

COMPUTER TECHNOLOGY AS A PEDAGOGICAL INNOVATION IN PHYSICAL EDUCATION OF SCHOOLCHILDREN

Borysova Yu.Yu., Vlasyuk E.A.

Dnepropetrovsk State Institute of Physical Culture and Sport

Annotation. *Purpose:* determine the status of implementation of computer programs in physical education of students of Dnipropetrovsk region and the need for automated monitoring systems components of the physical condition of schoolchildren. *Material:* This survey was attended by 21 physical education teacher: teacher-trainers - 19.05%, with the highest category of teachers - 33.3%, with the first - 23.8%, in the second - 19.05%, professionals – 4.8%. Found that 90.5% of employees feel the need to create an automated system for complete monitoring of the physical condition of students grades 1-11 for the introduction of a differentiated approach in physical education of students. *Conclusions.* The study results give reason to believe it expedient to establish a comprehensive program of monitoring the physical condition of students based on physical development, functional and physical preparedness depending on features weighty growth indicators.

Keywords: computer, technology, innovation, comprehensive monitoring.

Introduction

Increasing of effectiveness of rising generation's physical education is an urgent task of theory and practice of physical education. Attempts to solve it have been made by many of domestic and foreign scientists, specialists, managers and some pedagogues [6]. One of main reasons of unsatisfactory state of comprehensive schools' pupils as well as their physical fitness is, in opinion of specialists, absence of scientifically grounded system of pupils' physical education [4, 8]. In opinion of Yu.V. Vaskov it is connected with the fact that there is no developed holistic conception of this problem, ways of its modernization (reconstruction) have not been determined. Recent years, in Ukraine there have happened some deaths during physical culture lessons at comprehensive schools. In this connection Ministry of education and science of Ukraine issued two orders: № 956 dt. 22.10.2008 – "On measures of improvement of physical education and preservation of school children's health at educational establishments of Ukraine" [<http://oipop.ed-sp.net/content/view/954/36>], № 1008 dt. 8.11.2008 – "On urgent measures of preservation of pupils' health during physical culture lessons, defense of Motherland and extra-curriculum sport-mass measures" [<http://shkola.ostriv.in.ua/publication/code-281A8DFA21B4E>]. Analysis of unsatisfactory state of physical education at comprehensive educational establishments was carried out at joint collegiums of Ministry of education and science of Ukraine, Ministry of health protection of Ukraine, Ministry of Ukraine on family, youth and sports. On the base of this analysis they adopted appropriate decision, dt. November 11th, 2008, № 13/1-2; 10; 11/1. [<http://oipop.ed-sp.net/content/view/973/77>]. In connection with this modern science about physical education requires transition from traditional means of collecting of information about pupils' physical condition to complex monitoring. It is conditioned by the fact that teacher does not always have actual information about pupils' health that negatively reflects in quality of physical education.

Pedagogic innovations are relatively new concept for sphere of education. Recent 10-12 years, in connection with changes in social-economic conditions, development of scientific researches in field of education, need in new, more effective forms, means, methods and technologies of teaching and education has increased greatly [6].

Pedagogic innovations are ideas, conceptions, means, methods and results of improvement of pedagogic system. In respect to educational system innovations mean product of professional-pedagogic functioning, which have substantial properties of novelty and application of which facilitates achievement of social, educational and economic effect.

In our opinion one of pedagogic innovations is creation of automatic system of complex control over pupils' physical condition in order to reveal differences in pupils physical fitness, individual-personal features of responding to external factors and physical loads.

This idea is proved by a number of advanced domestic scientists: V.O. Kashuba (2009), V.G. Arefyev (2007), V.Yu. Volkov (2001), V.S. Ashanin (2005), V.O. Pustovalova (2009), and by a number of foreign scientists, who considered purposeful to widely implement new technologies of automatic processing of information and creation of data base about children's physical condition on this base for planning of physical loads, development of individual programs for independent trainings [9-15, 17, 19, 22]. Foreign editions widely elucidate problem of application of innovative technologies by pedagogues of comprehensive and higher educational establishments [16, 18, 20, 21].

