

**FUNCTIONAL ANALYSIS  
OF THE EXISTING SCHOOL BUILDINGS  
IN THE RURAL SETTLEMENTS OF THE CITY OF NIŠ**

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**Abstract.** *Criteria for evaluation of the existing school buildings registered in the rural settlements of the city of Niš have been formed, by defining the relevant parameters for evaluation from different aspects, such a conditions at location, functional-organizational and architectonic-engineering characteristics of the buildings.*

*On the basis of the established criteria and the formed data base, which consists of the systematized documentation about the existing buildings, the research that had to discover the extent of presence of certain organizational units in the existing village school buildings and the ways of their functioning was conducted. The results of this research have been presented in this paper.*

## 1. INTRODUCTION

The present status of the rural areas in the territory of the city of Niš indicates that it is necessary to bring a set of clearly defined measures for taking concrete action in order to enable their sustainable development.

In the village revitalization process, the youth and their families are the key issue. Survival of young families, their enlargement, safe and secure life with good prospects in the village are possible if the necessary environment in the social life is provided for them (among other things), where the cultural contents, and especially the education of children are the fundamental preconditions.

The concrete programs and measures for the improvement of conditions of primary education of children in the rural areas is possible to define only on the basis of precisely determined status of the existing village school buildings. Forming the list of criteria for their evaluation, makes a work on the valorization the concrete existing school facilities possible. On the basis of the established criteria and the formed data basis, which consists of the systematized documentation about the existing buildings, the research of the functional-organizational characteristics of the village school buildings was conducted.

## 2. FUNCTIONAL-ORGANIZATIONAL CHARACTERISTICS OF VILLAGE SCHOOL BUILDINGS

The specific village conditions significantly affect all the aspects of the educational process in the primary schools and so define the space where it takes place. That is the reason why the village school buildings significantly differ from the city ones, for they are built and made to function in accordance to the conditions and requirements characteristic for this sort of environment.

In respect to the functional organization, the village school buildings can be investigated from several aspects.

The following ones are the most important:

- 1 – typical capacity,
- 2 – space organization concepts and
- 3 – functional structure of village school buildings.

**2.1. Typical capacity** of village school buildings are determined by the primary conditions of the village population, where the decisive factor is the relation of the number of pupils and the required space intended for them.

The village school capacity can be defined in two ways, in respect to the

- number of floors of the building and
- number of classrooms.

The number of floors of village school buildings in the engineering-architectonic terms is directly related to the ability to accommodate all the needed contents at a ground level or at multiple levels.

In respect to the number of floors, village school buildings can be:

- ground level or
- multiple level buildings.

The ground level schools are typical for the villages with such number of school age children, that teaching and school space can be organized in one,

ground level, and that at the same time the site chosen for the school building meets the necessary requirements and is of sufficient surface area.

The multiple level buildings usually exist in large and well-developed villages with a lot of school age children which require larger spatial capacity of a school building, which is in terms of engineering and architecture most cost-efficiently solved by construction of multiple floors. It is most frequently the most favorable solution in terms of the surface area occupied with a building, in relation to the total surface area of the provided location.

Size of school buildings is most directly determined by the number of pupils, expressed through the required capacity of the teaching premises, among which the basic and the most necessary ones are classrooms.

In respect to the number of classrooms, the typical and the most frequent capacity of village schools is:

- 1 classroom
- 2 classrooms and
- several classrooms.

The case with one classroom comprises those smallest schools in the villages with a low number of children of school age, when children of different grades stay in the same

room. The most frequent case, in our conditions, is the one with village schools of 2 to 3 classrooms, while only the largest and most densely populated village environments demonstrate a need for a multi-classroom schools.

**2.2 Space organization concept** in village schools, as one of the parameters in relation to which it is possible to determine the individual, mutually different types, is conditioned above all by the capacity of a building, and then by the economic requirements in terms of economy of design and construction, primarily when the dimensioning of common and communication space is in question. Type of school space organization is based on establishing of interrelations of teaching and common space, that is on the way the classrooms are grouped.

The organizational concepts of primarily teaching and educational space for the conditions in villages, can be limited to two basic types, and those are:

- linear and
- hallway type.

