WEB based technology in planning sports education in primary schools

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Abstract: -
This paper deals with modern technologies which can be used for realization of sport education in primary schools. The physical education syllabus is organized around thematic areas, one of which is the so-called sports and technique education. This programmed framework is defined by its own educational contents and is based on requirements which concern motor skills at different levels of difficulty. During their physical education, students gain certain motor skills which are relevant for their everyday life, work or sports and recreation trainings. This paper deals with a Data Base Management system which we create to measure, calculate and define the optimal exercises for sports and technique education in primary schools

Key-Words: - WEB portal, Informational technology, Physical education, Syllabus,, Evaluation, Teaching

1. Introduction

Internet resources become very important for planning and preparing lessons. WEB portal Edusoft made by university professors from Serbia is very popular for teachers. Multimedia, written sources, tests and the other didactical materials are useful for realization education in primary school. The knowledge and skills gained through education hold certain values, sense and importance. This refers to physical education, too. Mastery of motor skills is the backbone of complete physical education. The quality of the skills gained stands in correlation with the students' attitude towards physical trainings and education. The general assumption is that the level of fulfillment of program requirements, especially educational ones, determines the quality of physical education at school to a great extent. The quality of sports and technique education at schools can be assessed by means of: quantitative markers (such as the number of fulfilled motor-skill requirements) and qualitative markers (the mastery of the skills gained through education). A research was conducted concerning the impact of sports and technique education on students' post-academic life and work. The aim of it was to have an insight into it`s realization in primary education using our specialised software. [2].

2. WEB portal

Requests information era in which we live is constantly learning in accordance with the development of science and technology, to apply the new achievements in all activities, especially in education. Scientists recognized and determine the 14 challenges as priorities for the next 10 years, and particularly emphasized the importance of the implementation of Internet technologies in education. Serbia, as the state in the development, define the goals and programs of basic education, so that the Edusoft portal is modeled according with the curricula of the Ministry of Education of the Republic of Serbia in accordance with the needs of modern education.

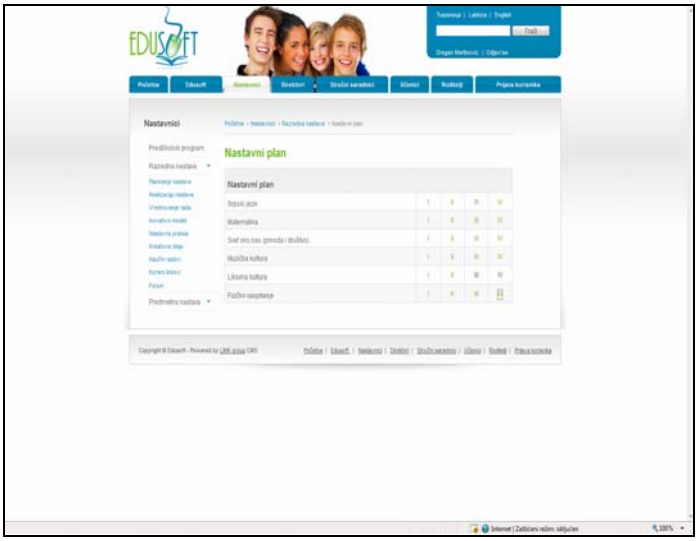
Fige 1. Edusoft portal

The process of creation and development of such a complex web portal takes a very long time. Because of the nature of the resources it is impossible to convert in the final product. Permanent changes in the development of science, new scientific knowledge, social movement requires daily updating the database resources, which will be constantly changed and adapted the needs of teachers.

Portal we constituted in accordance with the requirements of the Council of Europe on the availability of didactic material to all participants in education, regardless of the place in which they live and work. In this regard, is defined by the Council of Europe recommendations for ensuring the communication infrastructure that will allow internet access to all schools and accredited educational institutions in the country.