Special attention is paid to computer programs, which realize control over physical condition of pupils of different age groups (N.M. Goncharova, 2009).

Though, as on to day, physical culture teachers' attitude and readiness to computerization of pupils' physical education has not been studied sufficiently. But success of implementation of computer technologies is directly connected with this attitude. In this connection there appears need in determination of approaches to optimization of structure and content of computer training of physical culture teachers.

Our work is connected with fulfillment of fundamental research for 2013-2015 –“Scientific-theoretical principles of innovative technologies in physical education of different population strata”, state registration number 0113U001406.

Purpose, tasks of the work, material and methods

The purpose of the work is to determine the state of implementation of computer programs in physical education system of Dnipropetrovska region’s school children and to reveal demands in automatic systems of control of school children’s physical condition at present stage.

The tasks of the research:

1. Carry out questioning of physical culture teachers.
2. Determine purposefulness of computer programs’ implementation in physical education’s process of Dnipropetrovska region’s school children.

The method of the research was anonymous questioning of physical culture teachers, which was carried out on base of Dnipropetrovsk regional institute of after diploma pedagogic education and comprehensive schools of Dnipropetrovska region.

The questioning covered 21 teacher of physical culture, in particular teachers – 19.05%, teachers of highest category – 33.3%, of first category – 23.8%, of second category – 19.05% and 4.8% of specialists. Period of practical work less than 5 years – 14.3% of respondents; up to 10 years – 33.3%, more than 10 years – 52.4%. Representatives of Dnipropetrovska region were 48.0% from total quantity of teachers and from Dnipropetrovsk – 52.0%.

The content of questioned shows that all our respondents were experienced specialists and that is why their answers were highly valuable in respect of determination of need in computerization of school physical education.

Results of the research

The questionnaire for physical education teachers contains questions about necessity of knowledge and skills in work with PC and application of computer technologies in practice, about period of practical work and qualification of respondents.

In first block of questions we determined degree of application of computer technologies in process of school children’s physical education. Results of our research show, that physical culture teachers use different computer programs, developed on base of computer laboratories of higher educational establishments [2] or created by respondents themselves [3].

Question –“What is your attitude to application of computer technologies in field of physical education and sports?” was answered positively by 81.0 % of respondents and only 19.0 % regard this application as not purposeful.

Analysis of answers to second block of questions witnesses that 57.1 % of specialists do not use computer programs (see fig.1), justifying it by the following reasons: 33.3 % — by insufficient material base of schools; 33.3 % – absence of skills in working with PC; 38.1 % of respondents do not know where to acquire such programs; 19.0 % mark absence of programs, which would satisfy their demands; 4.8 % think that implementation of computer technologies in educational process is unnecessary.

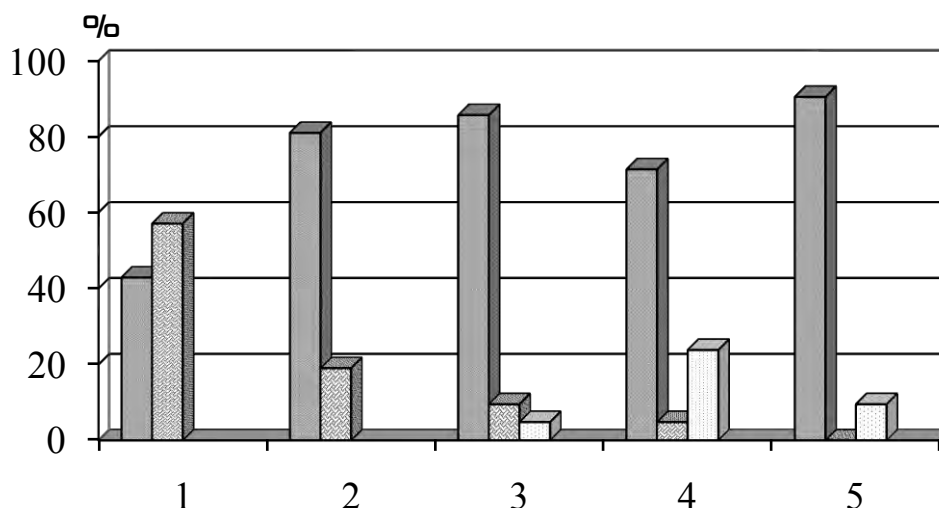


Fig.1. Attitude of physical culture teachers to computerization of school children’s physical education:

