomic principles and should not be renovated or repurposed spaces.

Key Words: Herzog & de Meuron, Gilles Deleuze, Surface, Difference, Repetition

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INTRODUCTION

Ergonomics is a multi-disciplinary science that determines the natural and technological laws of human-machine-environment harmony, taking into account the biology and psychology of humans (İncir, 1980: 2). Ergonomics presents the outcomes of scientific studies based on physics, chemistry and biology as natural sciences; psychology, sociology and economics as social sciences; history, archaeology etc. as human sciences, along with architecture, engineering and management. Ergonomics, which encompasses humans, machines and environments, aims not only to increase productivity, but also to harmonize humans and their environments (Efe, 1993: 485). Ergonomics maximizes the efficiency of the production and increases the efficiency of the tools, devices and mechanisms used by people. By designing everything, being open to human use and interaction in everyday life and compatible with human beings, ergonomics ensures human security and happiness (Özok, 1997: 34).

Spaces with a wide variety of functions and the equipment in them should be designed using ergonomic criteria to enable their users to work in a comfortable, healthy and safe environment and to increase productivity. This is also true for nursery schools.

Efficiency and comfort can be achieved with ergonomics. Suitable designs for user's ergonomic structure are very important in comfort and efficiency. This is also true for nursery schools or nursery classrooms. The aim of ergonomics in schools is to increase the efficiency of teaching-learning activities that is ultimately to ensure that students are successful. One of the leading tasks of school ergonomics is to determine the conditions in which learners will do their best and to contribute to the effective regulation of the learning environment for the specific aims of education.

The biological, psychological, mental and social development and health of students as well as design of the tools and equipment to arrange the environment for education are the issues that concern school ergonomics (Özbilgin, 1986: 28-33). Just as ergonomics examines the relationship between individuals and work, the ergonomics of preschool educational institutions is related to the interaction between children and the teaching environment (Alkan, 1983: 200).

Preschool education is described as the first and most important step of social advancement due to its large influence on basic individual development, and because it is the basis for lifelong learning in society (Şahin and Dostoğlu, 2016: 36). Preschool is the first step of education from birth until primary



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school. In this process, the physical, cognitive, social, psychomotor and language development of children is almost completed. To make children to have the desired behaviour characteristics, it is important to know their developmental features (Alisinanoğlu and Kesicioğlu, 2010: 93-110). When designing spaces, it is necessary to know users' body dimensions. For this reason, user characteristics and especially anthropometric dimensions should be known to design effective workplaces. Children spend most of their time sitting. Static standing along with long periods of sitting and advanced bending positions put extensive physical pressure on tendons, muscles and vertebrae (Bendix, 1987; Brunswic, 1984: 294-298). Proper posture and sitting positions are important factors in preventing symptoms in the musculoskeletal system. The sitting posture of students is influenced by the activities performed in the classroom and the measurements of the furniture in the classroom (Yeats, 1997: 45-55). Furniture plays an important role in correct sitting style. It is important to use furniture that supports correct standing because of children's habit of sitting at a young age. In this context, appropriating anthropometric data into furniture design in schools is an important factor to be considered. Some specific dimensions need to be taken into consideration when determining the size of furniture for sit-

ting (Knight and Noyes, 1999: 747-760; Parcells et al., 1999: 265-273).

Unfavourable educational environments have adverse effects on children's development, whereas appropriately designed educational environments have a positive effect on their physical and emotional development, accelerate their mental development and promote positive behaviours by providing educational role play (Ömeroğlu et al., 1998: 12). In this context, preschool educational institutions should be designed using ergonomic principles in order to preserve and ensure the health of children so that preschool educational institutions can contribute to their development (Tok, 2011: 155).

AIM

When designing, it is important that the components of the equipment fit together. In addition, there is a need for harmony between the equipment and users in terms of size and shape. This is achieved by considering the anthropometric data of users. These dimensions are static anthropometric dimensions, which consist of measurements of two positions, standing and sitting, and dynamic anthropometric dimensions, which are measurements of more complex motions.

The main aim of the study is to investigate whether the equipment and classroom dimensions of nursery schools are designed consid-



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ering anthropometric data of children or not. It will also draw attention to the importance of these factors on children's physical and mental health.