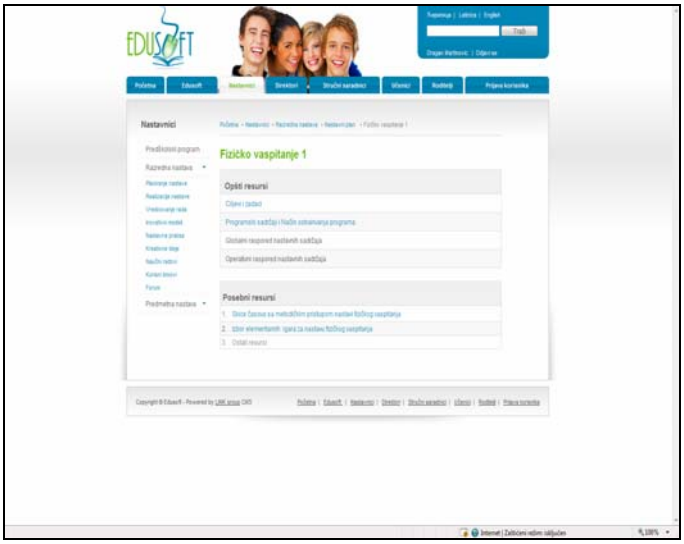
Entering this portal at the www.edu-soft.rs we can find materials for teachers, students, directors, professional staff, pupils and parents.

Materials for teachers are divided in four classes, so we can recognize subjects and classes.



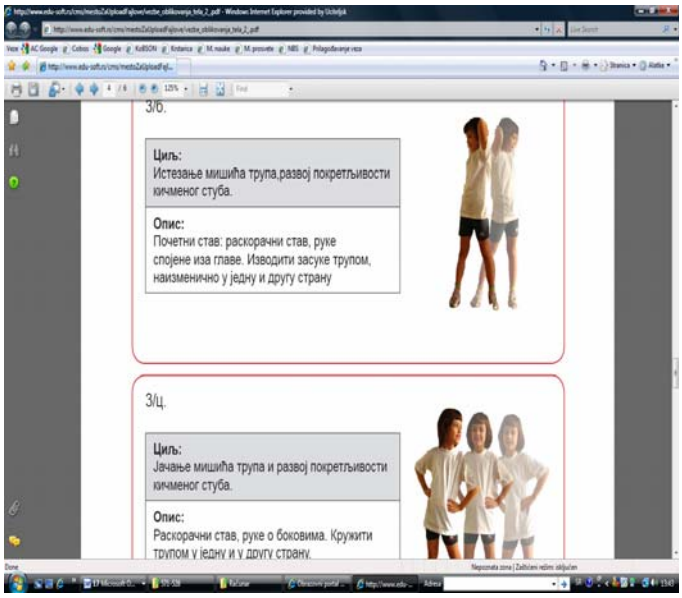
Fige 2. Subjects and classes

We can chose materials for sport education in first class and find curricula, main aims of sport education, and plans for all lessons, multimedia for exercises and guide for teachers.



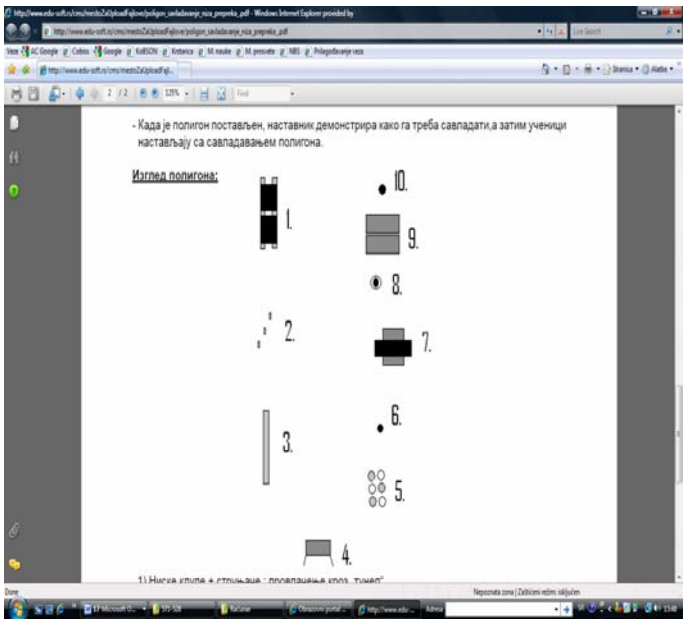
Fige 3. Didactical materials

Exercises are shown by pictures and small video clips. Teacher can describe and show the correct way of movements and then repeat it several times with pupils. Exercises are divided in a few corresponded classes.



