The framework and syllabus of the optional course in physical education, «Phygital-sport»

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Abstract

Objective of the study was to support the educational framework of the optional physical education course «Phygital Sport».

Methods and structure of the study. The framework is built upon a thorough examination of educational and instructional materials on the arrangement of educational and training processes and comprehensive pedagogical assessment in the following sports: computer gaming, basketball (3x3), mini-football, and track and field. In the creation of the pedagogical model, we adhered to the following principles: incrementalism, coherence, engagement, balanced development, and gamification.

Results and conclusions. The fundamental aspects of the curriculum, the allocation of time by subject and semester, the typical format of the lessons, the logistical support for the course, and the criteria for evaluating the quality of the course are outlined. The outcomes of this research can be applied in the implementation of physical education programs that incorporate phygital sports in educational settings.

Keywords: *phygital physical education, elective physical education, phygital sport, z-generation, pedagogical model, computer sport, phygital sport.*

Introduction. Currently, there is a decrease in the motivation of student youth for physical education and sports activities. Researchers note the negative dynamics of attendance of physical education classes among senior students compared to first-year students [4, 2], as well as the index of satisfaction with the organization of teaching [5]. The task of activating cognitive interest in physical education classes in accordance with the principle of independent choice of an elective course and taking into account individual characteristics is relevant. Modern students and schoolchildren born before 2010-2012 are representatives of the «Z-generation» or the generation of virtual communication. Their education took place in the information society, so they are characterized by obtaining most of their knowledge from the Internet using a variety of multimedia devices, as well as spending a significant amount of time on social networks and video games. The authors note [3] that employees of the physical education and sports sphere need to turn to the positive characteristics of the new generation in the educational process: quick inclusion in the tasks that interest them, digital competence, focus on achievements, striving for self-realization, ambition. Thus, among the 1st and 2nd year students of economic and technical universities of Moscow, 93.5% of people from the study group noted an interest in studying physical education in the form of gamification [8]. In order to improve the educational process in physical education classes, Russian universities began to use interactive teaching methods with elements of phygital sports. For example, in physical education classes at the Baltic State Technical University «VOENMEKH» named after D.F. Ustinov in 2023, the phygital sports discipline «Rhythm Simulator» was

successfully introduced [1]. The authors of another work propose including VR technologies and computer simulators of game sports in the structure of the elective course «Winter Football» in the amount of up to 20% of the training time [6]. It is noted that elements of phygital technologies reliably increase attendance at physical education classes, performance indicators and have a beneficial effect on the development of teamwork. Thus, the combination of active activities in the physical and digital environments using electronic devices for gamification of the educational process in the «Z-generation» environment seems to us to be a promising trajectory for the development of physical education in higher education.

Objective of the study was to support the educational framework of the optional physical education course «Phygital Sport».

Methods and structure of the study. The development is based on the analysis of educational and methodological literature on the organization of educational and training activities and comprehensive pedagogical control in the following sports: computer sports, 3x3 basketball, mini-football and track and field. The choice of these areas was due to the material and technical conditions that were created within the framework of the Priority 2030 program on the basis of the phygital center of Peter the Great St. Petersburg Polytechnic University [7]. When developing the pedagogical model, the following principles were observed: gradualness, consistency, activity, harmonious development, gamification.

Results of the study and discussion. The pedagogical model of the elective course «phygital sport» was developed in February 2023 and represents a set of interconnected components of the educational process, which are aimed at solving the following problems: harmonization of physical development, health improvement and reduction of the level of physical inactivity; development of mental abilities and physical qualities for mastering a rational technique for performing actions in a digital environment and on a sports ground; formation of communication skills and teamwork; study of the history of the development of phygital sport and the phygital movement, rules and features of sports competitions of a new format; stimulation of