■ –yes; ▨ –no; ▤ – not sure;

1. Apply computer programs in practical work;
2. Think that implementation of computer technologies in educational process can help to optimize physical education of pupils;
3. Think that it is possible to evaluate health, physical condition and fitness of children with the help of computer;
4. Think it possible to influence on progress, on health, physical condition and fitness of children with the help of computer programs;

5. Think it is necessary to create automatic system of complex control over 1-11 forms pupils' physical condition, for implementation of differentiated approach in pupils' physical education.

Computer programs are already used by 42.9 % of physical culture teachers. More over, 81.0 % of these teachers think that computerization of physical education teacher's work is one of ways of physical education's optimization. 85.7 % of teachers think that computer programs can help to evaluate and influence (71.4 %) on pupils' physical condition.

90.5 % of specialists think that it is necessary to create automatic system of complex control over 1-11 forms pupils' physical condition for implementation of differentiated approach in school children's physical education. With it coefficient of concordance was $W = 0.729$, mean value of raga correlations was 072 ($p = 0.0001$) that proves concordance of teachers' opinions and confidence of questioning results in the whole.

These data have become a ground for working out of automatic program of complex evaluation of 7-17 years old children's physical condition with determination of age-sex, functional characteristics and reserves of children's organism, which shall be considered with differentiated approach to pupils' physical education.

Conclusions:

Thus, our questioning permits to recommend application of computer technologies as pedagogic innovations in organizational-methodic maintenance of pupils' physical education. Results of the research also permit to think it purposeful to create program of complex monitoring of 1-11 form' pupils' physical conditions and fitness depending on their mass-height indicators.

References

1. Borisova Iu.Iu. *Diferencijovaniy pidkhid u fizichnomu vikhovanni shkoliariv na osnovi vikoristannia komp'uternikh tekhnologij* [Differentiated approach to physical education of students through the use of computer technology], Dnepropetrovsk, 2009, 20 p.
2. Vandzhura V. *Fizichne vikhovannia v shkoli* [Physical education in schools], 2003, vol.2, pp. 16-20.
3. Vandzhura V. *Fizichne vikhovannia v shkoli* [Physical education in schools], 2005, vol.4, pp. 35-38.
4. Vas'kov Iu.V. *Visnik Lugans'kogo nacional'nogo universitetu* [Journal of Luhansk National University], 2010, vol. 17(2), pp. 103-108.
5. Nedel'ko V. *Zdorov'e Shkol'nika* [Health of schoolchild], 2010, vol.3(476), p. 5.
6. Osipenko E.V., Iarchak I.L. *Pedagogicheskie innovacii v fizicheskom vospitanii kak faktor povysheniia kachestva obrazovaniia* [Pedagogical innovations in physical education as a factor in improving the quality of education]. *Innovacionnye tekhnologii v sporte i fizicheskom vospitanii podrastaiushchego pokoleniia* [Innovative technologies in sport and physical education of the younger generation], Moscow, 2014, pp. 40-42.
7. Parkhomenko R.N., Babenkova E.A. *Ozdorovitel'nye tekhnologi v sisteme fizicheskogo vospitaniiia* [Health technologies in the physical education]. *Innovacionnye tekhnologii v sporte i fizicheskom vospitanii podrastaiushchego pokoleniia* [Innovative technologies in sport and physical education of the younger generation], Moscow, 2014, pp. 251-254.
8. Sutula V.O., Bondar T.S., Vas'kov Iu.V. *Slobozhans'kij naukovu-sportivnij visnik* [Slobozhansky scientific and sport bulletin], 2009, vol.1, pp. 15-21.
9. Entwistle N. An Innovative Strategy to Promote Oral Health in Schoolchildren. *The Journal of the Royal Society for the Promotion of Health*. 1994, vol.114(6), pp. 311-313. doi:10.1177/146642409411400607.
10. Grad Rafal. Physical activity and leisure time among 13-15-year-old teenagers living in Biala Podlaska. *Physical Education of Students*, 2013, vol.2, pp. 74-79. doi:10.6084/m9.figshare.156385
11. Khudolii O.M., Titarenko A.A. The effectiveness of development programming strength in primary school children. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2013, vol.7, pp. 83-88. doi:10.6084/m9.figshare.744827
12. Murasko J.E. Associations between household income, height, and BMI in contemporary US schoolchildren. *Economics & Human Biology*. 2013, vol.11(2), pp. 185-196. doi:10.1016/j.ehb.2011.09.001.
13. Onyango-Ouma W., Aagaard-Hansen J., Jensen B.B. The potential of schoolchildren as health change agents in rural western Kenya. *Social Science & Medicine*. 2005, vol.61(8), pp. 1711-1722. doi:10.1016/j.socscimed.2005.03.041.
14. Platonova A.G., Podrigalo L.V., Sokol K.M. Rational for the use of children's motor activity as a criterion for the effectiveness of rehabilitation and recreation. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2013, vol.11, pp. 72-76. doi:10.6084/m9.figshare.817929
15. Podrigalo L.V., Platonova A.G., Ciešlicka M. Comparative analysis of vitamin status of schoolchildren in recreational period. *Physical Education of Students*, 2013, vol.5, pp. 79-82. doi:10.6084/m9.figshare.771201
16. *Professional standards Accreditation of Teacher Preparation Institutions*. National Council for Accreditation of Teacher Education. Washington. 2008, 92 p.
17. Rice P., Gunstone R. Health and sickness causation and the influence of Thai culture among Thai schoolchildren. *Research in Science Education*. 1986, vol.16(1), pp. 63-72. doi:10.1007/BF02356819.
18. Rink Judith. Teacher perceptions of a physical education statewide assessment program. *Research quarterly for exercise and sport*, 2007, vol. 78(3), pp. 204-215.

