

**ICEST 2021**

**II International Conference on Economic and Social Trends for Sustainability of Modern Society**

**PROFESSIONAL TRAINING OF PHYSICAL EDUCATION  
TEACHERS IN DIGITAL TRANSFORMATION OF SOCIETY**

V. A. Adolf (a), A. I. Kondratyuk (b), T. A. Kondratyuk (c), S. S. Sitnichuk (d),  
M. S. Zaitseva (e)\*, N. V. Kolesova (f)

\*Corresponding author

- (a) Krasnoyarsk State Pedagogical University named after V.P. Astafiev, Krasnoyarsk, Russia, [adolf@kspu.ru](mailto:adolf@kspu.ru)  
(b) Krasnoyarsk State Pedagogical University named after V.P. Astafiev, Krasnoyarsk, Russia, [kondr1607@mail.ru](mailto:kondr1607@mail.ru)  
(c) Regional State Treasury Educational Institution, Educational and Methodological Center for Civil Defense, Emergencies and Fire Safety of Krasnoyarsk region, Krasnoyarsk, Russia, [and-kondratyuk@yandex.ru](mailto:and-kondratyuk@yandex.ru)  
(d) Krasnoyarsk State Pedagogical University named after V.P. Astafiev, Krasnoyarsk, Russia, [sitnichukss@kspu.ru](mailto:sitnichukss@kspu.ru)  
(e) Krasnoyarsk State Pedagogical University named after V.P. Astafiev, Krasnoyarsk, Russia, [zaitseva@kspu.ru](mailto:zaitseva@kspu.ru)  
(f) Krasnoyarsk State Pedagogical University named after V.P. Astafiev, Krasnoyarsk, Russia, [nkoles8@inbox.ru](mailto:nkoles8@inbox.ru)

**Abstract**

Digital transformation of the society is the reason for changes in the professional training of a physical education teacher in terms of the necessity to master the skills to form pupils' universal educational actions. The research has made it possible to determine the indicators of pupils' functional literacy in the field of health and safety, to substantiate the necessity to create organizational and pedagogical conditions in the students' mastering the following skills: to use the means and methods of enhancing the cognitive interest of schoolchildren; use techniques aimed at determining the goals and personal meaning of a pupil's educational activity; teach pupils to search and analyze information, determine the sequence of actions; define differentiated learning tasks for pupils; keep documentation in digital format, organize the pupils' activities to master the methods of organizing and self-organizing activities (defining goals taking into account the final result, drawing up a plan and sequence of actions); create conditions for cooperation; use conflict resolution techniques; carry out pedagogical control of universal learning activities using techniques for reflective thinking development; use techniques and methods of developing self-regulation skills doing physical exercises; teach methods of forecasting and adjusting the result; choose educational techniques adequately corresponding to the purpose of the lesson; have a command of measuring health and safety literacy rates.

2357-1330 © 2021 Published by European Publisher.

*Keywords:* Digital transformation, universal learning activities, training, functional literacy



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## 1. Introduction

Taking into account the conditions of the society digital transformation, the requirements for the results of education in the professional training of a future physical education teacher, it is necessary to make changes aimed at mastering professional skills of developing universal learning activities among schoolchildren during educational activities at physical education classes. These changes will significantly increase the possibility of training the personnel who are able to implement new digital technologies, new technological solutions, who are able to think systematically and critically, who are ready to be responsible leaders and work in a team, and as a result, to increase the economic efficiency of higher pedagogical education.

## 2. Problem Statement

The relevance of the study is caused by digital transformation of the society and the necessity to change professional training of a future physical education teacher in terms of mastering professional skills aimed at achieving such new educational results of pupils, as learning, informational educational results, communicative literacy, health literacy. Metasubject skills and universal learning activities formed on their basis, provide general functional literacy, self-development and self-realization of schoolchildren in the modern world.