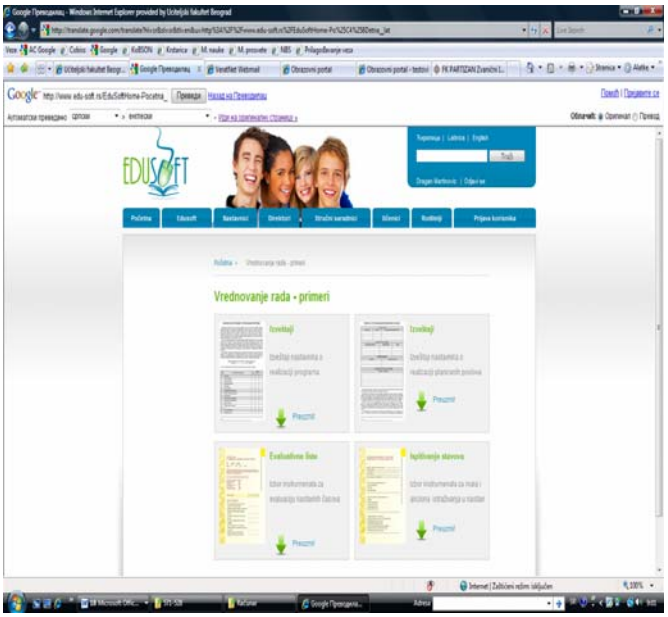
Fige 4. Photos and movies

Lesson plans contains pedagogical effects and schemes for pupils. It describes the best way of leading pupils through the exercises, how to achieve better condition etc.



Fige 5. Exercise schema

There are a lot of materials for evaluation knowledge and skills.. Using these materials teachers can create better organization, improve the methods and forms of teaching and achieve better pupil's results. Teachers are able to do little action researches every month so they can improve teaching.



Fige 6. Tests for evaluation

These materials are available for students at the Teachers faculty as well as teachers for permanent education. There are a lot of problems with using new technology. Firstly, we have the problem of traditional educational technology. Teachers are not educated for using new technology. They are not well informed about the possibilities that informational technology can produce.

3. Modern educational technology

Present organization of teaching has not been modelled as a whole cognition system. As a rule, feedback information is missing. After the lesson is over, learners do not know how well they have learnt the designed contents, nor the teacher has a complete vision about his learners knowledge. Feedback information should follow each step of the teaching progress, which is not the case in current practice. Teaching is based more on entropic than on system approach. One of the reasons for such condition is inadequate didactic-technical environment in which

teaching is carried out. Classrooms are not equipped with modern information technology for organizing system based teaching. Modernization process of existing technologies is much faster in product on fields, so it is rightly expected from schools and faculties to trace innovative processes and to train young professionals in accordance with the needs of society and economy. Worldwide considerable steps have been made in equipping schools with modern teaching tools, while the schools are expected to apply them adequately and innovate methods and ways of work with learners and students. [5]. At the Teachers Training Faculty in Belgrade activities have been started for creation of specialized multimedia classroom. It is desired by this project to design and equip multimedia classrooms, in a new, so far in practice unknown way. which would make possible organization of teaching as a whole system, so that in each stage of work learners and teachers have feedback information on the quality of acquired learners knowledge. Within the last two decades have been formed in schools, which represented universal purpose classrooms equipped with various didactic media designed for independent lear- ning by using available sources. The next step to improvement of teaching technology is designing of multimedia cathedra and functional cases for keeping didactic materials (graph foils, slides, diskettes, CD-ROMs, vide-cassettes, teaching papers, etc.), as well as retro stand made of three layer board with projector screen.

