

## Original Article

### Application of ecological tourism in physical education of primary school age children

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#### Abstract

**Purpose:** to work out and scientifically substantiate the program of trainings with application of ecological tourism means for primary school pupils, oriented on pupils' ecological culture formation and increase of their physical condition indicators. **Material:** in the research 191 pupils (96 boys and 95 girls) from comprehensive schools participated. Physical culture teachers (n=12) were invited as experts. Degree of the questioned experts' opinions' concordance was checked with calculation of concordance coefficient. Assessment of pupils' physical health was fulfilled. For diagnostic of personal ecological settings we questioned pupils by verbal associative methodic. **Results:** we found that prevailing majority of the questioned pupils were out of safe health level. Results of pupils' physical condition analysis showed reduction of some indicators in period from second to forth form. The mentioned negative changes were conditioned by weakening of motor functioning and tensed learning activity. The structure of program includes 7 main aspects: educational, physical culture-health related, ecological, research, cultural-entertaining and informational. We determined that practicing of ecological research activity during walks, hiking and excursions facilitates children's understanding of interactions in the nature, formation of firm interest to environment, children's cognitive functioning. The content of the program includes merry starts with ecological tasks, practical classes of ecological school of safety, overcoming of obstacle course, mastering of orientation techniques, games in the fresh air, ecological competitions, quizzes, working out and marking ecological paths, arrangement of ecological path near own school. **Conclusions:** we initiated the structure and worked out the content of "school ecological monitoring" in process of extra-curriculum physical education classes. The program contains diagnostic of ecological culture, level of adaptation-reserve potentials, motor functioning and physical health of primary school pupils.

**Key words:** program, ecological tourism, pupils, physical education.

#### Introduction

Health status of school age children is one of the most important medical-social problems, as far as it influence on formation of labor and intellectual potential of the country (Nian'kovs'kij, Iacula, Chikajlo, & Pasechniuk, 2012). Under such circumstances improvement of children's development conditions shall be regarded as pre-condition of favorable social-economic and demographic future of the state. Besides, it is necessary to regard it as the problem of national significance, which requires first turn solution. Recent years scientists intensively have been dealing with multi-factors researches of ecological culture. However, solution of tasks of schoolchildren's ecological education in physical education process has not been paid sufficient attention to. (Dmitruk, & Golovach, 2011; Golovach, 2016). To some extent, it is due to absence of ground for formation of motivation to careful attitude towards nature environment and indifference to own health. Some facts were found that in modern conditions one of strategic tasks of educational system were formation of personality with high ecological culture level (Dmitruk et al., 2011). One of the most important periods for formation of ecological culture principles is primary school age. Primary school requires effective technologies, oriented on formation of harmony in "pupils-environment" relationships. Such technologies shall result in formation of children's care attitude to the nature (Dmitruk et al., 2011; Butenko, 2015). That is why application of ecological tourism shall be of universal and inter-disciplinary character. It will permit to increase the level of primary school pupils' ecological culture and facilitate physical condition indicators.

Demand in activation of work in this direction is noted also by known foreign and domestic scientists (Anderson, 2012; Goncharova, & Butenko, 2015; Mulyk, & Grynova, 2015). The authors say that it is necessary: to study influence of forests on children's health [Soroka, Mazurek-Kusiak, Wojciechowska-Solis, & Hawlena, 2016], implementation of educational activity among children in rest camps [Manuel, Miguel, Serra, & Ribeiro, 2015], formation of positive skills in healthy life style through tourism practicing [Scholz, 2015], study of active hiking measures' influence on personality's qualities of youth [Makeeva, Pushkina, & Polyakov, 2015], pedagogic approaches to formation of responsible attitude towards environment [Toro, Luisa, Alejandro, Rozo, & Suescun, 2015; Ilnytska et al., 2016], implementation of formal models and theoretical conceptions in tourism and education through culture of communication [Alzahrani, Loke, & Lu, 2014; Kozina, 2015].

