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CRITERIA OF POSITIONING EDUCATIONAL SPACES IN URBAN SPACES (CASE STUDY: SECONDARY SCHOOL OF IBNSINA, ORUMIYEH)

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ABSTRACT

To present favorable educational services in educational users, some criteria in their positioning and local establishment should be considered. These criteria are allocated to two groups of general criteria such as compatibility, comfort, performance, utility, health and safety and specific criteria such as conditions of establishment of users in the environment (such as favorable and compatible neighborhoods and neighborhoodlimitations) and basic criteria and characteristics of places (such as the scope of suitable performance, population under the coverage and divided parts). If these criteria are not realized completely, educational users will not be able to take their own roles. Therefore, to obtain confidence of the observation of positioning criteria and conditions of establishment in places, in the present study, qualitative evaluation of these users are to be conducted. Therefore, the status quo of schools in terms of the degree of compatibility with the mentioned criteria was evaluated using matrices of compatibility, favorability, capacity, and dependency. These matrices evaluate different criteria from different perspectives. IbnSina Secondary School of Orumiyeh was evaluated by this method and the results indicate 80% of compatibility, 78.5% of favorability, 50% completely appropriate in the matrix of complete capacity, and 62.5% of completely appropriate in the matrix of dependency.

 Keywords: Educational Users, Orumiyeh, Positioning, Ibnsina Secondary School, Matrix

INTRODUCTION

Status of literacy and education

One of the criteria of urban life development is the increase in the rate of literacy in the studied scope based on the Statistical Yearbook of West Azerbaijan Province. According to this yearbook, about 81.67 percent of the population of the township are literate (table 1). From among the whole literate population of the township, according to presented statistics in the same yearbook, from among the whole population above 6 years old in Orumiyeh, 144488 individuals (about 18.33%) were illiterate. This statistics is relatively high for the township. Fortunately, the youth mostly enjoys literacy (graph 1).

Table 1: literate and illiterate population with 6 years old of Orumiyeh in terms of urban and rural regions as well as gender, 2006

									Orumiyeh Township
871204									
788133									Population above 6 years old
Rural	Urban	Women	Men	Total number of illiterates	Rural	Urban	Women	Men	Total number of literates
99523	44965	96890	47598	144488	173372	470273	289482	354163	643645
68.88	31.12	05/67	95.32	33.18	94/26	06.73	98.44	02.55	67.81
100		100		-	100		100		-

Resource: Yearbook of West Azerbaijan Province, 2006

Graph 1: literate and illiterate population of Orumiyeh, 2006
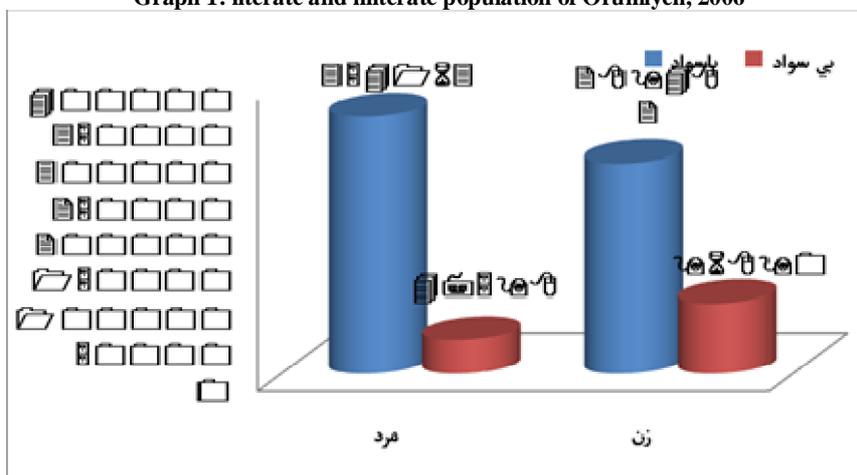
The mode of using urban lands in the status quo (2006). One of the basic needs of human settlements which should be considered collectively, is the need to education. In most of countries, these users are at the fourth rank after settlement users, communication networks, green and open spaces. The allocated portion to these users of urban per capita based on defined standards in Iran is

about 4.4 m^2 and the portion of secondary schools is 1.2 m^2[8].

