

“HYGIENIC CONSIDERATION OF THE SCHOOL SCHEDULE IN DIFFERENT COMMUNITIES OF BOTOSANI COUNTY”

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Abstract: The Organisation of the education process must take into account the ordinary and weekly oscillations of the labour capacity of the pupil. The investigation of the school schedule was realized in school collectivities from the county inside a common action in the 8 counties of Moldavia in the school year 1995-1996 and inside an action at national level and in the territory of Moldavia Republic in the school year 2001 - 2002. The frequency of the classes correctly elaborated is reduced, in all the school collectivities taken into study with a maximum of 1/5 schedules compiled in a right manner and the situation is more and more unfavourable in the second phase of study. The pupil's body is in this way exposed to non physiological solicitations at school and it is necessary the sustained intervention of the specialists in the preventive medicine for the remediation of these aspects.

Cuvinte cheie: proces
instructiv educativ,
orar școlar,
suprasolicitare

Rezumat: Organizarea procesului de învățământ trebuie să țină seama de oscilațiile zilnice și săptămânale ale capacității de muncă a școlarului. Investigarea orarului școlar s-a realizat în colectivități școlare din județ în cadrul unei acțiuni comune în cele 8 județe ale Moldovei în anul școlar 1995-1996 și în cadrul unei acțiuni de anvergură la nivel național și în teritoriul Republicii Moldova în anul școlar 2001 - 2002. Frecvența orarelor corect întocmite este redusă, în toate colectivitățile școlare luate în studiu cu cel mult 1/5 orare întocmite corespunzător și situația este și mai nefavorabilă în etapa a doua de studiu. Organismul elevului este astfel expus unor solicitări nefiziologice la școală și este necesară intervenția susținută a specialiștilor în medicina preventivă pentru remedierea acestor aspecte.

INTRODUCTION

The education process requires the nervous system and the function of knowledge through its activity preponderant intellectual but, in the same time, it represents the natural frame of the adequate development if the relationships between children and their fellows and also the formation frame of the personality of the future adult. (1) The activity has positive effects, stimulatory ones, only if the intensity, the duration and the conditions in which they develop are adequate to the capacity of adaption at effort of the young human body. Recognized by some authors or contested by others, the school tiredness is a phenomenon whose nature is not yet sufficiently. (2) The apparition of the phenomenon of tiredness is reflected in modifications of the work capacity, defined through index of quantity and quality of the executed work. In function of the type of the work, the physiological modifications determined by these are more intense in the systems, organs or tissues more required. So, because in the educative instructive activity the effort is preponderantly intellectual, the maximum requests interest in specially the nervous system, that neurosensorial and neurovegetative. (7, 9) The main functional systems of the body, including among these also the succession of the periods of activity with increased efficiency and those of recreation are closely connected by the biological nictemeral rhythm of the body. (7, 11) That's why, in order to have a right efficiency, the pupil's labour must be organized – as period and intensity – according to his biological rhythm so that the periods with intense school solicitations correspond to those periods in which, physiologically, the capacity of working and his efficiency are the best. (10) In contrary, there are found significant reductions of the labour capacity with the apparition

of the phenomenon of physiological tiredness alarm sign that announces the apparition of the exceeding of the capacity of effort adaptation and the necessity of the recreation or, in serious cases – of the phenomenon of pathological tiredness, of the breakdown, but also with the possibility of the school fiasco. (4)

Different occasional studies, realized by specialists in school hygiene in different collectivities have also approached the composition of the school program, being noticed weaknesses of different types. In base of the anterior experiences, at which there are annexed the knowing of the conditions in which it is developed the education process, the existence of 2-3 turns in the same school, the existence of the subjects named “optiona”, professors who run to and fro, it was issued the hypothesis that there could be – even in the rural ambiance – even in schools with recognized results – schedules executed in a wrong manner – which do not respect the physiological curve of effort (ordinary and weekly) of pupil's body. More than this, in rural localities near an urban centre, where the teachers run to and fro, the school schedule is also done in function of the schedule of transport means towards and from the city. In rural activities at a distance from the town, it may be presumed that the teachers are local, more settled, so the schedule could be done more appropriately.

