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A Suggestion For Educational Facilities In The Urban Planning

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Abstract
Educational facilities space is one of the public urban areas that should be given the most importance during the development works in settlements that are planned to be newly built or have the opportunity of urban transformation. Since education, which is one of the basic parameters of a country's development, is directly proportional to the investment given to it, the land allocated to educational facilities are among the main priorities of a qualified education.

In this study, data were collected on the areas of educational facilities in the Western European and American urban areas. The data obtained are compared with the regulations in Turkey. Upon this, it has been tried to discuss with an example how the optimum educational facility area should be proportional to the population.

Keywords: Educational Facility, Urban Area, Urbanization

Kent İçi Planlamada Eğitim Tesisi Yapıları İçin Bir Öneri

Özet
Eğitim tesisleri; yeni yapılması planlanan veya kentsel dönüşüm fırsatı yakalayan yerleşim bölgelerinde, imar çalışmaları sırasında en önem verilmesi gereken donatı alanlarından biri olmalıdır. Bir ülkenin gelişmişliğin temel parametrelerinden biri olan eğitim, ona verilen yatırım ile doğru orantılı olduğundan, eğitim tesislerine ayrılan araziler nitelikli bir eğitimin temel öncelikleri arasındadır.

Bu çalışmada, Batı Avrupa ve Amerika'nın kentsel yerleşimlerinde uygulama alanı bulan eğitim tesisleri alanları üzerine veriler toplanmış, Türkiye'deki Yönetmelikler'le kıyaslanmış ve bunun üzerine optimum bir eğitim tesisi alanının nüfus ile orantılı olarak ne olması gerektiği bir örnekle tartışılmaya çalışılmıştır.

Anahtar Kelimeler: Eğitim Tesisi, Kentsel Alan, Kentsel

1. INTRODUCTION

Education facilities are owned by public or real or legal persons to serve preschool, primary and secondary education and higher education. These areas are reserved for the facilities such as education campus, general, vocational and technical education functions of schools, sports hall,

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etc. in the application zoning plan as a private or public facility area (Official Gazette of Republic of Turkey, 2017).

In the zoning plans, the areas allocated to the training facility function are called the training facility area and primary, secondary, vocational and technical education facilities and higher education facilities can be made in these areas. When the educational facilities are categorized, another parameter that is as important as the coefficient value is the service area radius value. When determining the service area radius, the training facility area is considered the center of a circle. Then a circle is drawn in the dimensions of the service area radius, which is defined as the walking distance according to the type of facility. The area within this circle indicates the areas that the educational facility needs will meet.

The educational facility area data is in direct relation with the number of population and the coefficients to be determined for these facilities. The higher the population, the higher the demand of the training facility, the more the educational facility will tend to increase. However, the basis of this is the proportion of nuance education facilities with the population in the region. In other words, where the population density is high, the coefficients used in the training facility calculations should be taken high. Because the educational facility is one of the most important elements of the concept of urban areas, which are the main components of the socio-cultural life of the city, together with the green areas.

In this article; in the settlements of the developed countries where the majority of the urban population is concentrated, the coefficient of education facilities from kindergarten to high school and the service diameters are emphasized. In this study, it is tried to put forward a proposal about what kind of coefficients should be acted in an ideal planning study.

2. INTERNATIONAL STANDARDS IN EDUCATION FACILITY

It is not easy to determine the values of a public urban area parameter by country. This is also the case for the educational facility area. In various regions of a country, the value may vary greatly. Nevertheless, it can create a foresight by considering the standards applied in cities in Western Europe and America.

The values should be applied according to the Spatial Plans Production Regulations (SPPR) in force in Turkey are in Table 1. According to these values, it is compared to the extent of the educational facilities in Istanbul. Also; Educational facility area coefficients are shown in the USA, Germany, England, France, Italy, Portugal and Bulgaria. At the end of the table; international norms and regulations in Turkey are set forth recommended considering the coefficient for educational facilities (Polat, 2017).

For example:

While 0.36 m^2 kindergarten per capita is built in USA, the service area is 200 meters. The same value is 0.50 m^2 / person and 500 meters according to SPPR.

