Visual Communication in Physical Education

Irina G. Kalina
Kazan Federal University, Naberezhnye Chelny Institute
Naberezhnye Chelny, Republic of Tatarstan, Russia
KalinaIrinaGenn@yandex.ru

Rustam A. Aydarov
Kazan Federal University, Naberezhnye Chelny Institute
Naberezhnye Chelny, Republic of Tatarstan, Russia
aid-rus@mail.ru

Alsou M. Aydarova
Kazan Federal University, Naberezhnye Chelny Institute
Naberezhnye Chelny, Republic of Tatarstan, Russia
alsu-irek@mail.ru

Abstract—**The article reveals the potential and ways of visualization of educational information in physical education, the role of representations and mental kinesthetic sensations in the training process. Visualization of educational material is considered as a communication between the teacher and the student. The educational process focused on the use of e-learning models is characterized; functionality and application prospect of new generation didactic tools become obvious for using to improve the teaching and educational processes. The results of the educational experiment using electronic educational resources in the educational process are summarized providing methodical, theoretical, control and diverse visual materials mastering the program of "Physical training and sports" discipline, including the results of the university students' survey regarding the influence of sports on the development of communication skills.**

Keywords—*communication, visualization of educational information, physical education.*

I. INTRODUCTION

Communication is one of the oldest types of interaction between people caused by the need to establish and develop contacts, transfer information, ensure security and other needs of common life activities. Communication originated in gestures, facial expressions, written signs which were made by primitive men on surrounding objects, the communication of modern people is provided by a wide variety of means including those caused by technological and informational progress of recent years.

The way we work, learn, live and communicate today is largely determined by new technologies. Education formats are also being upgraded – the use of e-learning models is becoming more significant in the organization of the educational process [1, 2]. Education is enriched with large volumes of visual thematic material, diverse control blocks allowing the user of electronic resources to have a productive long-term interaction with various information tools which makes the process of learning entertaining and effective [3-5]. The educational process based on these principles is characterized by greater accessibility, compliance of training systems with curriculum requests, wide cooperation of teachers and students through network interaction in solving specific practical problems, and by the speed of information. This undoubtedly contributes to the implementation of one of the most important pedagogical tasks – the development of students' cognitive activity on which the effectiveness of the learning process ultimately depends [6].

At the same time, the role of a teacher is not reduced – from a knowledge translator, he/she becomes a moderator, navigator, consultant, coach [7]. Visualization of educational information should be viewed as a kind of communication between a teacher and a student [8].

Information visualization technologies (including educational ones) are nowadays so rapidly improving that many researchers consider such a large-scale increase in the volume of visual images as the destructive influence on the development of young generation's outlook. In their opinion, it manifests itself in the fact that visualization develops visual active thinking and, to a lesser extent, abstract logical thinking. (If, while reading books, an artistic image is formed, which in essence is not visual but intelligible, then visualization provides the reader with a ready-made image and saves it, there is the need of building up abstractions). It does not develop creative abilities and contributes to the weakening of the intellect [9]. Adolescents, who are since childhood accustomed to perceive rapidly changing visual images, have their ability to concentrate on one object for a long time deteriorated, and as a result they are unable to read and understand texts with implied meanings, analyze them and think logically. According to some authors [10], consciousness with such training becomes fragmented and loses integrity; and mosaic thinking reduces the ability to self-analysis and manifests itself in a superficial assessment of ongoing processes.

This does not entail, however, the necessity of hindering any kind of visualization, but one should make sure visualization does not become the main architect of the world image. Besides, the functions of visual aids should not be limited to illustrative ones.

II. METHODS

The research methods were: questionnaire survey, pedagogical observation, pedagogical experiment, analysis of

scientific literature, and statistical methods of experimental data processing.

The analysis of the scientific and methodological literature concerning the research problem allows us to conclude that in physical education the similar expansion of the means used in the educational process, the emergence and significant increase of new ways of presenting information can be traced, which entails the requirement for students' ability to correctly perceive and absorb it, their skills to visualize educational material, that is not only seeing, but also mentally presenting, creating visual schematic images that differ in completeness, integrity and generalization [2, 4, 11]. Teachers and psychologists believe that when knowledge is imprinted in the system of visual spatial memory, new information is processed better.