THE AIM OF THE STUDY

With these hypothesis, inside an action in the 8 counties of Moldavia, methodologically coordinated by Institute of Public Health Iași was developed a full study for the hygienic consideration if the schedule in school collectivities from Botosani city in the 3rd semester if the school year 1994-1995, which was extended subsequently in the 1st semester of the

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school year 1995-1996 and also in territorial collectivities from rural ambience.

In the school year 2001-2002, the study was taken again inside an activity of national level, included in the National Program of Health in relation with the Ambience, under the coordination of the specialty collectivity of Institute of Public Health Iași, in order to recognize these aspects in new conditions and demands of the education process from this period. (8)

This national study extended also in school collectivities from Chisinau and in the rural ambience of Moldavia Republic, with the collaboration of the specialty collectivities from University of Medicine Chisinau. (8)

The presentation of the results comparative to these two studies from Botosani county in the general context of the synthesis at national level, and also comparatively with the situation from the schools from Chisinau represented the objective of this work.

MATERIAL AND METHODS

In the realization of the studies, in the urban and rural ambience – the work phases were the followings:

- the nominalization of the study collectivities: town –county residence, some near rural localities and some far away from the urban centre;
- knowing the school network from the localities nominated on types of school, with the number of parallel classes and the number of pupils;
- the calculation of the classes samples for the analysis of the school schedule.

The sample was established by IPH Iași, being calculated through the probabilistic technique (5); it resulted:

- A number of gymnasium classes that represents 4 % from the total of gymnasium classes from the town –county residence;
- A number of high school classes that represents 10 % from the total of high school classes.

For the rural ambience, it was considered the analysis of the schedules from a minimum of 20 gymnasium classes and 20 of high school classes (there where they exist) from the 2 types of rural localities : near and far away from the city.

In base of this methodology, in Botosani county, in the study from the years 1995-1996 there were established for the investigation:

- gymnasium - 16 classes;
- high school - 33 classes;
- near localities - 22 classes: Bucecea, Orășeni Deal, Băiceni, Mănăstirea Doamnei;
- distant localities - 24 classes: Rădăuți Prut, Păltiniș, Ripiceni, Orășeni, Ștefănești.

For the national study, from the years 2001-2002, it was done an empirical sample of 2-4 % from the total effective of gymnasium and high school classes from the city, but not less than 10 classes for each study year.

There were investigated:

- in Botoșani city- 143 gymnasium classes and 99 high school;
- in near rural localities - 38 classes: Poiana, Joldești, Icușeni, Vorona;
- in distant rural localities - 46 classes: Miorcani, Rădăuți Prut, Rediu, Ripiceni, Suharău, Lisna, Oroftiana, Smârdan, Ștefănești.

In Moldavia Republic, the study was realized according to the mentioned methodology, and so there were

investigated:

- in Chișinău city - 66 gymnasium classes and 52 high school classes;
- in Hâncești city – 24 gymnasium classes and 11 high school classes;
- in rural ambience - 9 gymnasium classes and 8 high school classes.

The schedule was considered from the point of view of respecting the physiological curve of ordinary and weekly efforts, using for the valuation a scale of difficulty degree of the objects to be studied, offered by specialty literature (3, 6), which notes the tiredness coefficient of the objects in this way: Mathematics (11), Physics, Chemistry(10), Foreign languages(9), History(8), Maternal language(7), Geography, Biology (6), Sports(5), Practical activities(4), Technique design(3), Artistic design(2), Music, Supervision(1).

The schedule's evaluation was realized from the point of view of the frequency or of the percentage from the total of the schedules which respect the ordinary and weekly physiological curve and as a distribution of the schedules upon the curve type: correct, inversed, descendent, ascendant, oscillating.

RESULTS

The comparative analysis of the schedules in Botosani city in the two phases of the study show the following results:

a) number of classes investigated in Botosani county;

The ordinary curves of the schedules (number of classes x 5 course classes) totalized in the first phase 245 analysed schedules and in the second phase 1210 schedules; in the rural ambience were analysed 230 schedules in the first phase and 375 in the second phase. (tab. 1)

Table no. 1. Number of curves of ordinary schedules analysed in the two studies in Botoșani county

		1994-1996	2001-2002
Botosani city:	gymnasium	80	715
	high school	165	495
Near rural:	gymnasium	110	145
Distant rural:	gymnasium	120	230
Total daily schedule:		475	1585

b) the distribution of the schedules upon the type of daily curve in Botosani county;

In the phase from the years 1994-1996, their distribution upon the type of schedule showed the followings:

- In gymnasium - only 1/5 from the curves were correct, it dominated the oscillating aspect at more than 62 % from schedules; (fig. 1)
- in high schools – also, in majority there are oscillating curves (almost 60 %), and the percentage of the right schedules is more reduced than in gymnasium; (fig. 2)
- Per total, in the city there were 17 % practical schedules, 60 %, oscillating and the rest of them, in different proportions at the two cycles of education were 13 % inversed and about 5 % ascendant or descendent.