1.30 m^2 / person is applied for primary schools in Germany and there is no concept of service area radius. According to Turkey in SPPR, the value is 1.50 m^2 / person and the service area has a radius of 500 meters. For Istanbul, the primary school area per person is 0.50 m^2.

In Italy, planning is done at a value of 1.00 m^2 / person in secondary schools. SPPR for Turkey 1.50 m^2 / person requesting the implementation of the value of the service area has a radius of 1,000 meters. This value is 0.25 m^2 / person currently in Istanbul.

In France, the high school area per person is 1.60 m^2. SPPR has determined this value as 1.75 m^2 / person and service area radius is 2,500 meters. The current high school area per capita in Istanbul is 0.30 m^2.

According to the Spatial Plans Production Regulations of the educational facility in Turkey; for kindergarten: 0.5 (m^2 / person), for primary school: 1.5 (m^2 / person), for secondary school: 1.5 (m^2 / person), for high school and other non-formal education institutions: 1.75 (m^2 / person) according to paragraph 2 of Article 12, titled 'walking distance'; "zoning plans, children's playground, playground, outdoor sports hall, family health center, nursery, kindergarten and primary school about 500 m., secondary schools approximately 1,000 m., high schools approximately 2,500 m. in the domain can be planned ", is called (Ministry of Environment and Urbanization of Republic of Turkey, 2014).

Table 1. Educational facilities in the world area values and coefficient of suggestion (Polat, 2017).

Data	Draft model	Turkey (regulation)	Istanbul (current)[2]	USA	Germany	England	France	Italy	Portugal	Bulgaria
Kindergarten (m^2 / person)	0,5	0,5	-	0,36[3]	0,25[4,5]	0,6 [6]	0,7-0,9[7]	0,5[8]	0,2[11]	-
Service Area Radius (m)	500	500	-	200[3]	-	-	-	-	-	-
Primary school (m^2 / person)	1,5	1,5	0,25	1,8[3, 4, 5]	1,3[4, 5]	-	2,1[3,7]	-	-	2,6[5]
Service Area Radius (m)	500	500	-	400-800[3]	-	-	-	-	-	-
Secondary School (m^2 / person)	1	1,5	0,25	-	0,84[8]	-	1,6[7]	1[9]	-	-
Service Area Radius (m)	1000	1000	-	800-1200[3]	-	-	-	-	-	-
High School (m^2 / person)	1,5	1,75	0,3	-	0,84[10]	-	1,6[7]	-	1,5- 2,0[11]	-
Service Area Radius (m)	2500	2500	-	1200-1600[3]	-	-	-	-	-	-
Total (m^2 / person)	4,5									

These coefficients are rather pessimistic when compared to the current situation in Istanbul. Because in Istanbul; for primary and secondary schools, there is 0.25 m^2 / person and 0.3 m^2 / person for high schools. These data are 4 to 8 times lower than the regulation standards.

3. A SUGGESTION FOR EDUCATIONAL FACILITY STRUCTURES

It has been tried to develop a proposal within the framework of the data, standards and current situation described above. This recommendation is a mathematical model base that is defined by the coefficients of boundary values. While determining the coefficient of an educational facility, 8 different situations were considered. The legends of these cases are shown as 0, 1, 2, 3, 4, 5, 6, 7 in Table 3 (Polat, 2017).

[2] (The Istanbul Metropolitan Municipality, 2003)
[3] (De Chiara and Koppelman, 1969)
[4] (American Public Health Association, 1960)
[5] (Chapin, 1965)
[6] (Keeble, 1959)
[7] (Urbanistica, 1966)
[8] (Altaban, 1966)
[9] Urbanistica, 1966)
[10] [Altaban and Okyay, 1976)
[11] (Ministerio Do Plano e da Administracao do Terratoria, 1985)