19. Seabra A., Mendonça D., Maia J. Gender, weight status and socioeconomic differences in psychosocial correlates of physical activity in schoolchildren. *Journal of Science and Medicine in Sport*. 2013, vol.16(4), pp. 320-326. doi:10.1016/j.jsams.2012.07.008.
20. Trifonova M. Competency in ICT of students in “pre-school and primary school pedagogy” – educational qualification degree bachelor and educational qualification degree master. *Trakia Journal of Sciences*, 2010, vol.8(3), pp. 316-319.
21. Wright Steven. A comparative view of teaching practice in Physical Education. *International Sports Studies*. 1999, vol.21(1), pp. 55-68.
22. Zou J Liu Q., Yang Z. Development of a Moodle course for schoolchildren’s table tennis learning based on Competence Motivation Theory: Its effectiveness in comparison to traditional training method. *Computers & Education*. 2012, vol.59(2), pp. 294-303. doi:10.1016/j.compedu.2012.01.008.

Information about the authors:

Borysova Yu.Yu.: ORCID: 0000-0003-1296-7617; admin_infiz@ukr.net; Dnepropetrovsk State Institute of Physical Culture and Sport; Victory Quay str. 10, Dnepropetrovsk, 49094, Ukraine.

Vlasyuk E.A.: ORCID: 0000-0001-6515-2070; admin_infiz@ukr.net; Dnepropetrovsk State Institute of Physical Culture and Sport; Victory Quay str. 10, Dnepropetrovsk, 49094, Ukraine.

Cite this article as: Borysova Yu.Yu., Vlasyuk E.A. Computer technology as a pedagogical innovation in physical education of schoolchildren. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2014, vol.11, pp. 8-12. doi:10.15561/18189172.2014.1102

The electronic version of this article is the complete one and can be found online at: <http://www.sportpedagogy.org.ua/html/arhive-e.html>

This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited (<http://creativecommons.org/licenses/by/3.0/deed.en>).

Received: 25.05.2014
Published: 05.06.2014