The conducted pedagogical experiment consisted in using a significant number of visual components (lectures, diagrams, tables illustrating what was said by the lecturer; pictures and slides making visual representations of the information content; sports and fitness videos and etc.) at the lectures read to students during the Physical Education classes. To provide communication of students with the teacher, the experiment also used the prepared electronic resource, including a number of necessary training components: theoretical material throughout the course of lectures, guidelines for their processing, presentations on separate topics, a list of recommended literature for each section of the program, a glossary, video lessons with comments, a block of tests and practical tasks for independent performance designed to exercise control and self-control over mastering the studied material.

III. RESULTS

The results of the study were based on a comparative analysis of the level of program material knowledge by the students in the experimental and the control groups (the lectures in the control group were carried out in them with the help of traditional information and methodological aids). The achieved results convincingly refute the existing opinion about the uselessness of theoretical studies in shaping students' physical culture. In contrast, the results of the experiment show the increase in students' interest in studying program material when it is presented with the use of multi-dimensional information aids.

This was reflected in the quality of tasks and tests performance – students of the experimental group performed them 29% more efficiently. Besides, 36% of interviewed students noted an increase in their motivation to master not only theoretical but also practical sections of "Physical training and sports" discipline.

The generalization of scientific data allowed us to determine the most optimal structure and content of the electronic educational resource used. If in a traditional textbook (study guide, educational and methodical materials, etc.) texts (basic information material) are the most important structural element, and extra-text components are aimed to arrange the acquisition of the main text or facilitate its understanding, then in the case of an electronic resource, the extra-text system becomes the leading component (methodical, control, visual, etc.), and texts play an explanatory role.

Experimental work showed that the use of telecommunication networks and electronic media are able to integrate and significantly enrich the capabilities of traditional, including technical teaching aids.

Implementing a complete range of functions (reducing the time to search for the necessary materials in various sources, the ability to visualize a large amount of educational information, its emotional intensity and expressiveness, individualization and differentiation of the learning process, the development of skills for individual work, the possibility of prompt control of the teachers with the prompt feedback, increase of motivation to learn, etc.), modern didactic tools allow students to more effectively study educational material, present the results of their work in an interesting way, which undoubtedly opens up a wide range of possibilities for the improvement of the educational process.

Let us remind that the electronic resource used in the study provides direct real time communication of students with the teacher. It also provides a general thematic forum which allows discussing actual problems, asking the teacher questions or answering control questions using the knowledge gained during the course (the list of recommended references on each topic of program material allows you to independently find the necessary information for this). During the arranged on-line discussions, students learn to listen to others tolerantly and tactfully express their own opinions.

It is wise to note the fact that sports and physical education are the spheres of social activity of people aimed at developing physical abilities, strengthening health and self-realization of a person, which cannot be carried out without communications. Moreover, they imply a communicative function. In fitness and recreation activities, this function manifests itself in expanding the circle of people's communication during training sessions, in nurturing a sense of collectivism during teamwork in team sports, and in sports of excellence level – in expanding international ties, cultural cooperation of nations, and strengthening peace on earth [12-16].

A survey conducted in 2017 by students of Naberezhnye Chelny Institute of Kazan (Volga Region) Federal University on communications in physical education and sport revealed the following data:

- 43% of respondents replied that in the process of teamwork they feel the support and respect from other participants, and this boosts their self-confidence;

- 62% indicated that the system of conducting group-training sessions at the university contributes to the expansion of their range of social communication and the development of communicative qualities;

- 74% noted that joint participation in mass sports and fitnesss and recreational activities contributes to the consolidation of educational groups, the establishment of companionship in them;

- 60% mentioned that the skills of organizing and managing a student team during physical education classes are of great importance in preparing for professional activities.

IV. DISCUSSION

Another component of physical education is the teaching new motor actions and the improvement of the already existing skills and abilities to perform the technical elements of the chosen sport. The pedagogical system of organizing educational process should bring to a focus the implementation of the visibility method that is provided in physical education by a direct demonstration of the action (by the teacher or by someone who has already mastered the exercise) and mediated visibility provided by multimedia technologies (films and videos, drawings, diagrams, and other possibilities of electronic resources).