The linear type of grouping of classrooms comprises the arrangement of classrooms in line along the corridor communication. Such concept is both valid for low and high capacity schools, though a large number of classrooms brings about the longer corridors, while at low number of classrooms, the length of the communication is more favorable.

The hallway type of village schools is created by the organization of classrooms along the rim of a common, most frequently, entrance hall. It is not possible to adequately group a large number of classrooms in this way, so this principle is applied mostly in the village schools of low capacity.

**2.3. Functional structure** of village school buildings can be different and it varies, primarily, depending on the size of the school. Development status of a village and its population, determine the number of school-age children, so that in relation to the needed capacity, the complexity of the school building structure can be different.

In respect to the type, the basic differentiation of contents in a school building is:

- school and
- special contents with separate entrance.

School contents are of the primary character and they are a dominant group, which combines several types of spaces intended for the pupils, teachers and other staff. In respect to the type of these spaces, village schools may comprise:

- classroom space,
- office premises,
- sanitary space,
- library space,
- dining room with a kitchenette,
- pre-school children premises,
- gymnastics facilities,
- health-care premises and
- auxiliary premises.

The classroom group is the basic type of space whose number and surface area are dimensioned according to the number of pupils, and it requires a good insulation and most favorable orientation, which is south, and possibly east.

The office premises are also, an obligatory part of a village school and they are intended for the teaching staff (for instance a staffroom), and for other administrative personnel, depending on the number of employees.

For both of these groups, the separate, accompanying sanitary premises are designed.

The library space in village houses can be present to various extent, or even omitted, if the issue of the children's library is solved within some other cultural content in the village.

The dining room with a kitchenette in the village school buildings is designed, when this is justified in respect to the school capacity and the number of pupils. Very small village schools can have only the makeshift kitchenette.

The pre-school children premises with the accompanying sanitary premises and coat-room are built only in respect to the concrete requirements of the village.

The gymnastics facilities, the space necessary for physical education in the winter season, is present in the high capacity village schools, and its construction depends solely on the financial might to realize this investment. By constructing the gymnastics hall, the village acquires a hall which can be used for other sport activities or for recreation of the denizens when there are no teaching activities in the hall, as well as for various cultural manifestations of the village. Village schools of low capacity usually do not have the gymnastics facilities.

The health care premises are present in village school buildings, also depending on the size of a school, number of pupils and the general way in which the children health care is organized in the village. When there is a general practitioner and a dentist in a school, it can be a way to provide a more adequate children health protection in respect to the work of the regular village outpatient clinics.

The auxiliary premises are a part of each school building as various sorts of store-rooms for the different kinds of material and chemicals. It is necessary that any, even the smallest village school, possess at least one room like this.

The special contents with separate entrance are neither obligatory nor integral part of village school buildings, but they can be, and very often there is a reason for them to exist. In most cases, it is not economically viable to build individual buildings for every public function of a village, because those functions are of such extent that it is more appropriate to organize them in the school auxiliary premises. Those premises do not obstruct the basic educational activities of the school, because they are present in a school only in a physical sense, and their function is absolutely independent, and that is why they have a separate and distanced entrance.

Those can be:

- teacher's flat,
- local administrative office,
- outpatient clinic.

The flat of a teacher was traditionally build within a school building in our milieu, in it has still been built today, but only when there is a need for that.

All the other uses, such as the local administrative office, outpatient clinic, and possibly some other, depend on the concrete requirements of every individual village.

### 3. ANALYSIS OF THE STRUCTURE OF EXISTING SCHOOL BUILDINGS IN THE TERRITORY OF THE CITY OF NIŠ

The existing built up school buildings in the territory of the city of Niš, represent a material fundament this research has been based on, and it is the subject of conducted analyses.

Functional organization of village school buildings is researched in respect to three most important groups of aspects, and those are the typical capacity, space organization concepts and functional structure of village school buildings.

The recorded and systematized data referring to the presence of certain spaces and functional units in the village schools buildings in the territory of the city of Niš, are given in the following table.

