Pedagogical model for implementing drone racing into the sports life of a university

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Abstract

Objective of the study was to develop and scientifically substantiate a pedagogical model for the use of innovative pedagogical technologies for the introduction of drone racing into the inclusive physical education and sports environment of the university.

Methods and structure of the study. The comparative analysis and synthesis of special documentation and information sources; modeling organizational and methodological support for the introduction of drone racing into the physical education and sports space of the university; structuring and integration of pedagogical technologies; formulation of conclusions.

Results and conclusions. The pedagogical model for the use of innovative pedagogical technologies for the effective implementation of drone racing in inclusive student sports has been developed and scientifically substantiated in order to involve student youth in the system of sports training and participation in competitions.

Keywords: *students, drone racing, technology, pedagogical model.*

Introduction. The higher education system, including physical education, updates its development taking into account the country's state policy (national goals) and the interests of students (high-tech and intellectual sports) [6].

The virtual life of modern students (communication, learning, recreation, entertainment) leads to a decrease in physical activity and deterioration of health. The current situation actualizes the search for new methods, forms and means to attract young people, including those with disabilities to a sports lifestyle through the introduction of innovative types of physical activity into the inclusive physical culture and educational environment of the university [5].

Experts believe that the inclusion of a technologically advanced, innovative sport, Drone racing (drone racing), into the university space will contribute to the formation of universal and professional competencies in students, health-saving competencies and readiness to use the experience of operating drones in future professional activities [4].

The introduction of innovative high-tech sports into student sports and physical education of students with different levels of health determines the updating of the content, methods and forms of training through the use of innovative pedagogical technologies.

Purpose of the study: to develop and scientifically substantiate a pedagogical model for the use of innovative pedagogical technologies for the introduction of drone racing into the inclusive physical education and sports environment of the university.

Methods and structure of the study. The study was conducted on the basis of the Plekhanov Russian University of Economics. The research work included: comparative analysis and synthesis of special documentation and information sources; modeling organizational and methodological support for the introduction of drone racing into the physical education and sports space of the university; structuring and integration of pedagogical technologies; formulation of conclusions.

Results and conclusions. One of the important goals of domestic higher education is the education of a future specialist with innovative thinking in approaches, not only to professional activities, but also to personal health, which determines a new vector of

additional (continuous) education for students, taking into account student-oriented tasks and national goals of Russia in the condition's modern challenges.

The high-tech sport of "Drone racing" includes speeding through specially equipped tracks through FPV racing, and improving drone models. Drone racing is actively supported by the state, since this sport not only promotes the intellectual and psychophysical development of those involved, but also opens up enormous personnel potential for the development of new high-tech technologies.

Modern youth of the digital society are attracted to virtual technologies in communication, entertainment, including learning, which determined the search for effective pedagogical technologies (interactive methods, forms and means) to support the introduction of a technological sport (Drone racing) into the university environment. Innovative pedagogical technology (a system for the development and implementation of scientifically based innovations) consists of innovative components: content, methods, infrastructure. Table 1 presents penetrating pedagogical technologies (elements are present in other technologies), which the authors consider the most effective for introducing drone racing into the inclusive physical education and sports life of a university [1, 2, 3, 6].

The pedagogical model for introducing drone racing into inclusive student sports has been developed based on the use of complex innovative pedagogical technology (elements of monotechnologies and innovations in methods, forms and means of teaching) (Figure 1). The conceptual position is the concept of personality-oriented education for the development of young people's readiness for self-education and self-realization in personal and professional activities. The target component includes approaches: a systematic method of creating and applying both the teaching process and students' acquisition of knowledge; interdisciplinary approach to solve new problems taking into account scientific directions; an inclusive approach to organizing education accessible to all. And also, principles: relevance (content to real practice); multimedia (technical teaching aids); differentiation and individualization (creating conditions for the development of individual abilities).

Since physical education and sports training at a university are interconnected, innovations (educational material) have been introduced into the content component of the presented model, which must be included (developed and implemented) in the physical culture and sports environment of the university [3]:

1. The program of the discipline "Physical Education" includes theoretical and methodological-practical courses ("Drone racing").

2. The program of the discipline "EDPhCa" includes a practical block on developing the physical, moral and volitional qualities necessary for those involved in drone racing.

3. In the educational and training process – the "Drone Racing" sports training program for students with different levels of health.