With the help of these tools, the demonstration technique can be performed at different angles and tempos with pauses and accompanying comments. Subject images also allow students to focus on details (for example, the sequence of phases of movements or static positions). The motion shown in the video can be repeated or slowed down many times, and the graphic demonstration serves to understand the characteristics of the structure of the motor action (for example, it is possible to compare the angle of inclination of the body in the short and long distance runs).

For the analysis of motor actions based on its perception (i.e., to obtain an internal image of movement), the exercise can also be performed by the participants themselves at a slow pace, pausing, fixing body parts in separate phases. And some complex coordination movements can be accompanied and controlled by the coach (for example, when teaching how to throw the ball in basketball or discus throwing).

Special simulators are designed to feel muscular tension and body position at various moments of action, and some urgent information devices (tensoplatforms, electrogoniometers, photoelectronic devices, light and sound devices, electrical targets) provide the participants with information about speed, rhythm, amplitude of movement and consumed calories. Modern training devices equipped with built-in computers (bicycle ergometers, elliptical trainers, steppers) are equipped with a control and load regulation system, whose profile is graphically represented on their display.

In this context, it is impossible not to mention that visualization involves not only the viewing of the demonstrated action, but also its mental presentation. The mental representation of the studied technical element (due to accurate visual, auditory and motor perception) contributes to a more rapid understanding of the structure of the movement being studied, extends the orienting basis for subsequent reproduction, and later on, more mastery.

The method of imaginary movements is successfully used by beginners (to accelerate learning new techniques) and experienced ones (to improve existing skills). In sports this is called ideomotor training, which consists in presenting the necessary movement by an athlete with the most correct performance, accompanied by feeling the degree of muscle tension. The muscular-skeletal system of an athlete at such moment reflexively strains and relaxes individual muscle groups according to the trajectory of movement.

This is especially true for athletes of complex coordination sports (gymnasts, acrobats, wrestlers, players, snowboarders). Gymnasts, for example, preparing for a performance, mentally represent all the elements of the upcoming exercise, and skiers before the start. Standing on top of the hill, first represent your descent route, then mentally go through the most difficult turnings of the distance choosing the optimal movement trajectory, which also allows one not to reduce the level of physiological systems functioning and neuromuscular interactions achieved during the warm-up.

The complexity of ideomotor training lies in the fact that for the proper effect one should have a developed imagination, muscular memory, concentration of attention and the ability to hold it for a long time. Beginners, as a rule, do not possess the above-listed qualities, so only professionals do their training with the use of this method. Highly skilled athletes can master new exercises through only motor imagery practice (absolutely unknown actions) without preliminary fulfillment.

Ideomotor training is also effective for controlling the psychological state of athletes before important competitions. Those athletes who want to improve their emotional state before going to the start, try to present themselves in difficult competitive situations. Those athletes who, on the contrary, need to relieve their excessive stress, tend to see themselves as having a rest or doing exercises in a calm environment.

V. CONCLUSION

Communication of modern people is characterized by a variety of means and technological mobility. This makes it possible and necessitates the improvement of the methods, forms, modes and technologies of training.

The didactic tools of the new generation and media technology, due to their inherent qualities (interactivity, flexibility, efficiency, special popularity among young people, integration of various types of visual educational information, the ability to take into account the individual characteristics of students, etc.), are able to increase students' interest in classes (36% of the surveyed students noted) and their effectiveness (at least 29%).

Thus visualization of educational material while using modern information resources is an effective means of communication between the teacher and students in solving educational problems.

However, despite the fact that there are a lot of studies confirming this fact, the actual use of information technologies in physical education is private in nature and is not widely used in practice.

Not all institutions of general, higher and additional education (sports schools, clubs, etc.) can afford a sufficient number of modern computers and other communication tools, as well as their software. And the available funds are often not provided with Internet access, which does not meet modern

requirements for quality education.