In the years 2001-2002, resulted the following distribution upon the type of daily curve:

- At gymnasium – appreciatively 12 % correct schedules and almost 70 % oscillating ones; (fig. 1)
- At high school - almost 11 % correct schedules and are dominating also, those oscillating, at over 70 % from classes; (fig. 2)
- Per total, in the city there were almost 1/10 correct schedules and in majority, over 70 % were oscillating. (fig. 1)

Figure no. 1. The distribution of the schedules upon the type of the daily curve at gymnasium classes from Botosani city, phase 2001-2002, comparatively with the year 1994-1996 (% from total analysed)

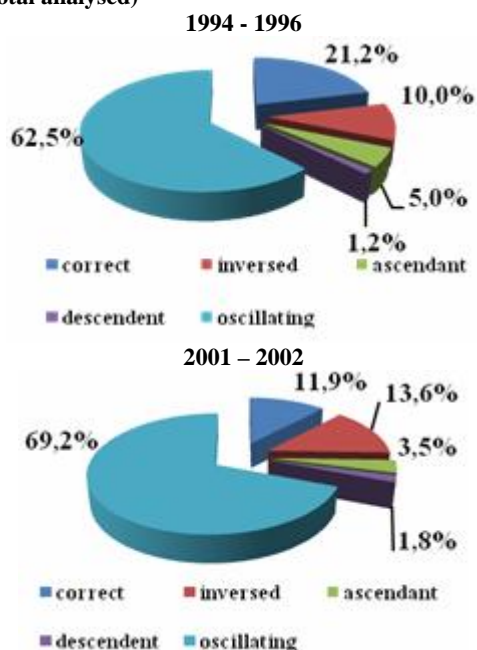
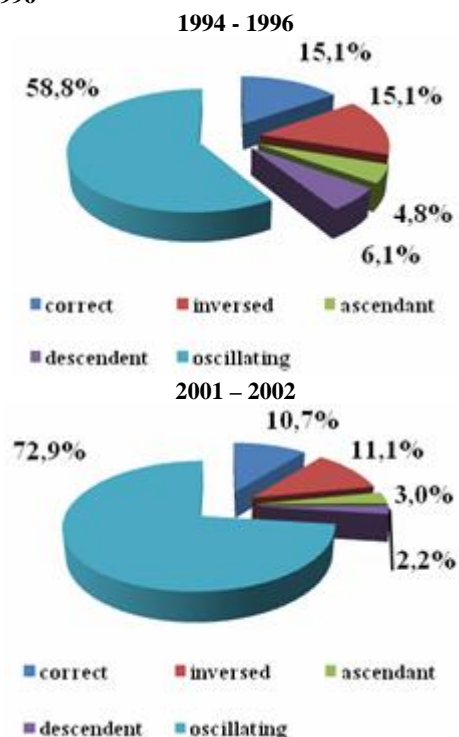


Figure no. 2. The distribution of the schedules upon the type of the daily curve at high school classes from Botosani city in the phase 2001-2002, comparatively with the year 1994-1996

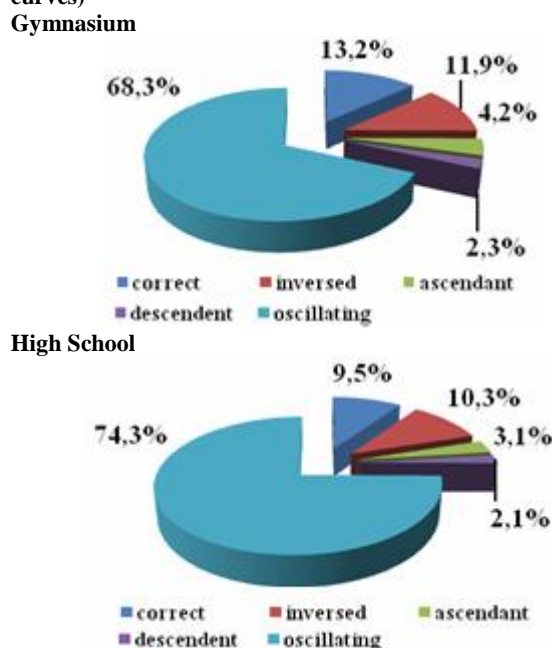


In consequence, in a period of 5 years, the frequency of the schedules correctly done, enough reduced in the first phase, becomes more unfavourable in the second phase of study, especially at gymnasium, at which it reduced with approximately a half.