Distribution of academic hours by topics and semesters

Topic name	Total	Semester			
		1	2	3	4
Topic 1. Safety precautions (safety precautions during the lesson; safety and self-safety techniques; preparing the workplace for educational activities)	16	4	4	4	4
Topic 2. Physical training (drill exercises; gymnastic exercises; track and field exercises; general physical training; special physical training; outdoor games and special types of physical activity in the preparation of a phygital athlete)	48	12	12	12	12
Topic 3. Features and modern development vectors of phygital sports (history of the phygital movement development; sports competitions in the format of the Future Games; categories «tactics», «sport», «technology», «strategy», «speed»; requirements and specifics of organizing phygital sports competitions; digital devices, sports equipment and equipment used in phygital sports competitions; software products used in phygital sports competitions)	8	4	4	0	0
Topic 4. Physical part of phygital sports disciplines (basketball 3x3; mini-football)	24	6	6	6	6
Topic 5. Digital part of phygital sports disciplines (battle arena DOTA 2; tactical 3D battle CS2; sports simulators NHL, FIFA, NBA; fighting games Tekken and Mortal Kombat; technical simulator Assetto Corsa; rhythm simulator)	52	14	14	12	12
Topic 6. Tactics of individual and team play in types of phygital sports programs (analysis of game moments influencing the situation in the physical and interactive part of the selected type of program; tactics of individual play depending on the role of the athlete in the physical and interactive part of the selected type of program; team tactical techniques in the physical and interactive part of the selected type of program)	28	6	6	8	8
Topic 7. Organization and holding of competitions in the phygital format (regulations on the competition, panel of judges, schedule of games and results table, site preparation, holding of competitions, summing up)	24	4	4	8	8
Assessment of physical fitness, passing control standards	16	4	4	4	4
Independent work of students	96	24	24	24	24
Credit	16	4	4	4	4
TOTAL	**328**	**82**	**82**	**82**	**82**

students' motivation by realizing their "I" and transferring the strongest to the university phygital sport team. The development of the elective course program is designed for 328 academic hours. The distribution of hours by topics and semesters is shown in the table. From the data provided, it is clear that the workload is 54 hours of practical classes and 24 hours of independent study each semester during the 1st-2nd years of study.

The distribution of activities during classes corresponds to the principle of harmonious development. Each semester, students spend 50% of their time actively engaged in the digital environment using personal computers, game consoles, virtual reality systems, and car simulators based at a specialized phygital center. The remaining 50% of the time, students spend in the physical environment on sports grounds using sports equipment. The content of the physical part of the phygital sports disciplines is dominated by general physical training, and sports training is aimed at developing basic practical skills in 3x3 basketball and mini-football: stances and movements, individual ball handling techniques in attack and defense, team tactics of players in defense and attack. The content of the digital part of the phygital sports disciplines in the first semester is aimed at familiarizing with the main sports video games, and in the following semesters – at in-depth specialization in one of the following areas: combat arena, tactical 3D combat, sports simulators, fighting games, technical simulator or rhythm simulator.

The structure and principles of constructing a lesson on the elective course «Phygital Sport» are classical: a preparatory part (20-25 min), the main part (60-65 min) and the final part (5-10 min). Within the framework of one lesson, it is proposed to solve problems either with active activity in the digital environment, or only in the physical one. This is due to the peculiarities of the material and technical support of the discipline, the peculiarities of information perception by representatives of the «Z-generation» and the hygienic factor. Conducting training sessions on the sports ground corresponds to the generally accepted methodological rules. A typical lesson using digital devices in the preparatory part includes performing a set of exercises in a standing position at a digital device and special «Rasklik» exercises in accordance with the chosen discipline. In the middle of the main part of the lesson, students perform a set of exercises at a digital device with elements of finger gymnastics, as well as gymnastics for the eyes. The final part includes a set of breathing exercises. Special material and technical support for the discipline includes: personal computers with peripherals and a headset (20 pcs.), assembled car simulators (2 pcs.), PlayStation5 game consoles with a set of peripherals (2 pcs.); Oculus Quest 2 virtual reality systems (2 pcs.). This volume of digital devices will allow conducting classes in study groups of up to 30 people. The main criteria for assessing the quality of mastering the discipline are: the results of student attendance at classes; the results of passing control standards for physical and special training; the results of the control survey of students (at the level of familiarization); the result of participation in competitions and judging practice. The following exercises are used as control tests to assess physical fitness: 100 m run, 2000 m run (girls), 3000 m run (boys), forward bend from a standing position on a gymnastic bench, long jump from a standing position with a push of two legs, pull-ups from a hanging position lying on a low bar 90 cm (girls), pull-ups from a hanging position on a high bar (boys). To assess special fitness, the following exercises are used, posted on the online portal cyberten.ru: special coordination, reaction speed, speed of thinking, visual memory, Aim training, click test, fine motor skills, concentration, target control, switching attention.

Conclusions. The proposed pedagogical model of the elective course «Phygital Sport» is a set of interconnected components of the educational process. The program is designed for 328 academic hours during the 1st-2nd year of study. The distribution of activities corresponds to the principle of harmonious development. Each semester, students actively engage in the digital environment at a specialized phygital center for 50% of the time and spend 50% of the time in the physical environment on sports grounds. The content of the physical and digital parts depends on the material and technical support of the discipline and includes general physical training, sports and outdoor games, as well as computer areas.

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