Educational users, in terms of their nature and levels of activities, firstly should be established in a location which they do not intervene other users (compatibility). Secondly, their establishment location should provide necessary conditions for their activities (favorability). Thirdly, they should have certain performance domain (capacity). Fourthly, for providing favorable services, they should have sufficient distance from other users for their activities and services (dependency and isolation).

In the present study, the criteria and standards related to the positioning of schools are to be mentioned and then, by comparing these criteria with the data related to the status of the case of the study (IbnSina Secondary School of Orumiyeh)the qualitative evaluation of this user is to be conducted using presented methods such as matrices of compatibility, favorability, capacity, and dependency. Then, by analyzing the results of these evaluation, some suggestions are to be presented for eliminating deficits in this section.

The studied case is one of the schools in the City of Orumiyeh whose most of educational users are not at favorable conditions in terms of educational per capita and positioning

conditions. The per capita suggested as the comprehensive project to each educational user is 1.2 m^2 which at status quo, only 0.51 m^2 of it has been realized and averagely, only 47% of the principles of urban development is observed in schools.

Criteria of positioning educational users

Determining a general and comprehensive criterion for positioning urban users, due to cultural and natural and etc. differences is difficult in different societies. However, these criteria, in general, are to realize a single goal, i.e. providing welfare and convenience) and in most of the cases, they have commonalties. These criteria are divided into two general and specific groups:

1. General criteria of positioning urban users

The objective of each kind of urban planning and consequently, planning of urban land users is to supply economic and social welfare and convenience of citizens. Therefore, to obtain it, the following criteria should be observed:

a. Compatibility: according to this criterion, incompatible users should be positioned far from each other and complementary users should be close to each other.

b. Convenience: different users should be positioned in terms of distance, time, and feasibility of accessibility.

c. Efficacy: in positioning, economicality and its productivity should be studied.

d. Favorability: in positioning activities, favorability should be considered in terms of visions, natural factors, and etc.

e. Health: in positioning for supplying health and enjoying a healthy city, the density, per capita standards, environmental issue, cultural legacies, and pollutions should be considered.

f. Safety: in positioning uses, the security of people against natural and non-natural events should be considered [3].

2. **Specific conditions of positioning of educational users**

Since educational users (kindergartens, primary schools, pre-schools, secondary schools, and etc.) have different performance and activity levels, each of them should observe specific criteria in positioning and designing for presenting more optimal services.

The concept of school is the highlighted element of each lane or neighborhood in the hierarchy of physical divisions of each city

and are positioned by observing the specific criteria within neighborhoods.

General view has divided specific criteria of positioning schools in two following groups:

The first group: Criteria related to conditions of establishing schools in the environment

A. Compatible and appropriate neighboring

a. Proximity to small playgrounds

b. Proximity to cultural institutes and centers

c. Proximity to general green spaces

d. Proximity to residential textures

B. Proximity limitations

1. Schools should be at least 500 m far from annoying industrial workshops

2. They should be far from main streets.

The second group: basic criteria and features of the allocated place

a. The scope of useful performance: each school should in a lane be established in a place where the maximum distance taken by students to access it should not be more than 1200 m.

b. Population under coverage: averagely, 10 thousand individuals (the average population of a lane) is suitable by observing the maximum of the performance scope.

c. Division parts: they should be proportionate to the number of students and suggested per capita [10].

Responsible organizations have emphasized the following criteria in positioning schools:

a. Compatible users: proximity with residential, cultural users and those of green spaces, and etc.

b. Incompatible users: proximity to different kinds of air-polluting users (industries, terminals, and etc.), noise pollutants (highways, airports, shopping malls, etc.), and environmental pollutants (sewage, slaughterhouses, cemeteries, etc.).

c. Environmental conditions

1. Natural states of the land:

*   Avoiding the construction of schools in lands with slope more than 8% and in mountainous regions with the slope more than 15%. Preventing the construction of schools in weak lands, muddy lands, watercourses, faults, and etc.