Fige 6. Active electronic board and cathedra

Multimedia cathedra would be designed in such a way to contain computer, cassette tape recorder, connected with BIM projector, television set and other projecting units. This cathedra would also have a graph scope, camera for three dimensional projecting and slide projector. All the units would be raised and lowered by electromotor using control and supervisory keys.

After finishing work, cathedra is locked by specially designed covers and it looks like a beautifully designed traditional teachers cathedra. Computer would be connected to local network and to Internet, to enable use and presentations of information from global computer network. Within the project production of software for searching didactic media locations has been foreseen, according to teaching subject and way of work to be carried out with learners. Didactic media would be coded and classified in didactic maps which are, as mentioned above, paced in cases. This kind of multimedia classrooms would contribute to better efficiency of teaching process.

BIM projector connected with computer is, naturally, one of the solutions which is now being used most frequently, but in practice it appeared that it is not so simple for teacher to control computer and at the same time point out pedagogical importance of presented material. Experts for information technology have constructed active electronic board connected with computer so that teacher can control software by pressing suitable menu or Keyes that are shown on electronic board. Experts for education are of opinion that teacher is feeling more free in this way, he is not burdened by controlling computer, but he is paying all his attention to pedagogical work and presentation of material.

4. Teaching characteristics

Many researches in the USA such as: Research within the system CMS (Computer Managed System), i.e. system managed by computers, Suppesov project ant Stanford University, as well as research at the Centre for pedagogical research in Pittsburgh within IPI (Individually Prescribed Instruction) i.e. individually planned teaching, etc., show that, with large number of learners, computers are better adjusted to individual abilities of learners than teachers, that learners make faster progress by using computers and their knowledge lasts longer. At the same time, experiments show that teaching and learning with the use of computers are more efficient than the traditional concerning quality and q quantity of the achieved knowledge, durability and applicability of the

knowledge, specially in respect of meditative mobility of learners, their motivation for learning, as well as faster, more humane and fair evaluation and grading of learners work. Naturally, researchers do not agree in evaluation of computer efficiency degree. "It is very important that computer has the same relation to all learners, develops self initiative in work, offers same chances for work and makes possibilities for them to progress as much as they can and in their own way. Slower learner receives help so he can progress without problems, do his best independently of the others and he can live without suspicion, scorn, frustrations and humiliation, because computer offers same education to all, treating all learners in the same way. This "teacher" is patient, just and does hot know how to get angry. "He" does not have wrong notions, and prejudices." [7] . It does not carry out any kind of discrimination to learners and has no favourites in class.

Computerized teaching and learning are suitable for the development of abstract thinking, make possible planned directing and individual progress in acquiring no learners characteristics are negated, or there are any ways and elements of suppressing their individuality, on the contrary. they are favoured. All learners are quite equal in front of computer, Here there are no mistakes, central tendency mistake, generosity, etc. Learner does not get angry at computer grad, he does not try to make it better in inadequate behaviour and to attribute his failure to somebody else. Way of communication between computer and learner is simple and direct. Computer offers learners not only instructions and questions but also instructions for solving the given tasks, as well as warnings in case of wrong answers and solutions. Learner asks computer for additional information, explanations and instructions for answering the questions and solving tasks, without hesitation and fear. He is not afraid that others would laugh at him because he does not know and that he would face some other way of misunderstanding from learners and teachers. [8]

American magazine for scientific issues "New Scientist" reported in 1982. that, thanks to computers, specially microcomputers which are lately widely used in American schools, there has been considerable progress in teaching mathematics, that they relieve teacher many routine activities, and they relieve learner of teacher fear and being laughed at by other learners because of eventual failure in learning. [3].