MATERIALS

Five different school's nursery classrooms, selected randomly from the city of Diyarbakır, were examined: Şehit Yüzbaşı Bahtiyar Er İmam Hatip Secondary School, Ali Emri Secondary School, Yenişehir Primary School, Şehit Jandarma Üsteğmen Pehlivan Secondary School and Vehbi Koç Primary School. These data were then compared with the optimum measurements determined by anthropometric data for preschool age groups. As a result of the data obtained, this study makes suggestions based on ergonomic principles. This study will also evaluate the design elements of building which have not been investigated in previous studies of nursery schools' classrooms. As a result of the study, the design parameters that must be considered in the new nursery schools will be determined.

RESEARCH METHOD

The survey was conducted by collecting data using qualitative research methods: on-site observation, photographing and evaluation of the studies which were prepared before about the nursery schools and children anthropometry. In order to evaluate the classrooms ac-

cording to ergonomic considerations, dynamic and static dimensions of the children were determined. Children's height measurements were made with a stadiometer while they were standing. The classroom sizes, width and height of classrooms, entrance doors, garden doors, toilet doors, heights of the door handles, heights of windows and window handles were measured. Table, washbasin and toilet heights were also measured. The dimensions that should be obtained after the calculations were compared. Their standard deviations were evaluated. All the values obtained are shown in separate tables for each school. In this study, the values that were calculated belong to the children's height were evaluated instead of statistical calculations. As a result of these calculations, the values obtained by measuring the classrooms were compared with the values dictated by the Ministry of National Education guidelines for minimum standards of school buildings.

This research demonstrates the importance of taking anthropometric data into account in spatial design in order to end up with ergonomically comfortable environments for learning. In addition, the classrooms, classroom sizes and their components of the five schools' nursery classrooms were evaluated in view of ergonomics.

The study was carried out in 5 randomly chosen nursery schools. In the study, the values



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defining the standards of the Ministry of National Education and ergonomic rates were taken as references. The study was constrained with the group of students in 5-6 years old. In this scope, the dimensions belonging to the classes, the square meters required for each student, the toilet and washbasin dimensions and the table-chair dimensions were taken into consideration.

RESEARCH PROBLEM

When designing schools, the physiological and psychological data of the users should be known. However, school designs have often ignored these data. In fact, many buildings and spaces have been renovated and converted into nursery schools by changing their initial functions. It is observed that the majority of these schools fail to meet the physiological and psychological needs of their users.

RESEARCH SUB-PROBLEMS

Examination of nursery schools shows that ignoring anthropometric dimensions in design is an important problem, which causes structural dimensions and functional areas to be inadequate or excessively large. In addition, the dimensions of the furnishings in response to this problem have led to the eradication of ergonomic uses.

RESEARCH HYPOTHESIS

In the study, it was considered that the ratio between the class size and the user was ignored in the design of nursery classrooms and the dimensions of the building components forming the space of classrooms.

This study examined the hypotheses that the spaces used as nursery schools were generally renovated and repurposed spaces, where the ratio between classroom size and the user was ignored in the design of the classrooms and the dimensions of the building components forming the space were not taken into consideration.

THEORETICAL FRAMEWORK

The term, ergonomics, derives from the Greek words, *ergon* and *nomos*, meaning work and law, respectively (Toka, 1978: 2). Ergonomics is an interdisciplinary research and development area that aims to reveal the basic rules of system efficiency and human-machine-environment harmony against the psychosocial stresses that may be caused by the effects of all factors in the industrial business environment, taking into consideration the anatomical, anthropometric, psychological and physical properties and tolerances of people. Ergonomics, also known as human factor engineering, examines the relationship between humans and equipment and work environments.



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Ergonomics is used for increasing the efficiency of human beings working with machines by taking the necessary precautions along with determining the conditions that are suitable to people's natural characteristics. The aims of ergonomics are:

- a. maximizing the efficiency of production.
- b. protecting physical and mental health of employees and prevents them from being harmed, by avoiding unnecessary difficulties with harmonious relationships,
- c. increasing the efficiency of the use of tools and devices used by humans.
- d. Along with designing everything for human use and interaction in daily life, it:
 - Increasing individual performance,
 - Providing individual security,
 - Protecting and enhancing human life,
 - Enabling human happiness and satisfaction (Özok, 1997: 34).