*   Avoiding the construction of schools in the lands of transmission lines

2. Orientation:

    *   Avoiding the construction of schools in the path of severe wind

*   Constructing schools on the face of the sun radiations and feasible air-conditioning conditions

3. **Access and its scope:**

    Inaccessibility to streets, main roads, junctions, squares, and traffic networks.

    The accessibility to all assistance and emergency vehicles to schools. The observation of the maximum of access (15 min. walking).

Evaluating educational users in terms of observing criteria

Evaluating is a necessity for being confident of the accuracy of plans for attaining objectives or revising in developing future plans.

Educational users can be evaluated from two viewpoints:

a. Qualitative evaluation: it is conducted based on the comparison of the per capita of the studied user at the status quo with the standards related to those users or via modeling and predicting current and future needs.

b. Qualitative evaluation: in this method, qualitative features necessary for positioning are evaluated by four matrices of compatibility, favorability, capacity, and

dependency) of the status quo of users [1].

1. Compatibility matrix:

Compatibility matrix is influenced by this view that the activity of all users established in a region should not hinder each other and at last, one of these states can be imagined:

totally compatibleusers, totally incompatible, relatively incompatible, and indifferent users [5].

According to the data in table 2, the matrix of compatibility in IbnSina Secondary School is indicated in table 3:

Table 2: principles and criteria of establishing schools near other users

Totally incompatible proximity	Relatively incompatible proximity	Indifferent proximity	Relatively compatible proximity	Totally compatible proximity
1. Proximity to healthcare places (hospitals)	1. Proximity to places for spending leisure time (kindergartens, parks, etc.	1.Proximity to playgrounds and cultural centers (cinema, theater)	1. Proximity to playgrounds and cultural centers (cinema, theater)	1. Proximity to educational users (kindergartens, primary schools, pre-schools, high schools, etc.)
2.proxiity to sports institutions (sports saloons and stadiums)	2. proximity to healthcare enters (public bathrooms)	2. proximity to healthcare enters (public bathrooms)		2. proximity residential textures with every amount of density
	3. proximity to life facilities (fire stations)	3. proximity to life facilities (fire stations)		3. proximity to commercial centers (local and weekly ones)
	4. proximity to industrial centers (light industries)	4. proximity to industrial centers (light industries)		4. proximity to religious centers (neighborhood's mosques)
	5. proximity to ways of transportation (rapid vehicles)	5. proximity to ways of transportation (rapid vehicles)		5. proximity to places for spending leisure times (parks in lanes and neighborhoods)
				6. proximity to ways of transportation (low speed vehicles)

Table 3: evaluating matrix of compatibility in IbnSina Secondary School

Transportation	Commercial	Green spaces	Educational	Residential	Users neighboring the studied user in the status quo
A neighborhood with low speed movement	Neighborhood	Gardens	Primary school	Moderate density	
Totally compatible	Totally compatible	Indifferent	Totally compatible	Totally compatible	Applied status

2. Favorability matrix

In this method, compatibility between a user and its place of establishment is evaluated in such a way that each user, or presenting services standardly requires a favorable place in terms of size and area, location, slope,

physical features, accessibility, facilities and equipment, pollutions and neighboring users. This method is useful for studying and comparing users individually. Therefore, using table 4, the degree of favorability of IbnSina School is indicated in table 5:

Table 4: standards of the place of establishment (site) of schools

a. Lands' dimensions: 7000 m2 for 600 students	**Relatively observed**
b. Facing the sun and at the path of severe winds	**Totally observed**
c. Lands' slope: 8% in usual regions and 15 % in mountainous regions	**Totally observed**
d. Physical features: lands' resistance, and being far from watercourses and faults	**Totally observed**
e. Accessibility: direct relations with main streets and the possibility of the traffic of emergency vehicles	**Totally observed**
f. Facilities and equipment: power, telephone, gas, and sewage	**Totally observed**
g. Pollutions: noise, air and environmental pollutions	**Relatively observed**
h. Neighboring users (residential, educational and gardens)	**Totally observed**

