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## **SMART TECHNOLOGY AS AN INNOVATION IN THE SYSTEM OF HIGHER PHYSICAL EDUCATION IN UKRAINE**

*Счастливец В. И., Скрипченко И. Т., Рожеченко В. М., Аксович Н. Smart  
технологія, як інновація в системі вищої фізкультурної освіти в Україні.*

*Ключові слова: smart технології, сфера спорту, сфера освіти.*

Today, information technologies have become an integral part of the living space of student youth. The development of modern education requires changes in the educational environment, which should qualitatively change the content of education, its methods, tools and move to Smart education (Self-Directed, Motivated, Adaptive, Resource, Technology Embedded) [1-2].

Smart training is implemented using technological innovations and the Internet, which provides higher education students with the opportunity to acquire professional competencies based on a systematic multidimensional vision and study of disciplines considering their multifaceted nature and continuous updating of content. Smart technologies in education, on the one hand, allow optimizing the university's expenses for material and technical support, on the other hand, bring the quality of educational services and products to a new level.

The implementation of Smart technologies in higher education will provide an opportunity to improve not only the correspondence education system, but also to organize high-quality and effective independent work of full-time students, their acquisition of professional competences based on the systematic multidimensional study of disciplines considering their interrelationships, to stimulate creative and scientific activity [3].

The use of smart technologies creates new opportunities for the education system, which consist in:

- integration of educational institutions into the international educational space;
- coverage of additional categories of students, including foreign students;
- the use of new tools and innovative educational technologies;
- the creation of new guidelines for teachers, training and assessment of knowledge;
- strengthening of scientific research;
- introduction of more effective models of administration and management.

Distance education, as a component of smart technologies, is becoming a leader and provides an opportunity to teach students with the help of video courses on YouTube and iTunes, which are popular with students. Wide access to electronic educational materials through smart technologies and IT tools directs the student to independent acquisition of professional competences. Student education is becoming more personalized, which becomes the basis for the development of personal educational programs focused on the intelligence, creativity, and creativity of future specialists.

New technologies have also changed the role of the teacher. He is no longer a source of knowledge, but an organizer of independent educational and cognitive and research activities of students, i.e. a tutor with facilitation skills. The teacher manages groups of participants in the educational process in creating new knowledge in the learning environment. At the same time, Smart-education opens up new opportunities for teachers: share experience and ideas, engage more in theory and science, save time by improving existing content, rather than creating it from scratch.



**Fig. 1. Popular smart devices for sport**

After analyzing the research data of many authors, we identified the most popular smart devices in sports. The leading position in the list is occupied by a fitness tracker. It allows you to monitor many indicators of the body's performance during training: pulse, pressure, blood oxygen level, and also has a number of useful functions, such as: activity monitoring, monitoring and synchronization with a PC or gadget (Fig. 1).

Activity monitoring helps to calculate and track the rate of movement during the day. Activity is determined based on accelerometer data - the number of steps taken. In more technological trackers, even the type of activity is taken into account: running, walking, cycling, etc. Indicators of physical condition: pulse, pressure, oxygen level in the blood, make it possible to calculate energy costs. Sleep monitoring helps to organize a rest regimen, track sleep indicators - duration, continuity, phase alternation, etc.

Next in popularity are Smart watches (Fig. 2), which display the physical indicators of a person, both during training and in everyday life (counting the number of steps, distance, training time, calories, pulse, pace, sleep, speed, number of circuits repetitions, GPS route tracking, fluid intake, and more).

All smart watches can be divided into several groups:

- fitness bracelets;
- everyday smart watch with basic functionality, discreet design and average shock resistance;
- premium gadgets – expensive devices with extended functionality and design;
- highly specialized professional watches - for orienteering, hiking, swimming, scuba diving, racing, flying or golf.