The basic approach in ergonomics is the collection of data and information on the physiological and psychological characteristics. The purpose of gathering this information is to use it in a variety of goods, tools, appliances, equipment and physical environment design to increase the comfort, health and productivity (Aykal and Günyel, 2010: 4).

Ergonomics is called human engineering in the United States, and the relationship of people to work environments is also of interest to this science. In domestic work, product design and manufacturing, environmental relations have become a very important research area for increasing productivity and preventing accidents. The main goal of ergonomics is to improve the quality of work life (Şimşek and Nursoy, 2004: 44).

Classroom and Child Ergonomics

In education, learning environments are organized to be utilized as efficiently, safely and comfortably as possible. Similar with the businesses, benefiting from the data of this scientific field in education also increases its quality and productivity. In order to grow the children as healthy and successful adults, nursery school education should be designed in a safe and functional way, which is suitable for their ages (Özburak, 2016: 23). It is now accepted as a scientific fact that the living and work environments of students affect them. In fact, learning and teaching do not come into existence in a void. They require physical, social and psychological environments, consisting of buildings, equipment, arrangements, thermal comfort, colours and objects. People shape these, and then the same environments shape people. For effective education, environments need to be organized in a way that is appropriate for learning and teaching ac-

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tivities. This requires the like various dimensions of interaction between environments and individuals to be organized and oriented to serve educational objectives (Küçükoğlu and Özerbaş, 2004: 3).

FINDINGS

Each school was evaluated separately. In a study conducted by Uran in 1980, children's measurements were evaluated. These measurements were compared with the dimensions of the furnishing elements and some ratios were obtained. The proportions obtained give ideal dimensions of the furnishing elements depending on the anthropometric dimensions of the children. In the study, furnishing and fitting elements were evaluated with these ratios (Figure: 1).

Ministry of National Education guidelines for minimum standards of school buildings guidelines have been accepted as a reference for evaluation at the structural dimension. Class size, total area to be considered per person, door and window dimensions and wet spaces assessments were taken into account by considering these standards.

Ergonomically evaluated working plane heights, sitting heights, eye alignments, and maximum reach distances were calculated. The conformity of the required values with the existing element sizes was evaluated. In addition, the area that needs to be allocated per student in the classrooms was determined and compared with the required values. All values are shown in Tables 1, 2, 3, 4 and 5.

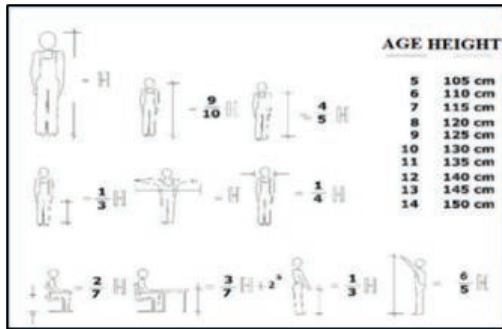


Figure 1. Anthropometric Size Identification (Uran, 1985: 5)



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Table 1. Şehit Yüzbaşı Bahtiyar Er İmam Hatip Secondary School Nursery Classroom Data

ŞEHİT YÜZBAŞI BAHTİYAR ER İMAM HATİP SECONDARY SCHOOL							
NURSERY SCHOOL DATA							
Class number	Class Sizes	Width	Height	Class Surface	Capit Required	Paving Area	Conformity
1	16 people	5,60 m	6,90 m	38,64 m ²	2,4 m ²	2,41 m ²	Appropriate
STRUCTURAL COMPONENTS					PHOTOS		
Entrance Door					 		
Required				At least 90			
Existing				85/200			
Conformity				Inappropriate			
Toilet Door					 		
Required				At least 90			
Existing				70/170			
Conformity				Inappropriate			
Door Handle Height							
Required				90-110			
Existing				105			
Conformity				Appropriate			
Toilet Door Handle Height							
Required				99,6			
Existing				95			
Conformity				Appropriate			
Window Height							
Required				90			
Existing				80			
Conformity				Inappropriate			