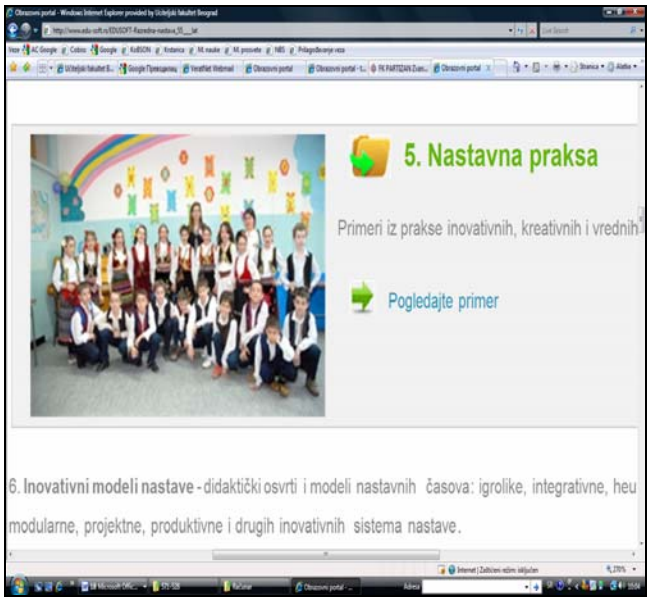


Fig 7. Example of unit folk dance

Computerized teaching leaves teacher more time for more creative activities, and/or for educational activity, for pedagogical and professional training, for programme innovating. For systematic following of each learner work, etc. "It has specially been noticed that computerized teaching enables development of memory, phantasy, independence in learning, raises educational level, develops sensibility for problems, openness, flexibility, tolerance, independence in work, By giving to learner numerous information in a fast, exact and effective way, computer offers him more time for carrying out operations which will influence development of abilities for comprehension, problem solving and creative spiritual potential. In this way knowledge is used more successfully for the development of human capabilities [9].

Within this project an interactive distance learning subsystem has already been implemented connecting teachers training faculties in Serbia and similar faculties in the Republic of Srpska. Part of teaching has already been implemented by using Internet locations for education, while during this academic year more intensive work of this system as well as wider teachers training has been planned.

5 Research in sport education

The analysis of the current status and realization of sports and technique education in primary schools was made based on the questionnaire form filled in by the students of the Faculty of Sports and

Physical Education and Teacher Training Faculty in Belgrade. The data included in the analysis (realization of educational contents in physical education – sports and technique education in primary schools) were collected by means of a questionnaire. First year students at both faculties were chosen as the target group. One of the reasons for this was the fact that both faculties train teaching staff in the sphere of physical education. The initial assumption was that the first year students' memory of the educational process they have been through is still relatively fresh. We assumed that they could still recall their own experience with physical education classes, including motor-skill contents that they were taught at school. This assumption was confirmed by their answers to the question: "How well can you remember the sports practice and physical exercises that you had in primary school within physical education classes?" The answers given show that 187 (out of 192) respondents remember the realization of their sports and technique education.The age of respondents and the environment in which the testing was done (regular faculty classes) are additional factors which guarantee that the answers were provided conscientiously. The time that has lapsed from their former physical education till today is not too long. Because of the presence of both genders among the respondents in the target group, the motor-skill requirements selected for this research were both male- and female-oriented. The sample of motor-skill requirements taken into consideration for the analysis of the sports and technique education includes: apparatus practice, athletics, handball, volleyball, basketball and dances. The requirements are shown in the table below. As the physical education syllabus encompasses both indoor classes and outdoor activities, the research also includes other obligatory contents. Therefore, the following contents were included in the research: field trip, cross country race, individual sports competitions and sports games competitions. [6]

5. Results

The respondents had to provide an answer in the questionnaire for each motor-skill requirement and activity. The first questions to be answered were whether the motor-skill requirements were realized during indoor or outdoor activities. Next question was if the necessary conditions for the realization of a particular requirement were fulfilled. Then followed the question if they had learned how to fulfill the requirement performed during the teaching process. [10] The answers are shown in the table below. This table shows that the realization of 26 motor-skill requirements was observed (9 in gymnastics, 9 in athletics, 6 in sports games, folk dances, 'kolo' and swimming).