Of not less importance in formation of pupils' ecological culture and increase of their physical condition indicators can be the following: teachers' ability to organize effective and interesting for children classes [Kenioua, Bachir, & Bacha, 2016; Kenioua, & Boumasjed, 2016]; usage of health related tourism for increase of pupils' organism functional potentials and their physical health [Mulyk, & Mulyk, 2015; Kashuba, Goncharova, & Butenko, 2016]; implementation of health-related technologies in formation of pupils' healthy life style [Chernenko, 2015; Shuba, 2016], creation of conditions for trainings motor actions and increase of motor functioning during all period of disabled children's learning [Kubaj, 2015; Kuzmin, Kopylov, Kudryavtsev, Galimov, & Iermakov, 2015; Adyrkhaev, 2016], consideration of children's gender peculiarities that facilitates more effective formation of physical culture values [Yermakova, 2015; Marchenko, 2016]. Adequate tests are special element of determination of pupils' health indicators [Bliznevsky, et al., 2016; Ivashchenko et al., 2016; Pomeshchikova et al., 2016]. Usage of creative motor tasks requires variety of condition for their realization and presence of appropriate criteria for their assessment [Kolumbet, 2016; Kolumbet, & Dudorova, 2016; Kozina, Repko, Ionova, Boychuk, & Korobeinik, 2016]. It is noted that recreational physical culture trainings facilitate strengthening of youth's psycho-physical state and psycho-social health [Yurchyshyn, 2015; Skurikhina, Kudryavtsev, Kuzmin, & Iermakov, 2016; Kuzmin, et al., 2016]. In the mentioned aspect facilitating physical activity is pointed at increase of growth, firmness, engagement and social results for schoolchildren [Semanychn, & Popel', 2015; Pop, 2016]. The found correlations between morphological functional indicators are characterized by the highest contribution in formation of youth's functional system [Podrigalo, Iermakov, Alekseev, & Rovnaya, 2016]. Besides, it is required to substantiate fulfillment of tests for assessment of schoolchildren's health level on the base of discriminant and factorial analysis [Ivashchenko et al., 2016; Khudolii, Iermakov, & Ananchenko, 2015]. Such approaches facilitate more effective training of physical exercises. Optimization of physical loads' choice is of not less importance [Iermakov et al., 2016; Kozina, Iermakov, Kuzmin, Kudryavtsev, & Galimov, 2016; Pryimakov, Iermakov, Kolenkov, Samokish, & Juchno, 2016] providing being fulfilled on the base of didactic principles of teaching and theory of optimal teaching [Bliznevsky, Kudryavtsev, Iermakov, & Jagiello, 2016; Iermakov, Arziutov, & Jagiełło, 2016]. In this didactic system two approaches are used: profound teaching and teaching with the help of main principles of motor actions' building. It permits to shorten the period of motor actions' training.

In our previous researches we determined low level of motor functioning and physical condition indicators of primary school pupils (Cherniavs'kij, & Andrieieva, 2007; Golovach, 2016; Khimenes, Lynets, Yuriy, Maryan, & Galan, 2016). The conducted by us previous works also point at possibility and purposefulness of tourism means' application for increase of pupils' physical condition (Cherniavs'kij et al., 2007). The relevance of present research condition requires substantiation of approaches to working out of program with application of ecological tourism means in extra-curriculum physical education of primary school pupils. Such approach is oriented on formation of pupils' ecological culture and improvement of their physical condition indicators. *The purpose of the research* is to work out and scientifically substantiate the program of trainings with application of ecological tourism means for primary school pupils, oriented on pupils' ecological culture formation and increase of their physical condition indicators.