Resources: School Reconstruction Organization

Table 5: evaluating favorability matrix of IbnSina School

h	g	f	e	D	c	b	a	
Neighboring users	**Pollution**	**Facilities and equipment**	**Accessibility**	**Physical features**	**Lands' slope**	**Status**	**Lands' dimensions**	**Indices**
Totally favorable	**Totally favorable**	**Totally favorable**	**Totally favorable**	**Totally favorable**	**Totally favorable**	**Totally favorable**	**Totally favorable**	**Standard cases**
Totally favorable	**Relatively favorable**	**Totally favorable**	**Totally favorable**	**Totally favorable**	**Totally favorable**	**Totally favorable**	**Relatively favorable**	**Studies cases**

Resources: 2003: 117

3. Capacity matrix

This method is to evaluate this issue that whether the school is established based on the scale and domain of its activity appropriate to different levels of the divisions of the body of the city? Educational users (kindergartens, primary schools, secondary schools, high schools, and etc.) each has certain status and performance domain in physical divisions of the city and physical divisions of the city (neighboring units, sub-neighborhoods, lanes, areas, regions, and cities) each requires certain levels of activity. If the place of the establishment of users and their performance domain is not compatible with physical divisions, the convenience and welfare fails and more problems will occur for the city (ibid, 244-245).

Table 6 indicate the relevance of different educational levels with different physical divisions. Based on the data in this table, the level of each educational user in terms of the activity domain can be in five states. The studied case (IbnSina School) has been established exactly within a neighboring unit and approximately bear the external edge of one of the residential neighbors in terms of physical divisions. In addition to covering the whole neighborhood due to the acceptance of a number of students form surrounding villages, their performance domain is beyond neighborhood and regional activities (table 7).

Table 6: the relevance of different educational levels with different levels of the physical divisions of the city

physical divisions of the city / educational levels	Neighboring units	Sub-neighborhood	Neighborhood	Regions	City	Areas	Country
Kindergartens	Totally appropriate	Relatively appropriate	Indifferent	Relatively inappropriate	Totally appropriate	Totally appropriate	Relatively appropriate
Primary schools	Relatively appropriate	Totally appropriate	Totally appropriate	Indifferent	Totally appropriate	Totally appropriate	Relatively appropriate
Secondary schools	Relatively appropriate	Totally appropriate	Totally appropriate	Indifferent	Totally appropriate	Totally appropriate	Relatively appropriate
High school	Indifferent	Relatively appropriate	Totally appropriate	Relatively appropriate	Indifferent	Totally appropriate	Relatively appropriate
Colleges	Totally appropriate	Totally appropriate	Relatively appropriate	Indifferent	Totally appropriate	Totally appropriate	Relatively inappropriate
Small universities	Totally appropriate	Totally appropriate	Totally appropriate	Totally appropriate	Indifferent	Totally appropriate	Totally appropriate
Great universities	Totally appropriate	Totally appropriate	Totally appropriate	Totally appropriate	Relatively inappropriate	Relatively appropriate	Totally appropriate

Resources: Bahreini, 1998: 197

Table 7: evaluating capacity matrix of IbnSina Secondary School

physical divisions of the city / educational levels	Neighboring units	Sub-neighborhood	Neighborhood	Regions	City	Areas	Country
Standard	Relatively appropriate	Totally appropriate	Totally appropriate	Indifferent	Totally appropriate	Totally appropriate	Totally appropriate
The studied case	Relatively appropriate	Totally appropriate	Totally appropriate	Indifferent	No performance	No performance	No performance

Resource: Bahreini, 1998: 197

4. Dependency matrix

To obtain the confidence with favorable proximity with dependent users and being far from non-dependent and annoying users, the users which enjoy favorable distance and those which are not favorable in terms of distance are investigated (table 8).