Table 1. Types of technologies and their characteristics

Type of technology	Characteristics
Large block	Combining educational material into large blocks, increasing their information capacity, saves time and space through diagrams and diagrams (reference signals), changes the organizational structure of the lesson to another unit (day)
Pedagogy of cooperation	Small group training, peer assessment, responsibility for the success of the team, equal opportunities. Penetrating technology (problem-search, creative, dialogical and gaming)
Information communication	Penetrating technology in the modernization of existing methods and forms of teaching (multimedia, virtual environment); models the processes of the knowledge monitoring and assessment program; trains skills, communication
Virtual	Simulation using game methods, simulation equipment, virtual simulators. Types of simulations: developing the ability to quickly analyze and manage information; speed of response and ability to effectively solve problems [2]
STEM technology	Technology based on an interdisciplinary approach to study problems in one discipline using knowledge from science, technology, engineering, mathematics
STEAM-technology	Uses natural sciences, technology, engineering, creativity, mathematics to solve practical problems, develop critical thinking, and research competencies
Multimodal learning technology	VARK framework: the use of modal channels of information transmission (V - visual, A - auditory, R - Reading / Writing - reading and writing, K - kinesthetic) and directions (Case-Based Learning, multimedia projects, Think, Pair, Share) [1]
Internet oriented technologies	Individual training "Mentoring"; paired learning (rehearsal, review); problem lecture; streaming video

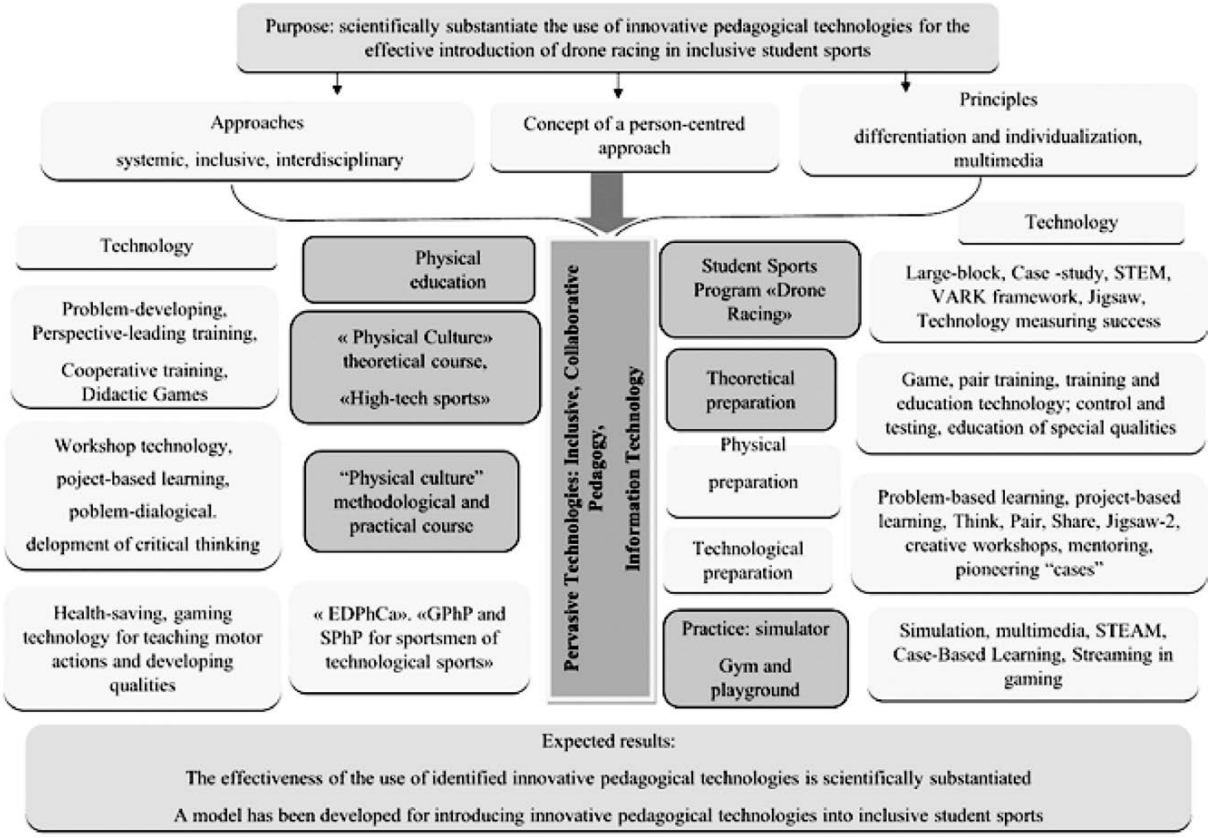

Figure 1 – Model for introducing drone racing into inclusive student sports

The final, control and analytical component of the pedagogical model determines the assessment of innovative technology based on the effectiveness of the total constituent components (innovative content, methods and infrastructure) for the development and implementation of educational courses and programs in the physical culture and sports environment of the university, including inclusive ones.

Conclusions. The introduction of "Drone racing" at a university will promote health promotion, successful socialization of young people, and the formation of universal competencies in managing UAVs for self-realization in professional activities. The use of innovative technologies in the physical culture and sports environment of a university must be built comprehensively and systematically: innovative updating of the content of classes using digital, multimedia and simulation teaching methods; personal and professionally oriented nature of training, taking into account the educational needs, health, intellectual and physical preparedness of each student.

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