## Material and methods

*Participants:* in the research 191 pupils (96 boys and 95 girls) from comprehensive schools participated. In formation experiment 50 schoolchildren participated (26 girls and 24 boys). Physical culture teachers (n=12) were invited as experts. *Procedure:* the research was conducted in several stages: at first stage we conducted stating experiment (n=191), at second stage – formation experiment (n=50). Formation experiment lasted one academic year. Assessment of physical health level was carried out by methodic of (Apanasenko, Bushuiev, Volgina, & Morozov, 2000). Diagnostic of personality's ecological settings was fulfilled with pupils' questioning by verbal associative methodic (Deriabo, & Iasvin, 1996). The questionnaire was used for diagnostic of intensity level of subjective attitude to nature. Diagnostic of attitude to nature was assessed with the help of questionnaire "My attitude to nature" (Kozina & Stepanian, 2004). Study of motives for schoolchildren's participation in functioning was fulfilled with methodic of (Bajborodova, & Cheniavskaia, 2016). The level of primary school pupils' ecological culture was assessed by methodic of (Asafova, 2009), in modification of (Golovach, 2016). *Statistical analysis:* degree of the questioned experts' opinions' concordance was checked with calculation of concordance coefficient (Denisova, Khmel'nickaia, & Kharchenko, 2008). The methodic of group expertise included: formation of tasks, selection and completing of experts' group, making of expertise plan, questioning of experts, analysis and processing of the received information. In list of expert assessment for physical culture teachers we offered the method of prevalence (ranking), which implied assessment of objects by ranks in order of their significance reduction (to assess from 1 to 8). The place, engaged by every outlined object was determined by the quantity of points: the less the sum of points was, the highest was engaged place (the more significant this object was). Conclusion about quality of expertise was made depending on concordance degree of experts' opinions (concordance coefficient was calculated: with W=0 concordance was absent, with W=1 – full concordance) (Denisova et al., 2008). For processing of questioning results we used commonly known means of transformation of questioning empiric data (Paniotto, & Maksimenko, 2003).

### Results of the research

In order to work out the program of trainings with ecological tourism means' application we studied age specificities of physical condition indicators; of motivations and ecological behavior of primary school pupils.

By results of the research it was found that the most quantity of primary school pupils has external motivation. School attracts such children as an object of cognitive functioning. One third of children have low motivation that witness about accumulation of fatigue after lessons. The mentioned conditions need in working out of measures, oriented on recreation of primary school pupils' psycho-emotional state. Among priority motor functioning's kinds pupils mark out outdoor and sport games (27%), walks (22%), tourism (21%), bicycle, rollers (19%) and etc. The main targeted orientation of such classes is manifested in desire to have active test, to communicate, to compete. It was found that dominating type of settings in respect to nature is aesthetic one. The nature is perceived as an object of beauty.

Results of questioning show that primary schoolchildren have potentials for ecological behavior. Pupils, to some extent, have knowledge about norms of behavior in nature; about interconnection of health and environmental conditions. Not all pupils think that it is necessary to observe ecological requirements in every day life. In school practice formation of the mentioned feature is practiced from time to time, without proper methodic maintenance. Assessment of pupils' ecological awareness showed that average level dominates in primary school (see table 1).

Table 1. Distribution of primary school pupils by levels of ecological awareness (n=191), %

Pupils	Form	n	Correlation of pupils by levels of ecological awareness						
			Very low	Low	Below average	Average	Above average	High	Very high
Boys	2	29	2.6	11.3	19.2	59.4	7.5	0	0
Girls	2	38	4.8	9.4	17.5	62.6	5.7	0	0
Boys	3	38	0	1.8	11.3	54.9	23.0	5.4	3.6
Girls	3	23	0	8.6	1.8	72.4	15.5	0	1.7
Boys	4	29	2.7	5.4	3.8	55.7	10.8	5.4	16.2
Girls	4	34	0	2.3	4.6	63.0	11.6	4.6	13.9