Schools, for presenting optimal services are dependent on the following complementary users:

a. Public green spaces

b. Cultural institutes such as library, cultural canons, etc.

c. Small playground and sports fields

d. Proximity to residential textures [10].

Schools, for presenting optimal services, should avoid proximity with the following users and observe required distance from them for reducing their effects:

    a. Air pollutants (industries, terminals, etc.)

    b. Noise pollutants (highways, airports, railways, etc.)

c. Environmental pollutants (Sewage, slaughterhouses, farms, cemeteries, hospitals, etc.)

d. Direct relations with entrance and exit of streets, junctions, squares, and high traffic networks [7].

The status quo of the studied case in terms of proximity is presented in table 8.

Table 8: evaluating dependency matrix in IbnSina School

Non-dependent and annoying users				Dependent users				Indices
Main streets	**Environmental pollutants**	**Noise pollutants**	**Air pollutants**	**Residential**	**Sports**	**Cultural**	**Green spaces**	
Totally inappropriate	Totally inappropriate	Totally inappropriate	Totally inappropriate	Totally appropriate	Totally appropriate	Totally appropriate	Totally appropriate	**Standard**
Totally appropriate	Totally appropriate	Relatively appropriate	Totally appropriate	Totally appropriate	Totally inappropriate	Totally inappropriate	Totally inappropriate	**case**

CONCLUSION

By results obtained from evaluating matrices, it can be judged about the general statuses of users and in case which a user is totally incompatible, unfavorable, inappropriate, or non-dependent, the studied user should be changed and in case of enjoying relatively compatible, favorable, appropriate, and dependent conditions, on should try to eliminate incompatible, unfavorable, inappropriate, or non-dependent conditions (table 9 is related to the evaluating of the case of IbnSina School in the four matrices).

    1. The results of compatibility matrix indicate the compatibility of the four

indices of the evacuated five indices (80%) in case of usersneighboring this user and an indifferent index (20%) to the studied user.

2. The results of favorability matrix indicate 75% of total favorability (6 indices of 8 ones) and 25% of relative favorability in this user.

3. The results of capacity matrix indicate 50% of total appropriateness, 25% of relatively appropriateness, and 25% of indifference in this user in terms of observing capacity criteria.

4. The results of dependency matrix indicate 12.5% of total appropriateness, and 37.5% of total inappropriateness in terms of dependent users, and 12.5% of total appropriateness and 37.5% of relatively appropriateness in terms of being far from non-dependent users.

Table 9: the results of evaluating the studied case (IbnSina School) in four mention matrices

Matrix type		Possible status of a user	The status of the studied case	The status of the studied case/ percent
Compatibility		Totally compatible	4	80
		Relatively compatible	0	0
		Indifferent	1	20
		Relatively compatible	0	0
		Totally incompatible	0	0
The number of studied variables			5	100
Favorability		Totally appropriate	6	75
		Relatively appropriate	2	25
		Totally unfavorable	0	0
		Totally favorable	0	0
The number of studied variables			8	100
Capacity		Totally appropriate	2	50
		Relatively appropriate	1	25
		Indifferent	1	25
		Totally inappropriate	0	0
		Totally inappropriate	0	0
The number of studied variables			4	100
Dependency	Dependent matrix	Totally appropriate	12.5	**12.5**
		Totally inappropriate	37.5	**37.5**
	Non-dependent matrix	Totally appropriate	37.5	**37.5**
		Relatively appropriate	12.5	**12.5**
The number of studied variables			8	100

SUGGESTIONS

1. Authorities of planning should change urban land users, producing users (gardens) neighboring educational users into green spaces or one of the users which are dependent on educational user. Accordingly, the deficits of the favorability matrix and dependency matrix can be eliminated.

2. Authorities of educational user should revise the performance domain of this user and by making it appropriate with the maximum of favorable performance, eliminate its deficits regarding capacity matrix.

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