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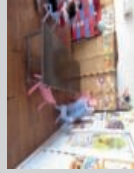

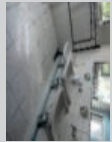
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Required <i>Window Handle Height</i>	110	
Existing.	170	
Conformity	Inappropriate	
FURNITURE		
<i>Table Height</i>		
Required	50-55	
Existing	55	
Conformity	Appropriate	
<i>Toilet Height</i>		
Required	30	
Existing	40	
Conformity	Inappropriate	
<i>Washbasin Height</i>		
Required	≤70	
Existing	80	
Conformity	Inappropriate	



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Table 2. Ali Emri Secondary School Nursery Classroom Data

ALİ EMRİ SECONDARY SCHOOL							
NURSERY SCHOOL DATA							
Class number	Class Sizes	Width	Height	Total Surface Area of Classroom	Area Per Capita Needed	Existing Area Per Capita	Conformity
1	22 people	5,40 m	9,80 m	52,92 m ²	2.4 m ²	2,41 m ²	Appropriate
STRUCTURAL COMPONENTS					PHOTOS		
Entrance Door							
Required				At least 90			
Existing				80/200			
Conformity				Inappropriate			
Toilet Door							
Required				At least 90			
Existing				90/200			
Conformity				Appropriate			
Door Handle Height							
Required				90-110			
Existing				105			
Conformity				Appropriate			
Toilet Door Handle Height							
Required				99,6			
Existing				100			
Conformity				Appropriate			
Window Height							
Required				90			
Existing				85			
Conformity				Appropriate			



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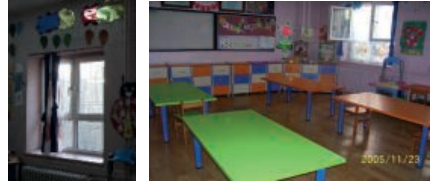


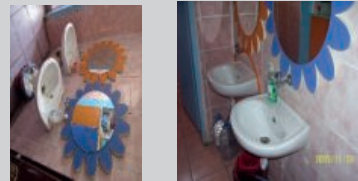
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Window Handle Height		
Required	110	
Existing	170	
Conformity	Inappropriate	
FURNITURE		
Table Height		
Required	50-55	
Existing	60	
Conformity	Inappropriate	
Toilet Height		
Required	30	
Existing	40	
Conformity	Inappropriate	
Washbasin Height		
Required	≤70	
Existing	78	
Conformity	Inappropriate	



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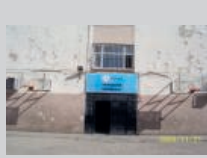




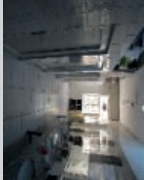



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Table 3. Yenişehir Primary School Nursery Classroom Data

YENİŞEHİR PRIMARY SCHOOL							
NURSERY SCHOOL DATA							
Class number	Class Sizes	Width	Height	Total Surface Area of Classroom	Area Per Capita Needed	Existing Area Per Capita	Conformity
1	25 people	6,70 m	6,90 m	46,23 m ²	1,5- 2 m ²	1,85 m ²	Inappropriate
2	20 people	6,65 m	7,00 m	46,55 m ²	2.4 m ²	2,35 m ²	Appropriate
STRUCTURAL COMPONENTS					PHOTOS		
Entrance Door					 		
Required				At least 90			
Existing				95/200			
Conformity				Appropriate			
Toilet Door					 		
Required				At least 90			
Existing				85/190			
Conformity				Inappropriate			
Door Handle Height					 		
Required				90-110			
Existing				120			
Conformity				Inappropriate			
Toilet Door Handle Height					 		
Required				99,6			
Existing				105			
Conformity				Inappropriate			
Window Height					 		
Required				90			
Existing				90			
Conformity				Appropriate			



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Window Handle Height		 
Required	110	
Existing	180	
Conformity	Inappropriate	
FURNITURE		 
Table Height		
Required	50-55	
Existing	50	
Conformity	Appropriate	 
Toilet Height		
Required	30	
Existing	40	
Conformity	Inappropriate	 
Washbasin Height		
Required	≤70	
Existing	80	
Conformity	Inappropriate	