Table 1. Level motor tasks of qwestioners

MOTORS TASKS	
GIMNASTICS TASKS	14. hang
1. forward roll	15. straddle jump
2. backwards roll	16. back tecnique high jump
3. forward horizontal stand	17. shot put from standing start
4. handstand without peers supporting	18. shot put-rational technique
5. cartwheel	
6. straddle vault	***SPORTS PLAY***
7. squat vault	19. handball techique (elements)
8. straddle with swing	20. handball play
9. retreat	21. basketball techniaque (eleements)
	22. basketball play
ATLETICS TASKS	23. volleyball technique (elements)
10. technique of steadfast running	24. volleyball play
11. technique of fast running	***DANCES AND SWIMMING***
12. relay race	25. dances-folk dances e „kolo"
13. squat long jump	26. swimming

This table shows that the realization of 26 motor-skill requirements was observed (9 in gymnastics, 9 in athletics, 6 in sports games, folk dances, 'kolo' and swimming).The respondents had to provide an answer in the questionnaire for each motor-skill requirement and activity. The first questions to be answered were whether the motor-skill requirements were realized during indoor or outdoor activities. Next question was if the necessary conditions for the realization of a particular requirement were fulfilled. Then followed the question if they had learned how to fulfill the requirement performed during the teaching process. The answers are shown in the table below.

Table 2. Realizations of gymnastics tasks

motor tasks	„Elaboration“of gymnastics tasks. The task was-not treated in class			
	yes		No	
	n	%	n	%
forward roll	186 (1*)	96,875	6	3,125
backwards roll	181 (2*)	94,270	11	5,729
forward horizontal stand	91 (7*)	47,395	101	52,604
handstand without peers supporting	116 (6*)	60,416	76	39,583
cartwheel	130 (5*)	67,708	62	32,291
„straddle vault“	146 (3*)	76,041	66	34,375
„squat vault“	135 (4*)	70,312	57	29,687
straddle with swing	58 (8*)	30,208	134	69,791
retreat	54 (9*)	28,125	138	71,875

* Level of realization of motor tasks

The above answers show that the most covered requirements were the forward roll and backward roll. Then follow the leap and handspring jumps. ‘Cartwheel’ and ‘handstand’ were the next most covered requirements. Straddle split with a rotation and retreat were the least covered requirements.

Table 3. Assessment of condicions for realization of gimnastics motor tasks

Motor tasks	Conditions for realization of motor tasks			
	The conditions existed		The conditions did not exist	
	n	%	n	%
tasks of parters	185	96,354	7	3,645
Straddles	166	86,458	26	13,541
retreat	97	50,520	95	49,479

According to the provided answers it is obvious that the conditions for the fulfillment of floor exercises existed. A few cases indicate the lack of conditions for the leap performance, and half of the answers provided indicate that there were no conditions for the fulfillment of the retreat

Table 4. Realization of athletics tasks

Motor tasks	„elaboration“ of tasks. The task was-not treted in class.“			
	yes		no	
	n	%	n	%
Technique of steadfast running	95 (4*)	49,479	97	50,520
Technique of fast running	135 (2*)	70,312	57	29,687
Relay race	48 (7*)	25,000	144	75,000
Squat long jump	140 (1*)	72,916	52	27,083
hang	70 (6*)	36,458	122	63,541
straddle jump	85 (5*)	44,270	107	55,729
back tecnique high jump	34 (9*)	17,708	158	82,291
Shot put from standing start	96 (3*)	50,000	96	50,000
shot put-„rational“ technique	39 (8*)	15,625	153	79,687

* Level of realization of motor tasks

A high level of coverage is registered in the case of the long jump with double-arm technique and the sprint technique. Glide shot put, track running and straddle technique high jump showed coverage in approximately 50% of the respondents’ answers. Relay race, rational technique shot put and flop technique high jump show a low level of coverage. One thing that is obvious in the realization of athletics requirements is the decrease in the coverage of certain athletics events as the level of their difficulty increases.