c) the analysis of the daily schedules in Moldova and at national level;

In the first phase, in Moldova, there were analysed schedules from 328 gymnasium classes (1640 curves) and 342 high school classes (1710 curves); there were resulted 21,6% correct schedules at gymnasium and at high school 12,4% correct schedules, the situation being in this way, scarcely more favourable in Botosani county. In 2001-2002, at national level, there were analysed the schedules from 2232 gymnasium classes (11160 daily curves) and from 1570 high school classes (7850 curves) resulting a proportion of the right schedules scarcely bigger at national level than Botosani county and a situation scarcely favourable in the county at the high school classes (fig. 3). In both phases, both in Botosani and at national level, the frequency of the correct schedules is more diminished at high school instead of gymnasium classes.

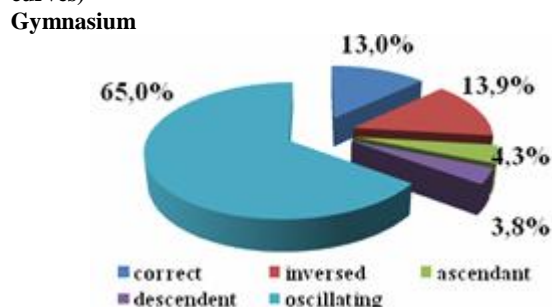
Figure no. 3. The distribution of the schedules upon the type of curve at gymnasium and high school in Romania in the school year 2001-2002 (% from the total daily analysed curves)



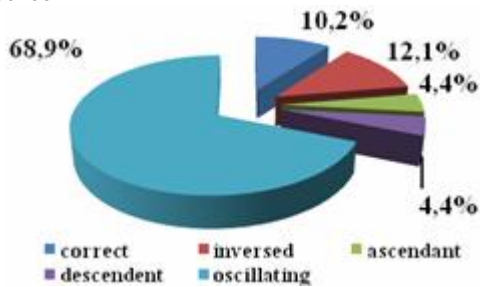
d) analysis of the daily schedules in Chisinau;

The 66 gymnasium investigated classes totalizes 346 daily curves, because 16 classes have education classes also on Saturdays. From the same reason, at the 52 classes of high school there were analysed the 273 daily curves. Their distribution upon the daily curve show similar results, closer to the Romania's situation at national level. (fig. 4)

Figure no. 4. The distribution of the schedules upon the type of curve at gymnasium and high school from Chisinau in the school year 2001-2002 (% from the total of daily analysed curves)



High School



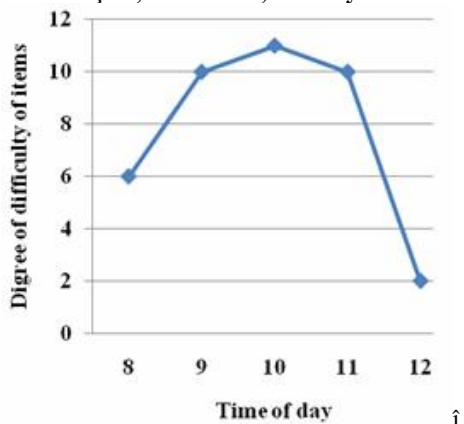
We exemplify in the figure 5 some types of daily

curves:

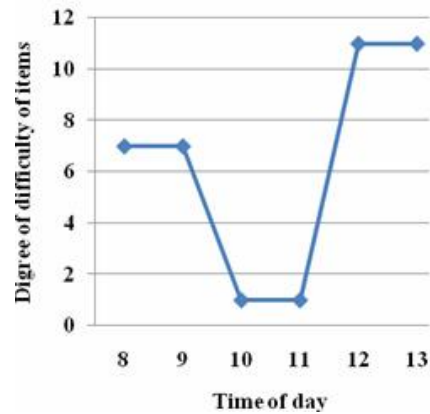
Figure no. 5. Daily curves of different types of schools from Botoşani and Chişinău city and in the school year 2001-2002