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Table 4. Şehit Jandarma Üsteğmen Pehlivan Secondary School Nursery Classroom Data

ŞEHİT JANDARMA ÜSTEĞMEN PEVLİVAN SECONDARY SCHOOL							
NURSERY SCHOOL DATA							
Class number	Class Sizes	Width	Height	Total Surface Area of Classroom	Area Per Capita Needed	Existing Area Per Capita	Conformity
1	15 people	6,70 m	6,90 m	46,23 m ²	2.4 m ²	3,08 m ²	Appropriate
2	20 people	6,80 m	6,90 m	46,92 m ²	2.4 m ²	2,35 m ²	Appropriate
STRUCTURAL COMPONENTS					PHOTOS		
Entrance Door					 		
Required				At least 90			
Existing				95/190			
Conformity				Appropriate			
Toilet Door					 		
Required				At least 90			
Existing				100/140			
Conformity				Appropriate			
Door Handle Height					 		
Required				90-110			
Existing				105			
Conformity				Appropriate			
Toilet Door Handle Height					 		
Required				99,6			
Existing				100			
Conformity				Appropriate			
Window Height							
Required				90			
Existing				80			
Conformity				Inappropriate			



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Window Handle Height		
Required	110	
Existing	180	
Conformity	Inappropriate	
FURNITURE		
Table Height		
Required	50-55	
Existing	55	
Conformity	Appropriate	
Toilet Height		
Required	30	
Existing	35	
Conformity	Appropriate	
Washbasin Height		
Required	≤70	
Existing	65	
Conformity	Appropriate	



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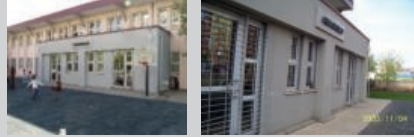

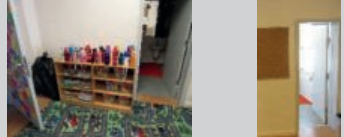
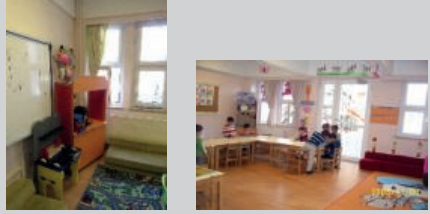
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Table 5. Vehbi Koç Primary School Nursery Classroom Data

VEHBI KOÇ PRIMARY SCHOOL							
NURSERY SCHOOL DATA							
Class number	Class Sizes	Width	Height	Total Surface Area of Classroom	Area Per Capita Needed	Existing Area Per Capita	Conformity
1	15 people	6,70 m	6,90 m	46,23 m ²	2.4 m ²	3,08 m ²	Appropriate
2	18 people	6,30 m	6,90 m	43,47 m ²	2.4m ²	2,4 m ²	Appropriate
3	21 people	6,40 m	9,50 m	60,8 m ²	2.4m ²	2,9 m ²	Appropriate
4	25 people	6,40 m	11,00 m	70,4 m ²	2.4m ²	2,8 m ²	Appropriate
STRUCTURAL COMPONENTS					PHOTOS		
Entrance Door							
Required				At least 90			
Existing				150/230			
Conformity				Appropriate			
Toilet Door							
Required				At least 90			
Existing				100/230			
Conformity				Appropriate			
Door Handle Height							
Required				90-110			
Existing				102			
Conformity				Appropriate			
Toilet Door Handle Height							
Required				99,6			
Existing				98			
Conformity				Appropriate			
Window Height							
Required				90			
Existing				90			
Conformity				Appropriate			

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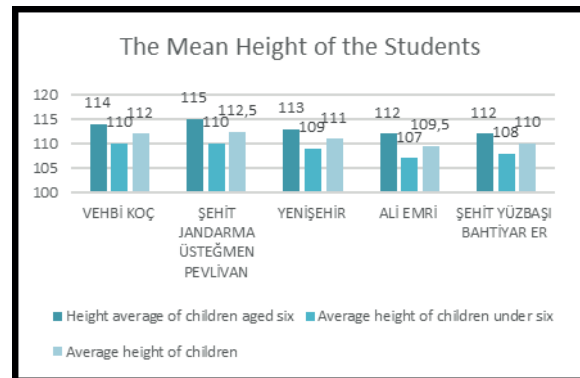
(Marka Patent No / Trademark)