Modern Russian society is currently undergoing digital transformation. The development of digital economics and culture, including professional culture, is taking place. It is not enough for a modern teacher to have profound knowledge in one professional area; universal qualities that allow to adapt and change oneself in a rapidly changing reality, while maintaining the identity and developing professionalism in accordance with the challenges of the time are required as well. A characteristic feature of modern vocational training is the focus on meta-subject matter and universal learning activities, on the basis of which the functional literacy of a future teacher can be developed. Therefore, new educational results are of paramount importance and include the following: educational, informational, communicative literacy, health literacy (Adolf, 2020a; Adolf et al., 2021a). In addition, a physical education teacher, possessing literacy in the field of health and safety, leads a healthy lifestyle, developing harmoniously and involving schoolchildren in it. These new educational results can be achieved if thinking skills are developed, as well as self-consciousness.

The implementation of federal state standards (hereinafter - FSES) of school education has made it necessary for a teacher to develop personal, cognitive, regulatory, communicative universal learning activities. Metasubject skills and universal learning activities are the key factors that influence functional literacy (Drandrov & Paukov, 2018).

According to Asmolov et al. (2010), universal learning activities are a basic element of an ability to study; a combination of ways of a student's actions and skills in the process of educational work, providing them with the opportunity to independently develop and improve themselves in the direction of a desired social experience throughout the life. Universal learning activities provide pupils with an opportunity to demonstrate the ability for self-development and self-improvement through educational and cognitive activities.

Educational and information literacy forms the basis of educational and information competences and relies on cognitive and regulatory universal learning activities. It provides the development of logical actions related to problem solving, actions ensuring the organization of their own activities, including health protective activities.

Communicative literacy is formed through communicative universal learning activities and provides social competence, develops personal attributes of students.

Health literacy is the foundation of personal safety and development, and is based on all types of universal learning activities.

When implementing programs on physical education, the development of the universal learning activities must be carried out in the process of high physical activity of students, therefore, the methods of developing the universal learning activities, which are already developed in modern science and practice, can be applied not completely.

The problem of students' universal learning activities development is substantiated by the contradiction inherent in the physical education curricula. They indicate that the implementation of the program should ensure the achievement of the universal learning activities and subject results by pupils. Subject and health-protective results in physical education include maintenance of the optimal level of physical activity, development of motorial skills and qualities of students (Prokudin & Milenko, 2016). In the programs by V.I. Lyakha, A.P. Mateveeva, A.A. Zdanevich, which are implemented in most Russian schools, the assessment of students' achievements is carried out through the diagnosis of how motor skills, abilities and physical fitness are formed. The programs indicate the need for the development of universal learning activities at physical education lessons but only a methodology for diagnosing the development of motor skills, abilities, physical fitness is provided. Thus, in the goal-setting and objective results of physical education in pedagogical practice, a tendency of somatopsychic accent can be noticed (Drandrov & Paukov, 2018; Shapovalova, 2019).

### **3. Research Questions**

- What are the new educational outcomes in the context of digital transformation of the society?
- What are the deficiencies in the professional training of future physical education teachers?
- What professional skills are required for future physical education teachers?
- What are the indicators of functional literacy among schoolchildren in the field of health and safety?

### **4. Purpose of the Study**

To substantiate the necessity of developing professional skills of future physical education teachers, ensuring the achievement of new educational results by schoolchildren. To determine the indicators of pupils' functional literacy in the field of health and safety and the list of professional skills of future physical education teachers that provide new educational results for schoolchildren.

## 5. Research Methods

The study is based on the analysis of scientific research works by scientists-educators, physical education teachers, regulatory legal documents in the field of education, as well as on the analysis of the opinions provided by 70 heads of general educational and sports institutions of the city of Krasnoyarsk and 45 students enrolled in graduate courses of the Institute of Physical Education, sports and health named after I.S. Yarygin of the Krasnoyarsk State Pedagogical University named after V.P. Astafiev. The survey has been carried out in terms of a grant project done on the state assignment of the Ministry of Education of the Russian Federation "Scientific- methodic and methodological support for the involvement of teachers of educational organizations in the process of training students in professional educational organizations of pedagogical orientation and pedagogical universities".