Table 5. Assessment of conditions for realization of athletics motor tasks

Motor tasks	Conditions for realization of motor tasks			
	The conditions existed		The conditions did not exist	
	n	%	n	%
Technique of steadfast running	156	81,250	36	18,75
Technique of fast running	163	84,895	31	16,145
Relay race	133	69,270	59	30,729
Long jump	116	60,416	76	39,583
straddle jump	121	63,020	71	36,979
back tecnique high jump	75	39,062	117	60,937
Shot put	115	59,895	77	40,104

Most answers in the above table prove that the best conditions were provided for sprint and track running. Contrary to that, the least favorable conditions were provided for the flop technique high jump. Less than 40% of answers indicate a complete lack of conditions for shot put, straddle technique high jump and relay race. On the whole, a large number of samples indicate the lack of conditions for the realization of the so-called technique disciplines. If we compare the possibilities for the fulfillment of requirements and their actual fulfillment, we can conclude that the existent conditions were not used to the full extent (in some cases the conditions did exist but there were no motor-skill requirements set).

Table 6. Realization tasks of Sportplays

Motor tasks	„elaboration“ of tasks. The task was-not treted in class.“			
	yes		no	
	n	%	n	%
Handball techique (elements)	131	68,229	61	31,770
Handball play	104	54,166	88	45,833
Basketball techniaque (eleements)	166	86,458	26	13,541
Basketball play	170	88,541	22	11,458
Volleyball technique (elements)	171	89,062	21	10,937
Volleyball play	150	78,125	42	21,875

The technique itself was best taught in the case of volleyball (89.062%), a little less in basketball (86.458%) and much less in handball (68.229%). According to students' answers, the most practiced game was basketball, then follows volleyball, whereas handball was the least realized of all games.

Table 7. Conditions for realization of Sportsplays.

Motor tasks	Conditions for realization of motor tasks			
	The conditions existed		The conditions did not exist	
	n	%	n	%
Handball	167	86,979	25	13,020
Basketball	182	94,791	10	5,208
Volleyball	186	96,875	6	3,125

Most answers show that conditions for the realization of sports games were existent. A number of answers indicate reduced conditions for the realization of handball. If we compare the possibilities for the fulfillment of requirements and their actual fulfillment, a certain discrepancy can be noticed in the case of handball. If the answers showing the fullfilment/non-fullfilment of motor-skill requirements in separate areas are compared with the overall fullfilment/non-fullfilment of requirements, we shall be able to devise the percentage of the requirements fluffiest per thematic areas.

Table 8.Review of overall realizationn of tasks (gymnastics, athletycs,sportplays)

„Thematic wholes“	Realized		Not realized		Owerall	
	Yes		No			
	n	%	n	%	n	%
Gimnastics without roll	730	17,200	634	14,93	1364	32,139
Atletics	742	17,483	986	23,23	1728	40,716
Sportsplay	892	21,017	260	6,126	1152	27,144
Overall	2364	55,70	1880	44,29	4244	100

The above table indicates the realization of the observed motor-skill requirements of 55.70%, that is, 2364 answers which prove positive realization out of the total of 4244 positive answers, which is a data we cannot be pleased with.

Table 9. Realization dances-folk and swimming

„Thematic wholes“	„Not realized in practice			
	Yes		No	
	n	%	n	%
dances-folk dances e „kolo“	58	30,208	134	69,79
swimming	34	17,70	158	82,29

Obviously, the realization of dancing contents represents a big problem. The situation is even worse with swimming, where 82.29% answers indicate complete absence of realization. A particularly interesting thing is to check how well the target group students mastered the contents they were taught.

Table 10. (Extracurricular activities)

Extracurricular activities	Activity was realized			
	yes		no	
	n	%	n	%
Walking excursion – every year	78	40,625	114	59,375
Each year cross was carried out	143	74,479	49	25,520
Competitions in individual sports	97	50,520	95	49,479
Competitions in sports games	133	69,270	59	30,729

The situation concerning the realization of extracurricular activities cannot be considered satisfactory. Cross country race is the most realized activity, as well as sports games competitions. Field trips and individual sports competitions are insufficiently realized. On the whole, the level of extracurricular activities realization proves to be low. Consequently, their effects are also much reduced.