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Window Handle Height		
Required	110	
Existing	135	
Conformity	Inappropriate	
FURNITURE		
Table Height		
Required	50-55	
Existing	60	
Conformity	Inappropriate	
Toilet Height		
Required	30	
Existing	30	
Conformity	Appropriate	
Washbasin Height		
Required	≤70	
Existing	85	
Conformity	Inappropriate	
In the discussion of captions some values belong to doors, windows		

The mean height of the students in these schools was determined with a stadiometer while standing. It is seen that the measured height average is above the height average of Turkish standards (Table 6).

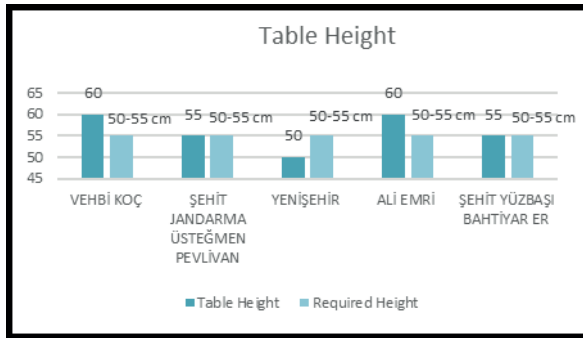
Table 6. The Mean Height of the Students



The measurements of table dimensions in the classrooms and the required values are given in the graphic below.

The $3/7 H+2^5$ formula is used to test the conformity of the required values with the standards of the Ministry of National Education. The values for schools are 58 cm, 58.2 cm, 57 cm, 56.9 cm and 57 cm. respectively. These values are close to the Ministry's standard of 50-55 cm (Ministry of National Education General Directorate of Basic Education Pre-School Education Institutions Equipment Material Standards 2014: 1). It was seen that table heights in schools were not suitable for students (Table 7).

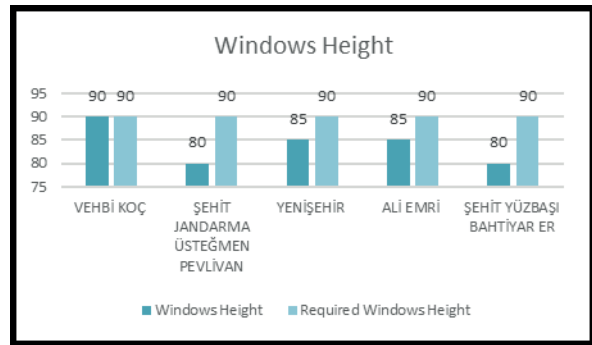
Table 7. Table Heights



Height of windows from floor in these schools are expressed in graphs (Table 8). These values are so similar with the values of Ministry of National Education guidelines

for minimum standards of school buildings. Standard of ministry is 90cm from the floor (MNE 2015: 51) (Table 8).

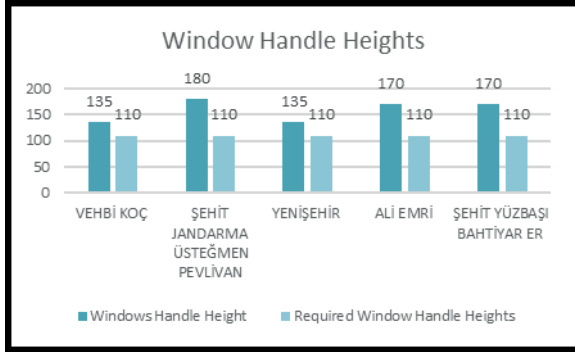
Table 8. Window Heights



In order to determine the height of the window handles, the maximum distance that children's arms can reach is determined the maximum distances the children's arms by using the formula $6/5H$. The values for window handles are 134cm, 135 cm, 133 cm, 131 cm and 132 cm. respectively.

The height of the window handles of the schools are close to the required height 140cm (MNE, 2015: 51). The values are so similar with the required standards at Vehbi Koç Secondary School and Yenişehir Secondary School. However, in other schools, the values of window handles are not suitable for children (Table 9).