Table 1. – Structure of school buildings in the villages in the territory of the city of Niš

No	Name of a village	U	P	K	B	I	O	FS	L	WC	S	M
	MUNICIPALITY NIŠKA BANJA											
1	BANCAREVO	-	-	-	-	-	-	-	-	-	-	-
2	G. STUDENA	4	1	2	-	-	2+2	-	-	1+1	-	-
3	D. STUDENA	4	v	2	-	-	2+2	-	-	1+1	-	-
4	JELAŠNICA	3+4	1	5	1	-	2	-	-	16	-	-
5	KUNOVICA	-	-	-	-	-	-	-	-	-	-	-
6	LAZAREVO S.	-	-	-	-	-	-	-	-	-	-	-
7	OSTRVICA	1	-	1	-	-	1	-	-	-	-	-
8	PROSEK	2	-	1	-	-	1+1	-	-	1+1	-	-
9	PRVA KUTINA	2	-	1	-	-	-	-	-	2+2	1	-
10	RAVNI DO	-	-	-	-	-	-	-	-	-	-	-
11	RAUTOVO	-	-	-	-	-	-	-	-	-	-	-
12	RADIKINA B.	-	-	-	-	-	-	-	-	-	-	-
13	SIČEVO	4	-	2	-	-	-	-	-	-	-	-
14	ČUKLJENIK	1	-	1	-	-	-	-	-	-	-	-
15	KORITNIK	-	-	-	-	-	-	-	-	-	-	-
	MUNICIPALITY NIŠ											
16	BERBATOVO	1	-	2	-	-	-	-	-	-	1*	-
17	BERČINAC	-	-	-	-	-	-	-	-	-	-	-
18	BUBANJ SELO	1	1	-	-	-	-	-	-	-	-	-
19	BRENICA	2	1	1	-	1	2	1	-	1+1	-	-
20	VELE POLJE	3	-	1	-	-	-	-	-	-	1	-
21	VRELO	3	-	1	-	-	1	-	-	1+1	1	-
22	VRTIŠTE	2	1	1	-	-	-	-	-	1+0	-	1
23	VUKMANOVO	2	-	1	-	1	2	-	-	1	-	-
24	GABROVAC	5	-	2	1	-	3	-	-	3+3	-	-
25	G. TOPONICA	2	-	1	-	-	1	-	-	-	-	-
26	G. TRNAVA	1	-	1	-	-	-	-	-	-	1	-
27	G. MEĐUROVO	2	1	1	-	-	1	-	-	2+2	-	-
28	G. KOMREN	1	-	1	1	-	-	-	-	-	1	-
29	G. MATEJEVAC	4+4	-	2	-	-	1	1	-	-	-	-
30	D. MATEJEVAC	2	1	1	-	-	1	-	-	2+2	-	-
31	D. TOPONICA	-	-	-	-	-	-	-	-	-	-	-
32	D. TRNAVA	4+7	-	2	1	1	1+3	-	-	-	1	-
33	D. VLASE	-	-	-	-	-	-	-	-	-	-	-
34	D. MEĐUROVO	2	1	1	1	-	1	-	-	2+1	-	-