In addition, the implementation of the task regarding the information support of the education system reveals the problem associated with the lack of literacy of teachers in this field. Therefore, possession of the methodology for using the new generation educational tools and modern technologies in the educational process should now become the integral quality of each teacher, and the development and use of their own electronic educational resources in order to optimize learning are the essential elements, including in physical education of students.

As for the training process – when preparing for the lesson the teacher must select the best methods for a particular stage of training that corresponds to the conditions of the lesson, the tasks assigned, the level of preparedness and the age of the learners.

This is especially important when working with beginners and children: they have a highly developed ability to imitate and strive to follow examples; therefore, at the initial preparation stage methods of visual perception of educational information are most often used. At the training stage and the stage of sports improvement, visualization methods should be used to eliminate errors and as an element of adjustment before performing complicated exercises.

Acknowledgment

References

[1] A.V. Morozov, T.V. Shorina, "The structure of scientific and methodological support of visualization of educational information in the system of modern higher education", Education management: theory and practice, No. 4 (28), pp.14-24, 2017.

[2] J. Wiemeyer, "Students' use of and attitudes towards information and communication technologies in sport education cross-sectional surveys over the past 15 years", 11th IACSS (Univ Konstanz, Germany), vol. 663, pp.139-150, 2018.

[3] R.A. Aidarov, I.G. Kalina, "Didactic approaches to the projection of teaching facilities: the state of the problem and the ways of solution, Modern Journal of Language Teaching Methods, vol. 7, Issue 9.1, pp.164-168, 2017.

[4] A.M. Aydarova, T.V. Mazaeva, "Multimedia presentations as an effective teaching technique of foreign languages", Visual communication in sociocultural dynamics, Proceedings of 2nd International Conference, 2016.

[5] S. Kostromina, D. Gnedykh, "Type of visualization and quality of digestion of educational information by students", 5th ICEEPSY (Kyrenia, Cyprus), vol.171, pp. 340-349, 2017.

[6] I.A. Bakhtina, A.S. Lysenko, T.Yu. Ivanova, "Development of cognitive activity of students using the technology of visualization of educational information", Quality of education: systems, technologies, innovations, pp. 291-293, 2007.

[7] A.M. Aydarova, E.M. Vildanova, M.S. Ilina, "The social and pedagogical qualities of modern vocational training teachers", Modern Journal of Language Teaching Methods, vol. 7, No. 9, pp.102, 2017.

[8] Fan Fei. "The lack and construction of teaching communication in college sports teaching", 3rd Annual international conference on management science, vol. 50, pp.139-141, 2017.

[9] A.N. Zadvornov, "The impasse of total visualization, or why democrat has deprived itself of vision?" Visual communication in socio-cultural dynamics, p. 82-86, 2016.

[10] A.L. Zhuravlev. "Psihologiya cheloveka v sovremennom mire", Vserossijskaya nauchnaya konferenciya, 2009.

[11] I.G. Kalina, "The role of visual representations in learning motor actions", Actual problems of physical culture and sports, pp. 346-350, 2016.

[12] P.A. Labuschagne, "Non-verbal and paralinguistic political communication in sport: an analysis of images of springbok rugby", Communicatio-south african journal for communication theory and research, vol. 43, Issue 1, pp. 80-102, 2017.

[13] Li Gang, "Analysis on the Conceptual Innovation of Sports Culture in International Communication Based on the Values of Physical Education", Agro food industry hi-tech, vol. 28, Issue 3, pp. 3486-3488, 2017.

[14] C. Lopez Rodriguez, L. Arevalo Iglesias, J. Fernandez Vazquez, "Online communication management in sporting events. case: euc handball 2013", Media and metamedia management, vol. 503, pp. 265-270, 2017.

[15] C.D. McLaren, K.S. Spink, "Examining communication as information exchange as a predictor of task cohesion in sport teams", International journal of sport communication, vol. 11, Issue 2, pp.149-162, 2018.

[16] M.J. Smith, S.G. Figgins, M. Jewiss, "Investigating inspirational leader communication in an elite team sport context", International journal of sports science & coaching, vol. 13, Issue 2, pp. 213-224, 2018.