The received data show that it is necessary to introduce ecological-developing situations in the process of primary school pupils' ecological education. It will be purposeful to use variable techniques and forms of work on organization of real communication with nature. An example of such education is children's participation in ecological tourism and health related-recreational measures, which are practiced in the fresh air. The quantity of missed, owing to diseases, days is, in average, 12 a year per one pupil (in second form – 5.1, in third – 9.8, in forth – 16.1 per one pupil). The study of primary school children's morbidity indicators showed that 16% – are diseases of muscular-skeletal system, 12% - respiratory system; 8% - diseases of digestion system. 6% of primary school pupils have more than one diagnose. Indicators of organism's adaptation-reserve potentials have tendency for worsening (failure of adaptation was observed in 44.12% of girls and 33.33% of boys of forth form; if to compare – in second form 25.93% of girls and 27.59% of boys). By most of physical fitness indicators pupils correspond to low level. Analysis of pupils' physical condition indicators showed mainly average and below average levels (3<sup>rd</sup> form pupils – 61.9%, 4<sup>th</sup> form - 58.5%). The received results witness about increase with age the quantity of children, who have disharmony in their growth – in second form only 60.34% have harmonious growth; in third – 50.81%. In 4<sup>th</sup> form percentage of children with harmonious growth reduces to 38.8%. Assessment of physical workability by Rouffiet's methodic showed that index indicators were within from ( $\bar{x}$ ; S) (8.55; 2.34 conv. un.) to (9.36; 2.98 conv. un.). In great number of pupils we observed average level of workability. The data of the tested pupils' distribution by health level permit to say that 35.9–42.9% of 2<sup>nd</sup> and 3<sup>rd</sup> form pupils have average physical health level. Most of 4<sup>th</sup> form pupils (41.1–45.1%) have below average level of physical health (see table 2).

Table 2. Distribution of 2-4 form pupils by level of physical health, %, (n=191)

Class	Sex	n	Percentage correlation of pupils by physical health levels				
			Low	Below average	Average	Above average	High
2	Boys	29	27.8	25.2	40.8	6.2	0
	Girls	38	26.5	32.6	36.6	4.3	0
3	Boys	38	26.2	24.1	42.9	6.8	0
	Girls	23	29.8	28.4	35.9	5.9	0
4	Boys	29	25.0	41.1	26.0	5.9	2.0
	Girls	34	19.5	45.1	23.0	7.5	4.9

Great number of the tested schoolchildren is out of safe health level. Analysis of pupils' physical condition showed reduction of some indicators in the period from second to fourth form. The mentioned negative changes are conditioned by reduction of general level of motor functioning and by tensed learning activity. The quantity of academic hours per week by 3-15% exceeds maximal admissible academic load in primary school. In fourth form we observed substantial increase of static and informational forms of loads. That is why the choice of fourth form pupils as an object of the research in formation experiment was conditioned by objective demand in improvement of their physical condition indicators. From such positions application of ecological tourism means can be regarded as effective method of increase of motivation for regular motor functioning practicing; of physical condition indicators. The conducted by us studies became the base for working out of extra-curriculum classes' program with application of ecological tourism means for primary school pupils.

Analysis of expert assessment data witnesses that it is purposeful to implement ecological tourism means in the process of extra-curriculum primary school pupils' physical education (concordance coefficient was  $W=0.72$ ). Experts determined that for primary schoolchildren priority forms of ecological tourism were: ecological lesson (19 points), ecological path, (25 points), ecological game (30 points), day-off hiking (37 points), ecological excursion (45 points), ecological camp (62 points) ( $W=0.82$ ,  $p<0.05$ ). The main purpose of the offered program is promotion of harmonious personality growth; pupils' adaptation to intensification of learning process; organization of leisure and active rest; rising of schoolchildren's ecological culture. For practical realization of the offered program we determined a complex of organizational-pedagogic conditions for increase of primary schoolchildren's ecological awareness.

The structure of program includes 7 main aspects: educational, physical culture-health related, ecological, research, cultural-entertaining and informational. Practicing of ecological-research work in time of walk, hiking and excursions facilitates children's cognition of interconnections in the natures; formation of firm interest to environment; children's cognitive activity. Pupils had chance to participate in sports competitions, ecological hiking and excursions.

The content of the program included merry starts with ecological tasks, practical classes on ecological school of safety: obstacle course overcoming, orientation techniques' mastering; outdoor games in the fresh air, ecological competitions; quizzes; ecological path's working out and marking; ecological path's arrangement near own school and so on.

Assessment of effectiveness of the worked out program was fulfilled in the process of formation experiment. Control group pupils were trained by traditional program for tourism and local history circles of out-of-school education. The main components of both programs were similar and took the same time (216 hours, 6 hours a week). Frequency rate of the classes during one week in both groups – three times. Content of out-of-school classes for primary schoolchildren of control group did not contain separately marked out ecological activity. Accordingly, they had less quantity of ecologically and information oriented practical lessons. Junior pupils of control group had more topical classes on special physical and tourist's training.