No	Name of a village	U	P	K	B	I	O	FS	L	WC	S	M
35	JASENOVIK	2	-	-	-	-	1	-	-	-	-	-
36	KAMENICA	2+4	-	4	1	1	-	1	-	6+6	-	-
37	KNEZ SELO	2	1	1	-	1	-	-	-	-	-	-
38	KRAVLJE	2	-	1	-	-	-	-	-	-	1	1
39	KRUŠĆE	2	1	1	-	-	2	-	-	1+1	-	-
40	LALINAC	2	-	1	-	-	-	-	-	1+1	1	-
41	LESKOVIK	1	-	1	-	-	3	-	-	-	-	1*
42	MALČA	4	1	2	-	-	5	1*	-	2+2	1	-
43	MEZGRAJA	2	-	1	-	1	1	-	-	1+1	-	-
44	MILJKOVAC	4	-	4	-	-	-	1*	-	-	-	-
45	MRAMOR	1	-	-	-	-	1	-	-	2+1	1	-
46	MRAM. POTOK	2	1	1	-	-	-	-	-	3+3	-	-
47	OREOVAC	2	1	1	-	-	-	-	-	-	-	-
48	PALIGRACE	1	-	1	-	-	-	1*	-	-	1*	-
49	PALJINA	1	-	1	-	-	1	-	-	1+1	-	1*
50	PASJAČA	2	-	1	-	-	-	-	-	-	1	-
51	POPOVAC	3	-	1	-	-	-	-	-	-	-	-
52	RUJNIK	1	-	1	-	-	2	-	-	1+1	1	-
53	SEČANICA	3	-	1	-	1	3	-	-	2+2	-	-
54	SUPOVAC	1	-	1	-	1	1	-	-	1+1	-	-
55	TRUPALE	4+3	1	4	1	1	4	-	-	4+4	-	-
56	HUM	6	-	1	1	-	1	1	-	1+1	-	-
57	CERJE	2	-	1	-	-	1	-	-	2+1	1	-
58	ČAMURLIJA	1	-	-	-	-	-	-	-	-	2	-
59	ČOKOT	11	-	4	1	1	3	1	1	4+4	-	-
60	SUVIDO	2	1	1	-	-	2	-	-	1+1	-	-
61	BRZI BROD	4	-	1	-	-	-	-	-	2+2	2	-
62	G. VREŽINA	4	-	1	-	-	3	-	-	2+2	1	-
63	D. VREŽINA	2	-	1	-	1	-	-	-	1+1	-	-
64	MEDOŠEVAC	9+6	1	2	1	1	-	-	-	10	-	1
65	NOVO SELO	2+3	1	1	1	1	3	-	-	4+4	-	-
66	PASI POLJANA	2	-	1	-	-	-	-	-	1+1	-	-
67	D. KOMREN	1+2	1	2	1	-	5	-	-	2+2	-	-

Legend: U–number of classrooms, P–pre-school classroom, K–offices, B–lybrary, I–dining room, O–store room, FS–gymnastic premises (\*non-assigned premises), L–doctor, WC–sanitary premises, S–teacher's flat (\* alternative use), M–local administrative office (\*other).

The schools in the following villages do not work: Bancarevo, Donja Studena, Koritnik, Kunovica, Lazarevo Selo, Radikina Bara and Ravni Do in the Niška Banja Municipality; and in the territory of the Niš Municipality in the following villages: Rautovo, Berčinac, Donja Toponica and Donje Vlase. In those villages the schools could not survive due to an insufficient birth rate. There are either no school age children, or their number is low so they attend the schools in the neighboring villages and commute daily. Some villages have been deserted (Koritnik, Rautovo, Manastir), and there other that are destined to be deserted because there are only a few very aged households in them. Thus, out of total number of villages, in 11 of them there are no active schools, which is 16%.

An analysis of the existing village schools in respect to their capacity have shown that in the Niš rural area there is the highest number of small school buildings with a capacity of up to 3 classrooms. There is 69%, of such schools, that is 39 out of total of 56 schools which have been operating. Of them, there is most of the very small schools with only one

classroom, 22 of them, while 13 schools have 2 classrooms and 4 schools with 3 classrooms. 4 and more classrooms can be found in 31% of schools, which is 17 buildings. Out of this number 7 schools have 4 classrooms, while 10 schools have 5 and more classrooms. Among the schools with multiple classrooms, the most of them have multiple floors too, which comprises 8 of them. Two schools, in Gabrovac and Hum villages, have 5 and 6 classrooms on the ground level, with a number of classrooms in an old part and a number in the newly added part of the building. A classroom with a **preschool group** is present in 34% of schools, that is 19.

As to the **administration premises**, the largest number of schools has at least one or two offices, primarily those that function as a staff office and is intended for teachers. In the case there are two offices, the other one is often a director's office, and in some cases it is a preparatory room (for teaching) with teaching material and aids or steward's office (supply room). Out of the total number of analyzed village schools, 86% are the schools with one or two offices, which is 48 schools. Only 10 schools have two offices, while as much as 38 schools have only one staff office. 4-5 offices are present in 5 schools, which is 9% of the number of schools in active service.

**Library** as a separate space exists in 12 village schools, that is, they are present in 21% of those schools. It is most often a small room for storing and lending books, with no special space for a reading-room.