Correct schedules

School nr. 8 Botoşani, cl. a V- a E, Monday

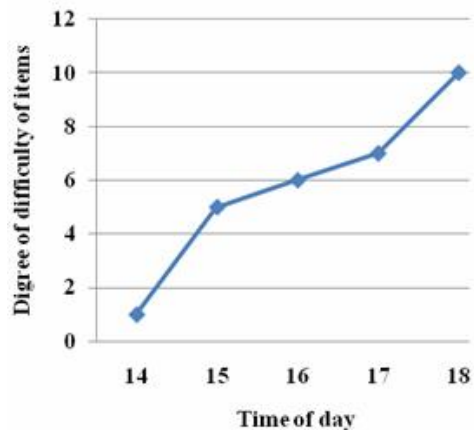


High School „Haşdeu” Chişinău, cl. a IX- a A, Thursday

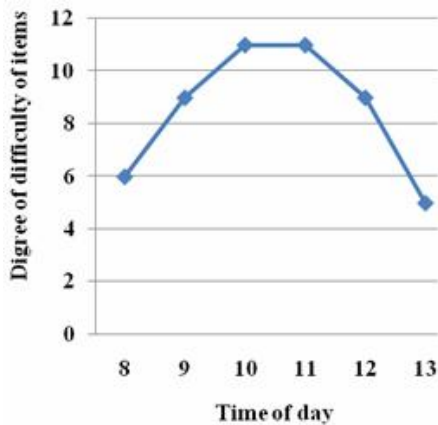


Ascendent schedules

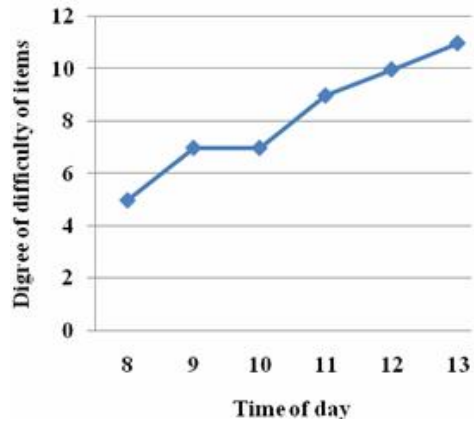
School nr. 8 Botoşani, cl. a VI- a I, Tuesday