Table 9. Window Handle Heights



The standards which were set by the Ministry of National Education, the height of the door handles should be between 90 cm and 110 cm. (MNE, 2015: 49). It was found that students can reach the door handles in the schools comfortably (Table 10).

Table 10. Door Handle Heights

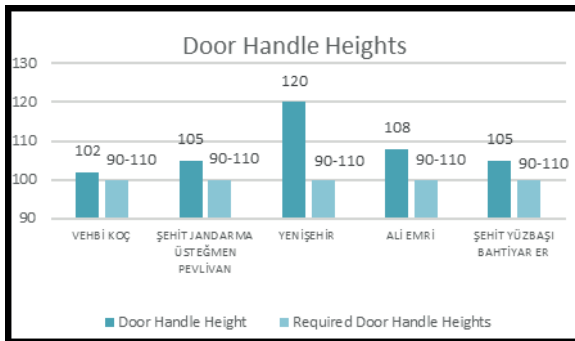
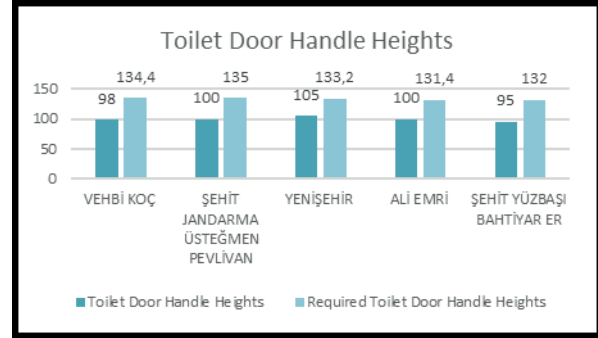


Table 11. Toilet Door Handle Heights



The standards which were set by the Ministry of National Education, the height of the toilets should be 30cm. (MNE, 2015: 56). Toilet heights in the schools were determined by using the formula $2/7H$. The values for toilets were calculated as 32cm, 32.1 cm, 32 cm, 31.2 cm and 31.4 cm. respectively. These calculated values are similar with Ministry of National Education standards (Table 12).

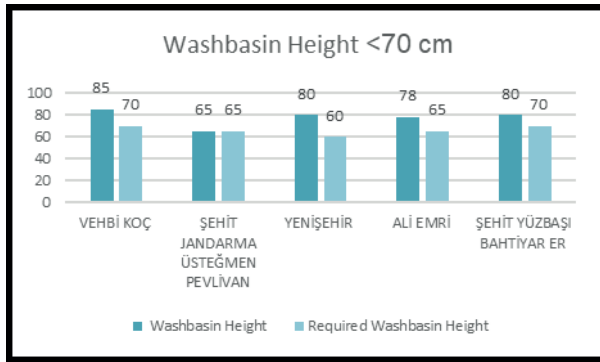
Table 12. Toilet Sitting Heights



The heights of washbasins must be ≤ 70 cm. (MNE, 2015: 55). The measured values in the schools were found too high for students to use washbasins. The most suitable value was

measured only at Şehit Jandarma Üsteğmen Pehlivan Secondary School (Table 13).

Table 13. Washbasin Heights



RESULTS

It is known that environmental factors affect the behaviours, emotions and thoughts of living things, and behavioural patterns arise accordingly. These factors are very important for children under six in the preschool period. Children spend a large part of their day at school. For this reason, school is a great way for children to fulfil their need for movement and to do activities in school that enable them to use their energy. Educational environments are places where many learners are involved and where learning activities are held. They must meet certain standards in order to be effective.

It has been stated that unfavourable educational environments lead to adverse effects on children's development, whereas appropriately designed educational environments

have a positive effect on the physical and emotional development of children, accelerate mental development, and promote positive behaviours by providing educational role play.

In addition, toilets and washbasins for nursery schools should be designed in accordance with the body measurements of students. Ergonomic data should be used in the arrangement of these classes.

Especially chair and table measures used in the classrooms which play an important role in the musculoskeletal development of the students should be arranged in accordance with the student body measurements.

As a result, attention must be paid to the design of the nursery schools in parallel with the above-mentioned issues, taking into account the cognitive, sensory and psychological needs of the students as well as their vital and physical needs.

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