MODERN PEDAGOGICAL TECHNOLOGIES IN THE PROCESS OF TEACHING PHYSICAL EDUCATION AND SPORT IN PRIMARY SCHOOLS

(Preliminary communication)

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Abstract
The purpose of the research is to make the interactive educational methods applicable to the extracurricular form of “Physical training and games” and to reveal their influence on the motor development of students at the age of 10. Main tasks: 1. Research on the efficiency and influence of the interactive education on the motor development of the students studied. 2. Revealing the main factors of the increased interest, for the motor activity of students and for modelling lasting patterns for their independent activity in physical training and sport. We carried out our experimental work with students at the age of 10 and in the period between 15th September 2012 and the end of May 2013. The persons studied were 85, trained at different schools in the town of Ruse: “Vasil Levski” Secondary School, “Yordan Yovkov” Secondary School, “Friedrich Schiller” German Language School and The Secondary School with the Study of European Languages. The students were separated into two groups: experimental (E Group) – 45 students totally, boys and girls at the age of 10; and a check group (C Group) with 40 students at the same age. Within the experimental group we used specialised methods for interactive education of students practicing basic track and field exercises (main body “Track and field”) and applied them into the sports training and games during their spare time. For the students from the check group we used standard educational methods stipulated in the extracurricular studies of physical training and sport.

Keywords: 10-year-old children, physical training and sport, knowledge, values, interactive methods, experimental group, control group, motor tests

INTRODUCTION
There are different definitions of technology. It is a combination of consecutive pedagogical activities within the educational process, including the instructions and the means and methods for their performance. The emphasis is put on the teaching and studying technique which is of great importance when solving practical tasks related to the increase of effectiveness of the educational process.

According to the age specific of the students and the relevant educational degree we classify the educational technologies as educational technologies for: preschool education and training; primary stage of the elementary educational degree; in the system of secondary education; the system of higher education; post-graduate education.

What we shall not forget within this classification is that some technologies, e.g. verbal and playing ones, have almost universal character and other technologies are strictly specific for the relevant educational degree and they will not be found among the other degrees.

Modern technologies of teaching physical education and sport in the primary stage of the elementary educational degree have the following characteristics to distinguish:
• Modernity – constant update of the curriculum content with the purpose of reducing the difference between the innovations in science and their effect on the discipline;
• Optimality – pursuit of achieving educational goals with as less drain of efforts, time and costs as possible;
• Integrity – synthesis of the results achieved in the fields close to the discipline, especially by solving practical tasks;
• Scientific – taking the necessary decisions on the basis of the newest discoveries of science;
• Programming the activity of students and teachers – modelling the possible pedagogical situations in advance and structuring the educational process;
• Wide use of modern technical educational means, didactic materials for illustration and methods
that activate the activity of students.

The pedagogical technologies used are presented in table 1.

We will examine in detail the essence of the interactive methods and their application into the lessons of physical education and sport.

Interactive methods are used to achieve the goals of modern education. Of a great importance for the efficiency of the educational process is how they will be selected and combined with traditional methods. Their use in the educational process, in the different curricular and extracurricular forms of physical education and sport arouses a great interest to students and to future teachers. An evidence for this are the numerous scientific publications and researches on the subject considering the issue within different scientific fields.

Interactive methods include several concepts: interaction, innovation, interactive education, interactive methods (fig. 1).

1. **Interaction** (interact, inter – between and act, actus – do something, have effect on). Interaction is a kind of action that occurs as two or more persons have an effect and influence upon one another. It is characterised as an exchange of actions that results in change in the behaviour of the communicating parties. In other words, interaction is an intense collaborative action through mutual actions between the parties in the process of activity.

2. **Innovation** (innovatio, novatio – renew, change). It is a renewal, an application of something new into practice, new product, a change in organization or technique. It is related to innovation which is defined as an interest to new things and to the introduction of changes. Innovation is preceded by creative thinking that generates new ideas.

3. **Interactive education.** It is innovation, a process of studying through interaction between teacher and students that leads to development of the cooperation skills when obtaining knowledge, of motor skills and habits, of value orientations and competence for the activity in real situations. The students are competent participants in the educational process and their experience serves as the main source of educational knowledge. The teacher doesn’t just provide knowledge, the teacher stimulates the participants to look for a solution themselves. Compared to traditional education, the interaction between teacher and student in the interactive education is different: the activity of the teacher gives place to the activity of the student. The task for the teacher is brought to creating an environment where the initiatives of the students can develop. The teacher actually assists within the process.