High School „Haşdeu” Chişinău, cl. a X- a B, Wednesday

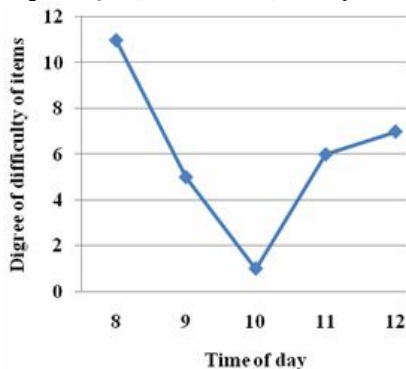


National College. „AT Laurian”, cl. a IX- a D, Friday



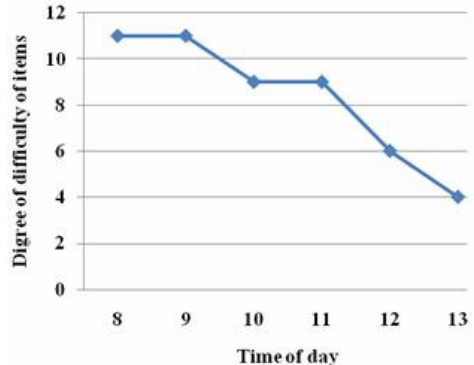
Inversed schedules

School Group Botoşani, cl. a VI- a A, Friday



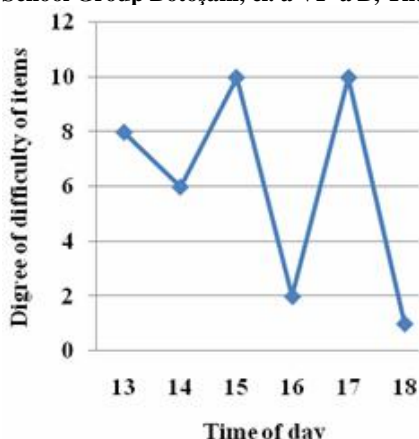
Descendent schedules

High School „Haşdeu” Chişinău, cl. a VIII- a B, Thursday

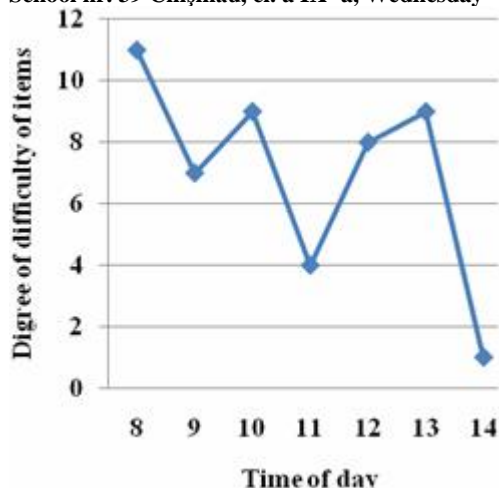


Oscillating schedules

School Group Botoșani, cl. a VI- a B, Thursday



School nr. 39 Chișinău, cl. a IX- a, Wednesday



e) consideration of the weekly schedules;

By adding marking degrees of difficulty for each year, it was considered the aspect of the weekly curve, seeing almost the same aspects, with rare situations of right use of the period from the week (Wednesday) when the efficiency of the labour is higher.

We mention that in the phase 1994-1996, this aspect was not investigated, and at national level in 2001-2002 is mentioned only the frequency of the weekly schedules rightly executed.

In this way, the weekly schedules are made up in a right manner in at most 1/5 cases both in gymnasium and in high school, both in Botosani city and in Chișinău. In Botoșani the frequency of the correct weekly schedules is bigger instead of Romania's situation at national level. In all the situations dominates the oscillating aspect of the weekly curve. (tab. 2)

f) evaluation of the schedules in rural ambiance ;

In the study phase 1994 - 1996, there were analyzed 110 daily curves in gymnasium in the near localities and 120 in the 4 distant localities, resulting the followings:

- The proportion of the right schedules in near localities is bigger in the county instead of Moldova;
- The proportion of the right schedules in distant localities is more little instead of Moldavia situation;
- in the county, the proportion of the correct schedules is more unfavourable in the distant localities, non confirming the hypothesis, while in Moldavia in the near localities, there is a more little percentage of correct schedules. (tab.

3)

Table 3. Number of daily curves analyzed and distributed upon the type of schedule in rural localities from the county comparatively with Moldavia situation (% from the total analysed)

		Botoșani	Moldova
Number of curves analysed in the near activities:		110	915
• from which %:	- correct	19,1%	15,2%
	- oscillating	68,2%	70,6%
	- inversed	9,1%	9,3%
	- descendent	3,6%	4,0%
	- ascendant	-	0,9%
Number of curves analysed in distant localities:		120	1190
• from which %:	- correct	17,5%	18,4%
	- oscillating	67,5%	65,6%
	- inversed	9,2%	9,3%
	- descendent	5,0%	5,3%
	- ascendant	0,8%	-

In the phase 2001-2002, the situation of the correct schedules is also more favourable in the county instead on that at national level in case of the classes from the near localities, but the schedule in the distant localities is correct in more reduced proportion at the county level. (tab. 4)

The comparison between the types of localities does not confirm the hypothesis in Botosani county and at national level, the proportion of the right schedules is very slightly higher in distant localities.

Table 4. Number of daily curves and the distribution upon the type of schedule in rural localities from the county in comparison with the situation at national level (% from the total analysed)

		Botoșani	România
Number of curves in the near localities:		145	5430
• from which %:	- correct	16,5%	12,98%
	- oscillating	64,8%	71,8%
	- inversed	13,8%	10,1%
	- descendent	3,4%	3,2%
	- ascendant	1,4%	1,9%
Number of curves analysed in distant localities:		230	3575
• from which %:	- correct	8,7%	13,3%
	- oscillating	76,5%	73,5%
	- inversed	12,6%	8,8%
	- descendent	1,7%	2,8%
	- ascendant	0,4%	1,6%