Table 2. Educational facility area coefficient

Population groups (people)		0- 75.000		75.001- 150.000		150.001- 500.000	
Infrastructure areas		m²/person	Minimum Unit Area (m²)	m²/ person	Minimum Unit Area (m²)	m²/ person	Minimum Unit Area (m²)
Field of Education Facilities	Kindergarten	0.50	1.500-3.000	0.50	1.500-3.000	0.60	1.500-3.000
	Primary school	1,50	4.000-7.000	1,60	4.000-7.000	1,60	4.000-7.000
	Middle School	1,50	5.000-9.000	1,60	5.000-9.000	1,60	5.000-9.000
	High School	1,75	6.000-10.000	1,75	6.000-10.000	2.00	6.000-10.000
	Boarding High School		10.000-15.000		10.000-15.000		10.000-15.000
	Industrial Vocational School,		10.000-25.000		10.000-25.000		10.000-25.000
	Multi-Program High School		2.000-4.000		2.000-4.000		2.000-4.000
	Special Education, Rehabilitation and Guidance Centers		3.000-5.000		3.000-5.000		3.000-5.000

Table 3. The relationship between the legend-boundary value coefficient

Legend	Limit Value Coefficient (m²/person)	Status
0	0,00	All current educational facility areas: Adequate (no need)
1	0,50	Existing kindergarten area is inadequate (needed)
2	2,50	Existing primary school area is inadequate (needed)
3	1,50	Existing high school education facility areas are inadequate (needed)
4	3,00	Existing kindergarten and primary education area: Inadequate (needed)
5	2,00	Existing kindergarten and high school area: Inadequate (needed)
6	4,00	Existing primary and high school area: Inadequate (needed)
7	4,50	All current educational facility areas: Inadequate (needed)

Accordingly, the optimum educational facility area coefficient (m^2 / person);

- Legend 0: If there are all training facilities within the project area or within walking distance, there is no need and the limit value coefficient should be 0.00 m^2 / person.

- Legend 2: If the primary school needs of the project area and is not found within walking distance of the boundary limit values coefficient of 2.50 m^2 / person must be (now no longer primary and secondary education institutions are separated in Turkey, so they are used together in the accounts)

- Legend 3: If there is a high school requirement in the project area and it is not within the walking distance, the limit value coefficient should be 1.50 m^2 / person.

- Legend 4: If there is a primary school and primary education in the project area and it is not within the walking distance, the limit value coefficient should be 3.00 m^2 / person.

- Legend 5: If there is a need for kindergarten and high school in the project area and it is not within the walking distance, the limit value coefficient should be 2,00 m^2 / person.

- Legend 6: If there is a need for primary and high school in the project area and there are no in walking distance limits, the limit value coefficient should be 4.00 m^2 / person.

- Legend 7: If there is no educational facility within the walking distance of the project area, the limit value coefficient should be 4.50 m^2 / person.

For example; what is the area of the educational institution that is needed in a residential area with a population of 5,000 and no educational facilities within walking distance.

Legend 7 should be selected according to Table 3. In this case, the limit value coefficient will be 4.50 m2 / person.

Population (person)	x	Draft Educational Facility Area Coefficient (m^2/person)	=	Draft Educational Facility Area (m^2)
5.000		4,5		22.500

According to this analysis, a total facility area of 22,500 m^2 is needed. If a coefficient is made with coefficients; 22.500 m^2 of area; 2.500 m^2 of the kindergarten (0.5 coefficient), 12.500 m^2 of elementary school (2.5 coefficient), 7.500 m^2 of high school should be divided.

4. CONCLUSION

Whether the educational facility is sufficient or not is among the basic indicators of a country's development index. In this context, various standards are set for what should be the educational facility area in a region. The observance of these standards also points to the importance that the country gives to education. This study focuses on areas that need to be allocated to education facilities in new settlements or in places where urban transformation opportunities are gained. Data and standards put forth in the World and Turkey, the question is that what should be the amount of land in need of educational institutions have been investigated. In this context, regulations are based on walking distances that are frequently used and various coefficients have been determined. These coefficients are recommendations. Especially in developed countries with data for standard applications in Turkey to focus on the most optimal option-based applications and have attempted to show the results with an example.

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