After experiment we determined confident improvement of physical condition indicators; some indicators of cardio-vascular system's functional state; physical health level, ( $p<0.05$ ) (see table 3).

In control group we also registered tendency to improvement of physical condition indicators after experiment. The changes of the mentioned indicators were not confident ( $p>0.05$ ). In experimental group (by 29.5%) and in control group (by 15.5%) the quantity of missed, owing to disease, days during academic year reduced.

Table 3. Distribution of experimental and control group children by physical health before and after experiment

Group	Sex	n	Physical health level				
			Low	Below average	Average	Above average	High
Before experiment							
Control	Boys	8	29.0	53.4	12.1	5.5	-
	Girls	17	27.8	61.7	8.0	2.5	-
Experimental	Boys	10	31.1	51.0	10.4	7.5	-
	Girls	15	28.3	56.8	10.2	4.7	-
After experiment							
Control	Boys	8	15.0	37.5	39.2	8.3	-
	Girls	17	11.3	53.7	29.3	5.7	-
Experimental	Boys	10	3.3	28.9	32.0	35.8	-
	Girls	15	-	33.3	23.8	40.4	2.5

The studies, conducted at the beginning of experiment showed insufficient ecological interests and fragmentary character of knowledge. Besides, we observed the absence of ecological values. Such situation

explains personal passivity of children and absence of their desire to participate in ecological activity. By results of experiment we determined changes in priority motives of experimental and control group pupils' participation in ecological activity. In experimental group prevailing motives were those, belonging to collective block (mutual assistance, possibility to share own knowledge, active participation in collective deeds, good actions for the sake of surrounding people). In control group boys changes were similar. In control group girls we found no significant changes in priority motives. Re-distribution of main motives for participation in ecological activity was observed also in experimental group by personal and prestige blocks. The quantity of experimental group pupils, who participated in ecological activity by personal and prestige reasons (to be better than other, to rule other) reduced. Due to ecological tourism classes in schoolchildren of experimental group priorities in motivation sphere re-distributed. New knowledge and actions caused children to expand motivations in collective block. Experimental researches showed improvement of experimental and control group pupils by indicator of attitude to nature. The quantity of children with irresponsible attitude to nature reduced in both groups. Though, in experimental group substantial changes were observed also in indicators of positive and responsible attitude to the nature.

Increase of schoolchildren's ecological awareness level, changes in their attitude to the nature, increase of motivation for ecological activity substantially influenced on ecological culture level of the tested contingent of experimental group. It was found that more than 20% of boys and 40% of girls had profound knowledge and skills in this knowledge application in practice in different situations that characterize high level of ecological culture. 20% of boys and 13.4% of girls have ecological knowledge and skills as well as ability to interpret them (level above average). Average level of ecological culture was in 30% of boys and 35.3% of girls. The presence of elementary ecological knowledge was found in 30% of boys and 11.3% of girls (see table 4).

Table 4. Distribution of experimental and control group pupils by ecological culture level before and after experiment, %

Schoolchildren		Level of ecological culture						
		I	II	III	IV	V	VI	VII
Control group								
Boys, n=8	Before	50.0	25.0	12.5	12.5	–	–	–
	After	12.5	12.5	37.5	25.0	12.5	–	–
Girls, n=17	Before	47.3	17.6	11.7	17.6	5.8	–	–
	After	5.8	11.8	5.8	47.1	29.5	–	–
Experimental group								
Boys, n=10	Before	40.0	30.0	20.0	10.0	–	–	–
	After	–	–	30.0	30.0	20.0	20.0	–
Girls, n=15	Before	46.6	20.0	13.5	13.3	6.6	–	–
	After	–	–	11.3	35.3	13.4	40.0	–

\*Notes: I – very low level, II –low, III –below average, IV –average, V –above average, VI – high, VII – very high level

In experimental group we found no low and very low levels. 25% of control group boys and 17.6% of girls have extremely limited volume of ecological knowledge and weak skills and desire to use them in practice.