In rural ambiance of Moldavia Republic, there were analysed the schedules at 9 gymnasium classes and at 8 at high school classes; having a reduced number of daily curves, the results can be presented only in form of absolute cases, resulting the same aspects: at most 1/10 from schedules are correctly executed:

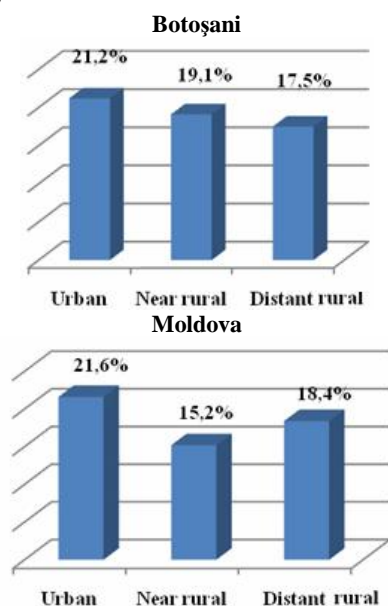
	Gymnasium	High School
Number of daily schedules analysed:	45	40
• schedules:		
- correct	5	4
- oscillating	1	6
- inversed	1	1
- descendent	-	3
- ascendant	38	26

Table no. 2. The distribution of the weekly schedules upon the type of its application in Botoșani, Chișinău and at national level in Romania

	Gymnasium			High School		
	Botoșani	Chișinău	Romania	Botoșani	Chișinău	Romania
Correct	19,6 %	22,7 %	18,7 %	22,2 %	13,5 %	19,3%
Inversed	16,8 %	16,7 %	-	7,1 %	17,3 %	-
Ascendant	2,1 %	-	-	1,0 %	1,9 %	-
Descendent	2,1 %	4,5 %	-	-	-	-
Oscillating	59,4 %	51,5 %	-	69,7 %	67,3 %	-
Monotone	-	4,5 %	-	-	-	-

Comparing these frequencies of the correct schedules in the three types of territorial collectivities, results that in the phase 1994-1996, the composition of the schedule was better supervised in urban area, both in the county and in Moldavia. In distant rural area, in the county, the situation is, contrarily to our hypothesis, more unfavourable, both compared to other territorial collectivities and in Moldavia. In the study phase in 2001-2002, the situation is more unfavourable both in the county and at national level instead of the anterior phase. Between the types of collectivities, in the county it is the most inappropriate situation in the distant rural attended by the urban ambiance. At national level, the frequency of the correct schedules are reduced, being very close on types of collectivities. (fig. 6)

Figure 6. Frequency of the correct schedules in gymnasium classes on types of territorial collectivities in the county and in Moldova in the phase 1995 – 1996 (% from total of analysed schedules) 1994 - 1996



CONCLUSIONS

The activity in the classroom, at courses, is an important part of the education process and that's why, the method of schedule's organization depends in a big part of the school efficiency. The medical prevention services from the field of school hygiene currently realize the surveillance of the schedule, but the first organized action, with unitary methodology was realized in the school years 1994-1996 in all the Moldavia, on collectivities and on number of schools well established.

In the context of a synthesis at the level of the 8 counties of Moldavia, from the total of the schedules analysed,

in Botosani county were analysed:

- in urban area: 4, 9 % from gymnasium schedules; 9,7 % from high school schedules;
- 12,0 % from schedules in near rural localities;
- 10,1 % in distant rural activities.

The results were similar in all the collectivities, both in the county and in Modavia, with little frequencies, of at most 1/5, of the right schedules. An large action of national level, extended also in Moldavia Republic, through the collaboration with specialists from Chisinau was realized for the school year 2001-2002. The results were confirmed on a very great number of investigates schedules, highlighting a more uncorrespondent situation both in the county and at national level, confirming also the same aspects both in the schedule from Moldavia's schools. Through the deficiencies of making up the schedule, in both phases, in all the school collectivities investigated, dominate the schedules of oscillating type, (in 60 - 70 % from the cases), aspect which breaks the rhythm of nervous tension with which must work the pupils, so the action of retaking the activity requests a bigger effort. The other types of deficiencies – inversed schedules, descendent and ascendant ones, - have more reduce frequency, but the same particularities – they do not use in favour of the pupil's body the period in a week from the day and from the night, in which, physiologically, the capacity of labour is best.

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