   There are several educational models used in sport studies and games:
   • **Passive** – the student acts as an „object“ of education (listens, watches and performs);
   • **Active** – the student acts as an „subject“ of education

<table>
<thead>
<tr>
<th>Technology type</th>
<th>Conceptual bases</th>
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<tbody>
<tr>
<td>1. Playing technologies</td>
<td>Games provide students with entire freedom for their activity. They are the main</td>
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<td></td>
<td>activity during the whole educational process. Used and included in the curriculum</td>
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<td></td>
<td>are different types of games – athletic, active, relay and prep sports, (basketball,</td>
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<td></td>
<td>football, tennis, badminton, volleyball, etc.)</td>
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<td>2. Problematic education</td>
<td>Knowledge is acquired through a problematic presentation of the material; the</td>
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<td>teacher uses different ways to create problematic situations and this stimulates</td>
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<td></td>
<td>the creativeness of students.</td>
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<td>3. Group technologies</td>
<td>During the sport lesson the class divides into groups for solving particular educative</td>
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<td>tasks. The groups could act independently or under the guidance of the teacher.</td>
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<td></td>
<td>Besides performing different planned motor tasks and testing the group, the group</td>
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<td>activity can also be a group discussion about their performance.</td>
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<td>4. Computer technology</td>
<td>Formed are skills for handling information, research skills and optimal appliance</td>
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<td></td>
<td>of the individual approach. Used are videos about the technique for performing new</td>
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<td></td>
<td>motor tasks from the curriculum and about programming the very education.</td>
</tr>
<tr>
<td>5. Application of the interactive</td>
<td>The orientation of our education to the European standards leads to renewal of</td>
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<td>methods into the lessons of physical education and sport for students of primary stage of the elementary educational degree, by students – future teachers and for qualification of teachers.</td>
<td>the training, qualification of teachers and enrichment of their mental, personal and professional qualities. Also leads to stimulation of the emotions, perceptions and experiences of students, obtaining knowledge, forming skills and cultivating attitudes through the process of “studying though experience”.</td>
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</table>
tion (works independently, shows creativity when performing motor tasks);

• **Interactive** – student and teacher are „equal subjects“ of education. The educational process is carried out in the conditions of a constant active interaction between all parties.

There is a constant feed-back.

4. **Interactive methods** are all methods based on obtaining knowledge, forming motor skills and habits and cultivating attitudes at the same time by putting the students in situations where they can interact and after that they can discuss these situations on the basis of their performance and experience. These situations get the students out of the position of being passive observers and listeners and make them active participants and parties in the process of their own education. They put teachers and students in position of continuous discussion, expression of personal opinion and individual style. They give them opportunity to show creativity and to take the curriculum beyond the bounds of the pattern. They enrich and give variety to the educational process for pupils.

**Why is it necessary to use interactive methods in the extracurricular forms of physical training and sport for students?**

Besides the constant interaction and feed-back, interactive methods mean also commitment of the student, a constant search for general solutions. Their purposes are more and more qualitative interactions between teacher and students. They assist their personal progress on the basis of the co-experience, of the dialogue, of the joint solutions when solving motor tasks through analysis, search for alternatives and taking decisions.

Interactive methods give the opportunity to jointly build the educational subject and the pedagogical reality in such a way where each student can assume their share of responsibility for the educational process. They are supposed to be spoken in a common educational language that gets more easily interiorized by the parties because it is built on the basis of their own experience and participation in the activity process.

In this sense interactive methods give shape to modern educational process based on joint search, dialogue, discussion and finding solutions, expressing personal opinions, building well-grounded behaviour strategies.

**What makes the interactive methods attractive is:**

• pragmatic orientation of education and the active position of students;

• new vision about the role of the teacher in education – instead of a main source of information, the teacher becomes a moderator of the process, an organizer who ensures the emotional atmosphere;

• changed structure of communication during the lesson – intensified is not only the communication between teacher and student, but also the interaction between the very students.

**Basic principles of work during a lesson in physical education and sport when using interactive methods** are: situation selection (specific applied movements, exercises games); obligatory connection between analysis and practice; active intellectual and emotional participation of the students; cooperation and mutual assistance; helping and guiding, but not managing.

**Work stages.** They refer to: studying the problematic situation (analysis); clearing up the alternatives (selection of the necessary motor actions); developing a solution; performance in front of others watching, etc.

**What types of interactive methods for studying and teaching are there?** We distinguish:

• **Situational** methods: method of specific situations, case studies, simulations, games and others;

• **Controversial** methods: inquiry, talk, discussion, deliberations, brain attack (brainstorming, joint generation of ideas) and others;

• **Experimental** (empirical) methods: method of projects, experiments and others based on the dialogue;

• **Method of the particular situations** – purpose of education is the development of particular qualities of thinking such as curiosity and good sense; personal qualities (will, responsibility, discipline, obstinacy and others).

We will examine some of the **more important interactive methods** specified above.

• **Case study** – it is a description of a real situation presented as close to reality as possible, as the purpose of the situation is the performance of a given motor task. Described are as many facts for analysis and for taking the decision as possible and not only those necessary for the performance. Students have to distinguish between necessary and unnecessary information themselves, to analyse it and to give suggestions for solutions. There is not only one right solution, there are different alternative possibilities with their different advantages and disadvantages.

**Simulation.** Students perform a particular activity in circumstances as close to the conditions of the real situation as possible.