The program of classes with ecological tourism means' application proved its effectiveness owing to improvement of physical condition indicators, rising of ecological culture level. The mentioned above permits to recommend the worked out program for implementation in physical education process of primary school pupils.

We initiated the structure of "school ecological monitoring" and worked out its content for extra-curriculum physical education trainings. The program contains diagnostic of ecological culture, the level of adaptation-reserve potentials, motor functioning and physical health of primary school pupils.

## Discussion

Theoretical analysis of special literature data on the studied problem showed that the present status of physical education's organization in general and ecological education in particular provoke reviewing and reconstruction of organizational-methodic principles of physical education. The solution of the mentioned problem acquires especial importance in specific conditions of ecological and social-economic crisis; intensification of learning process. It conditions overloading of child organism's psychic and physiological systems. Means of ecological tourism and physical exercises' systemic practicing weaken this stress. Generalization and systemizing of scientific-methodic literature data on development of modern school education system in Ukraine show that innovations in educational system practically do not touch physical education branch. Educational process in comprehensive school is still being been overloaded with subjects, oriented on development only mental activity. Neither weakening of modern children's physical condition, nor continuing worsening of their health is considered. Formal approach to physical culture teaching and distortion of its target also result in pupils' health worsening. Our researches prove the available data about low level of

health and motor functioning of primary school pupils and witness that it is necessary to improve schoolchildren's physical education system (Butenko, 2015; Sainchuk, 2015). Results of our work supplement and expand information about structure and content of extra-curriculum physical education of primary school pupils (Moskalenko, 2009). Also the data of (Grin'ova, 2014; Butenko, 2015) about tourism means' application in health related trainings of pupils are supplemented. Ideas about primary school pupils' priority motives for choice of extra-curriculum motor functioning's trainings and their influence on psycho-emotional state are expanded (Krucevich, & Bezverkhnia, 2010; Sainchuk, 2015; Cherniavs'kij et al., 2007). We also generalized and improved approaches to organization of extra-curriculum physical education in respect of primary school pupils' ecological culture's cultivation in comprehensive educational establishments.

As a result of our research we theoretically substantiated program of extra-curriculum classes with ecological tourism means' application, oriented on improvement of physical condition indicators and development of pupils' ecological culture and readiness for environmental activity in "area of his responsibility". We determined and characterized complex of organizational-pedagogic conditions of rising of primary school pupils' ecological awareness (complex approach to usage of educational potentials of academic disciplines' cycles and reserves of extra-curriculum works); rational combination of traditional and innovative forms and methods of accumulation of ecological-ethic behavior experience; appropriate didactic-methodic and personnel provisioning and etc.). We expanded ideas about possibilities of application of ecological tourism different organizational forms for improvement of primary school pupils' physical condition; for formation of their motivation for extra-curriculum physical education classes.

### Conclusions

The status of pupils' ecological awareness is characterized by significant gaps in education, underestimation of its many sides. Analysis of school practice shows that modern educational system does not ensure systemic influence on primary school pupil's personality for overcoming excessive pragmatism in attitude toward environment. Such situation results in absence of basis for formation of motivation care attitude to nature. Besides, it facilitates progressing of indifferent attitude to own health. That is why, application of ecological tourism means of universal and inter-disciplinary character will permit to raise primary school pupils' ecological culture and facilitate improvement of physical condition indicators.

The basis for working out the program of trainings with ecological tourism means' application was the knowledge about physical condition's initial level, ecological awareness and motivation of primary schoolchildren. We determined and characterized complex organizational-pedagogic conditions for rising of primary schoolchildren's ecological awareness level: complex approach to usage of educational potentials of academic disciplines' cycles and extra-curriculum works' reserves; rational combination of traditional and innovative forms and methods of accumulation of ecological-ethic behavior experience; appropriate didactic-methodic and personnel provisioning and so on.

Results of the conducted pedagogic experiment proved effectiveness of ecological tourism trainings in respect to positive influence on physical condition indicators, ecological culture formation; organization of useful leisure and active rest of primary school pupils. We registered confident improvement of physical condition indicators and ecological knowledge level.

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**Conflict of interests** The authors declare that there is no conflict of interests.

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