**Fig. 2. Differences between a smart watch and a fitness bracelet**

Table 1

### Comparison of smart watch and fitness bracelet functions

Specifications	Smart watch	Fitness bracelet
<b>Purpose</b>	More features, including some smartphone features and activity, sleep, and health trackers.	Functionality is limited to sport functions.
<b>Autonomy</b>	They work even without synchronization with a smartphone, with all functions enabled and GPS, they hold a charge for up to several days, with economical use – up to a week.	Works only in conjunction with a smartphone, the battery lasts from 1 week to 1 month.
<b>Basic Functions</b>	<ol style="list-style-type: none"> <li>1. Music control.</li> <li>2. Receive SMS and call notifications on your smartphone.</li> <li>3. Advanced sports features + all the functionality of a pedometer.</li> </ol>	<ol style="list-style-type: none"> <li>1. Pedometer.</li> <li>2. Calculation of calories burned.</li> <li>3. Sleep monitoring.</li> <li>4. Heart rate monitor.</li> <li>5. Calendar of physical activity.</li> </ol>
<b>Ability to download additional applications</b>	In some models.	-
<b>Installing a SIM card in a gadget</b>	In some models.	-
<b>Software</b>	OS depends on the model; the watch can work on Android and iOS.	The microcode transmits information from the built-in sensors to the smartphone.
<b>Screen type and control</b>	There is always a display, in some models – touch, in others – button control.	Ordinary LEDs / display, in some fitness bracelets – touch, in others – button control.
<b>Internet access</b>	In watches with a sim card.	-
<b>GPS</b>	Available in almost all models.	Found in some fitness bracelets.

Applications in the phone complete the list of leaders in smart technologies. Every person who is interested in sports downloads these applications and uses them. In the application, you can either select existing workouts or create your own from your favorite exercises. In the settings, you can choose a goal: losing weight, gaining mass, keeping fit, increasing endurance, and many others.

Also popular are heart rate monitors designed to change the frequency of a person's heart rate in real time.

Less popular respondents consider «Smart» sneakers. They are equipped with a built-in accelerometer that collects statistics on the actions of an athlete, for example, a runner or a football player, so that his coach can monitor the athlete, as well as adjust his actions and training program.

Smart glasses of interactive properties consist of a processor, a camera for shooting video in HD resolution, a memory slot, and an accelerator in three

dimensions. The new generation of smart accessories combines AR (augmented reality), fitness tracking and mixed reality. Soon, they will become essential for personal and educational use.



The following smart technologies are recognized as less popular, such as:

- smart clothes, when tracksuits are able to track the correctness of your exercises. It is equipped with sensors that monitor the position of the human body in space, compare the data with the training program and let you know if you are doing the right thing, and if not, how to correct the mistake;
- SmartBall, a special soccer ball that will automatically determine the exact intersection of the goal line. Relevant for improving the skills of football players when practicing a variety of shots on goal;
- C-RingDumbbells (smart dumbbells), which themselves will calculate the number of calories burned during your workout, and, depending on the indicator, will glow in different colors.

The most effective in the learning process in sports are applications that include image or video analysis; they can be used to study the technique of performing sports movements and exercises in various sports (Coach'sEye, Adidas MiCoach Smart Ball, Sony Smart Tennis Sensor) [4].

AdidasMiCoachElite and MLS football smart technology. Its essence is to equip all players and coaches of the US Football League with a set of devices that monitor the physical condition of people during physical activity.

Flyboard device: «soaring on special wings» over the water surface with incredible somersaults. This device also gave rise to the sport of the same name.

Thus, we see that the prospect of developing such technologies will be very useful for the physical development of young people, but also for maintaining a healthy lifestyle of a person at any age.

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## **CREATION OF AN EDUCATIONAL AND HEALTH ENVIRONMENT FOR CHILDREN ON THE BASIS OF A HIGHER EDUCATION INSTITUTION IN WARTIME CONDITIONS**

*Solohubova S. V., Kaplenko D. D. Creation of an educational and health environment for children on the basis of a higher education institution in wartime conditions.*

*Keywords: children in war conditions, stress, educational and health environment.*

Since the beginning of 2020, all state educational institutions in the city of Dnipro have been working almost remotely. In the last year, due to the constant threat of airstrikes, the children of Dnipro do not visit parks and sports grounds, do not spend time in nature. The presence of constant war-related stress has a negative impact on both the psycho-emotional and physical condition of children. But using the right approaches to the organization of the educational and health environment, it is possible to create an environment for children that will help them not only maintain and improve their health and psycho-emotional state, but also learn useful skills and acquire new knowledge.

**The purpose of this study** is to investigate the peculiarities of the organization of an educational and recreational environment for children in wartime conditions and to consider the main means of reducing stress, as well as to determine the content of the program of educational and recreational activities for children based on a technical higher education institution in wartime conditions.

In the course of the analysis of scientific publications on this issue, the possibility of organizing an educational and health-improving process during