**Game.** It increases the interest for education. It serves as a transfer of knowledge. In most of the cases the teacher is an arbitrator.

**Inquiry.** It is connected to a specific problem that needs to be solved. The inquiry drags into a joint discussion, into decrease of differences in opinion, into compromise thesis formulation.

**Talk.** Most common in practice and often used by teachers. During an educative talk the teacher “leads” the student to the formulation of a certain answer or consent.

**Brain attack** (brainstorming, joint generation of ideas). This method gives the opportunity for numerous suggestions for solving a certain problem to be given in a short period of time. It is used to stimulate the creative activity of students. The teacher clearly and briefly lays the problem that needs to be solved and does that in a
way that attracts the attention of students. They freely express ideas and opinions. The suggestions made get evaluated through discussion and eventually the most appropriate ones are selected in order to perform the motor task.

**Discussion.** This is an educational method for solving controversial issues and specifying the contradictions. It consists of exchange of information for reconstructing the issue, clearing up the alternatives, their evaluation and consent on the final version. It requires a general understanding of the meaning of the basic terms used on the subject.

**Deliberations.** A technique very close to discussion. This is a method of dialogue through which teacher and students exchange information, share feelings, experience, thoughts and ideas, clear up points of view, formulate hypotheses, give certain opinions for evaluation and outline solutions. It is one of the main methods for team work, a basic step to the solution of each problem.

**The purpose** of the research is to make the interactive educational methods applicable to the extracurricular form of “Physical training and games” and to reveal their influence on the motor development of students at the age of 10.

**Main tasks:**
1. **Research** on the efficiency and influence of the interactive education on the motor development of the students studied.
2. **Revealing** the main factors of the increased interest, for the motor activity of students and for modelling lasting patterns for their independent activity in physical training and sport.

**RESULTS**

We carried out our experimental work with students at the age of 10 and in the period between 15th September 2012 and the end of May 2013. The persons studied were 85, trained at different schools in the town of Ruse: “Vasil Levski” Secondary School, “Yordan Yovkov” Secondary School, “Friedrich Schiller” German Language School and The Secondary School with the Study of European Languages. The students were separated into two groups: experimental (E Group) – 45 students totally, boys and girls at the age of 10; and a check group (C Group) with 40 students at the same age.

Within the experimental group we used specialised methods for interactive education of students practicing basic track and field exercises (main body “Track and field”) and applied them into the sports training and games during their spare time. For the students from the check group we used standard educational methods stipulated in the extracurricular studies of physical training and sport.

1. The comparative final data from the research of the speed from “Running 50 m” (sec) are shown in Table 2.
2. The comparative final data gathered from the test “Throwing a dense ball with mass 1 kg with both hands over the head” (cm) give us information about the development of the strength of hand, arm and shoulder muscles and partially the body muscles of the students from the test groups (Table 3). The research on this index shows a difference between the achievements of the 10-years old students, which is in favour of the Experimental group by both sexes.

<table>
<thead>
<tr>
<th>Sexes</th>
<th>Mean</th>
<th>Experimental Group</th>
<th>Control group</th>
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<tbody>
<tr>
<td>Girls</td>
<td>8.84</td>
<td>8.91</td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>8.45</td>
<td>8.67</td>
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</table>

The presented data show that in the Experimental group there are optimum conditions created for increasing the strength of hand, arm and shoulder muscles. This strength is the main premise for the correct learning, assimilating and mastering of techniques for different applied exercises used in different sports games.

3. The comparative final data provided from the test “Standing long jump with two legs” (cm) reporting the explosive strength of the muscles of the lower limbs of the 10-years old students are shown in Table 4. They reveal that in comparison to the Control group, the studied motor skills in most cases, quality in the Experimental group.

<table>
<thead>
<tr>
<th>Sexes</th>
<th>Mean</th>
<th>Experimental Group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>6.69</td>
<td>6.54</td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>6.98</td>
<td>6.66</td>
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4. The final data from the test of the physical endurance of the 10-years old boys and girls provided by the test “Running 200 m” (sec) are shown in Table 5.
At the end of the experimental period the boys from Experimental group, at the age of 10, run the distance of 200 m faster than those from the Control group. As we can see from the data, experimental methods exercise a considerable influence on the improvement of basic motor skills of the students from E Group. As a result form the increased emotionality and interest in motor tasks they actively participate in the educational process; higher physical load and density of lessons are achieved.

The analysis of the absolute values of the speed received at the end of the examined period shows that the systematic influence on students by using interactive methods considerably helps improving their speed.

CONCLUSION

Experimental methods used for carrying out physical training and games gives relatively good results despite the short period of the study. They give a real opportunity to “break the pattern” and to enrich the curricular program in physical education and sport at primary schools. Main factors for increasing the interest, for improving the motor activity of students and for modelling lasting patterns for their independent activity in physical training and sport are: entirety and complexness of the applied interactive educational methods; settings of education; including a variety of exercises and games; correct organisation of the educational process; knowledge enrichment.

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