This slightly liberal approach to the research of physical education syllabus realization included one key question. **Should one consider them damaged if they had no opportunity to master the movements, sports and other contents included in the physical education syllabus?**

The answer to the above question resulted in the following: 155 respondents or 80.729% of them consider themselves damaged for not being given an opportunity to master all the syllabus-based contents in physical education which they had at school. 19.27%, i.e. 37 respondents do not consider themselves damaged because of the non-realization of the physical education program contents.. This is the main consequence of the failure in the realization of thematic areas within the overall physical education program: sports and technique education and its application in extracurricular activities. The conducted research imposes the need for certain consideration.

The physical education syllabus in general (which encompasses both regular classes and extracurricular activities), and regular classes in particular, are overloaded with motor-skill requirements. From the "historical" point of view, the number of physical education lessons in primary school has not changed. Initially, there are 3 lessons of physical training per week, and then 2+1 lessons. Today, the physical education syllabus is realized through 2 lessons per week from the fourth to the eighth grade of primary education. The subject itself is divided into two sub-subjects: "physical education" (2 lessons per week) and "physical education – "optional sport" (one lesson per week). This practically means that a great many motor-skill requirements such as: apparatus practice, athletics, sports games, rhythmic and sports gymnastics and dance, have to be realized in two lessons of physical education per week. This form of curriculum was not followed by the rationalization of the program contents in the "sports and technique education" thematic area. Perhaps this must be taken into consideration in further stages of syllabus improvement. The research indicates that many parts of the country lack adequate conditions for the realization of all the motor-skill requirements, especially in the sphere of gymnastics and in some elements of athletics program. An insight into the data collected shows that some of the requirements were not fulfilled despite the existence of adequate conditions. We can assume that the reason for this can be sought in the personal factor – i.e. teacher's inconsistency in the program realization.

6. Conclusion

Information and telecommunication technologies have made preconditions for changed positions of teachers and learners with the aim of releasing teacher from routine activities concerning memorizing numerous facts, presentation and evaluation, with the increased learners activity and continual interaction between learner and teacher. It is expected that learner will really become centre in education, receive information from various sources, make progress in acquiring new knowledge with the speed which suit to his own abilities and prior knowledge, and he will learn the teaching contents more thoroughly and with understanding.

Dominantly teaching role of teacher is replaced by the role of strategist, organizer and adviser. Constant interaction between learner and source of information ensures self-evaluation and constant following of all learners activities in order to evaluate learners work in a more complex way. Information era education, by application of new technologies, also requires changes in work organization, teaching ways and methods to overcome disadvantages of traditional teaching and raise educational process to a higher, better quality level. We create software for measuring, calculating and defining the optimal exercises for sports and technique education in primary schools. Research deals with gymnastics tasks, athletics tasks, sports with a ball and the results are very useful for teachers. Successful training results from those situations where teaching and practice are adequately realized. Most students master the motor-skill forms they are taught, which prove that efforts oriented towards consistent realization of sports and technique education do pay. With regard to sports games program contents; a negative ratio has been noticed between teaching the technique and the game itself, since the game is applied without systematic teaching of the technique in many cases. In the domain of gymnastics, the greatest level of realization of motor-skill requirements is noticed in the practice on the floor and of the vaulting horse leap. The realization of requirements seems to decrease as the level of the requirement difficulty increases. Consequently, easier requirements are realized in a higher percentage. In the realization of athletics requirements, complex motor-skill requirements are less taught. Insufficient attention is paid to track running and relay race. Realization proves to be poor even where the conditions for the requirements fulfillment are good. The highest level of content realization is present in sports games. The second best are athletics contents, and then come gymnastics and dances. Teachers should pay special attention to this fact, since these are contents that students cannot master on their own. The main orientation in education should be directed to the minimal educational requirements that are particularly emphasized in the physical education syllabus. This software could be used for the other primary school subjects and we are sure that it can help teachers to make optimal syllabus.

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