**Dining premises** are present in 13 village schools, which is 23% of the number of schools in function. These spaces occur in three varieties, as a makeshift kitchenette, dining room, or kitchenette with dining room.

A lot of different kinds of **auxiliary premises**, are present, general-purpose storerooms to heating fuel storages. So, 39% of the buildings, that is 22 schools are without any auxiliary rooms, and in 14 there is at least one such room, while 20 schools have 2-3 auxiliary rooms.

As to the **gymnastics facilities**, there is one in only 5 schools, which is 9% out of total number of active schools. Three schools, in the villages of Malca, Miljkovac and Paligrace have the physical education teaching in classrooms or similar space within buildings, which is larger and assigned only for this sort of activity, but is inadequately equipped (no dressing rooms) because it was not designed for the specific needs of this sort of education. Construction of a complete gymnastic facility compound is a large investment, for which reason only the schools in larger villages have it, and they are relatively new.

**Health care** is neglected as a separate service, and only in Cokot village there is a dentist in the school building.

**Sanitary premises** do not exist within the school building in 38% , that is 21 of the villages. In the remaining 35 villages where the school works, the sanitary premises range between one compartment, separately for boys and girls, and a compartment for a teacher, and the multi level buildings with several sanitary premises.

In 29% of the villages, that is 16 schools, there is a **teacher's flat**, in the same building but with a separate entrance. Those are mostly the old low capacity schools, which reflects the fact that traditionally, a teacher would be assigned to a village, and would live in/by the school. Nowadays, those flats are used in the same way when there is a need for this, or there is a janitor in them in some cases. In only two cases, those flats are used in some other way, as home for refugees in the village of Berbatovo or as auxiliary premises

in the village of Paligrace. The high capacity villages have several teacher, and were built in recent times, mostly without this kind of flats.

There are other **non-educational activities**, in the schools, but are not very frequent. In 5% of the villages, that is 3 schools with separate entrance there is a local administrative office. In Paljina village, at the ground level, there is a general store, and on the floor there is a school classroom, while in Leskovik village, there is occasionally a disco-club in the basement.

#### 4. CONCLUSION

Revitalization of village area calls for solution of the issue of the youth and their families. In an effort to accomplish a higher quality of life in the village, the school age children education and the problem of the built up school buildings, are the dominant ones.

By setting the criteria for evaluation of the existing school buildings, their further categorization along all the relevant parameters is enabled. An analysis of the functional organization and structure of the village schools has demonstrated that the dominant group in the territory of the city of Niš consists of the old buildings, with low capacity, 1-2 classroom, as much as 63% of the total. In all those buildings, there is most frequently a staff office (in 66%) of the schools and the necessary sanitary facilities.

The makeshift library and kitchenette exist in 21-23% of schools, and in 6% of active schools, there are also the auxiliary store rooms. Most of the village schools, as many as 86% do not have the premises for physical education. The dentist is present only in the Cokot village school, and out of the group of special contents with separate entrance, 29% of schools have a teacher's flat, while the other contents are not present in significant extent.

The status of school building and scope of existing content in the analyzed village schools indicate a necessity of a wide social action and concrete investments in their restoration and improvement.

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## **FUNKCIONALNA ANALIZA POSTOJEĆEG ŠKOLSKOG FONDA U RURALNIM NASELJIMA NA PODRUČJU GRADA NIŠA**

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*Kriterijumi za evaluaciju postojećeg fonda seoskih školskih zgrada evidentiranih u ruralnim naseljima na području grada Niša, formirani su definisanjem relevantnih parametara za vrednovanje sa aspekta uslova lokacije, funkcionalno-organizacionih i arhitektonsko-gradjevinskih karakteristika objekata.*

*Na osnovu uspostavljenih kriterijuma i oformljene baze podataka, koju čini sistematizovana dokumentaciona gradnja o postojećem gradjevinskom fondu, obavljeno je istraživanje u pogledu zastupljenosti pojedinih organizacionih celina u postojećim seoskim školskim zgradama i u pogledu načina njihovog funkcionisanja. Rezultati tog istraživanja prezentirani su u ovom radu.*