Having analyzed the psychological and pedagogical literature and modern practices of physical education in the context of digital transformation of the society, we introduced a concretizing essence into the concept of universal learning activities of pupils. For us, these are the ways of students' actions based on reflective thinking, that is formed through mastering the methods of obtaining conscious knowledge, skills (including moving skills), express a positive attitude towards self-knowledge and oneself. Universal learning activities are manifested in cognitive and educational, health-protective activities through the conscious appropriation of positive social experience and are the factor of personality self-development.

We have come to the conclusion that while maintaining sufficient motor density, developing motor skills and abilities, physical qualities of schoolchildren, it is possible to form and develop universal learning activities at physical education classes. In addition, universal learning activities affect the quality of the subject results of mastering physical education programs.

A survey of future teachers of physical education, 4th year students (45 people) of Krasnoyarsk State Pedagogical University named after V.P. Astafiev has shown that 96% of those undergoing pedagogical internship in educational institutions of the city of Krasnoyarsk faced the requirements of the administration of educational institutions, concerning the necessity of the work ensuring the achievement of educational results of students in accordance with the requirements of the Federal State Educational Standard (subject, meta-subject and personal results) during physical education lessons. At the same time, 90% of respondents who had school practice, did not find it difficult to formulate subject results in physical education, means and criteria for their assessment. 97% of the respondents know about the requirement of the Federal State Educational Standards about the need to develop universal learning activities of students but they find it difficult to formulate the goals of the universal learning activities' development by means of physical education, as well as in assessing the results of universal learning activities in educational activities. 99% of the respondents do not know the concept of "health literacy".

At the same time, all 100% of the respondents have indicated that if the universal learning activities of schoolchildren had not been developed during the physical education practice, then the teachers-interns experienced difficulties while conducting a physical education lesson.

On the basis of the formed universal learning activities of schoolchildren, we have determined the indicators of their literacy in the field of health and safety:

- willingness to independently use available methods of monitoring and determining one's physical health, personal well-being and physical activity, as well as methods for diagnosing physical development to assess the effectiveness of personal efforts to achieve the desired result;
- to master the methods of exercise selection in accordance with the set goal, methods of monitoring the compliance of intermediate and final results of the state of health, the ability to perform physical exercises according to the plan;
- readiness to independently perform complexes of exercises for improving or corrective orientation in compliance with safety precautions.

A modern teacher should be proficient in the methodology for assessing health and safety literacy rates.

A survey of employers and physical education teachers has made it possible to determine the deficiencies of professional training of future physical education teachers:

- readiness for teaching activity - 66%;
- connections with the real educational needs - 54%;
- independence, initiative - 47%.

Practical workers in education and sports consider the following professional competencies of future physical education teachers to be significant:

- deep and conscious subject knowledge - 93%;
- willingness to interact with participants in the educational process - 92%;
- ability to analyze and make logical conclusions - 85%;
- striving for professional self-development - 89%;
- stress resistance - 65% (Adolf & Savolainen, 2020b).

In 1996, in the city of Bern, in terms of the Council of Europe program, a number of key competencies for a graduate of the school was defined. Soft skills that would contribute to effective cooperation of people in the business process are formulated, such as: independence; use of tools, including a computer; functioning in socially heterogeneous groups (Kazakova & Tarkhanova, 2018).

A future physical education teacher should be focused on new educational results, needs professional skills aimed at pupils' universal learning activities development, as these activities are the basis for functional literacy, including literacy in the field of health and safety (Table 1).

**Table 1.** Professional skills of future physical education teachers required for the development of basic literacy among schoolchildren in the field of health

№	Organizational and pedagogical conditions for developing universal learning activities of schoolchildren at PE lessons	Professional abilities of future PE teachers
1.	The use of methods and techniques for enhancing stable cognitive interest in the methods of cognition, the content and process of an educational activity. Explaining the personal meaning of education to a student.	1. Uses various means and methods of enhancing cognitive interest at the lessons. Able to conduct a dialogue, teach to formulate and address questions. Knows the ways of motivating and taking interest of schoolchildren. 2. Uses techniques aimed at explaining the goals and personal meaning of educational activities. Achieves understanding of the educational material by students, using special techniques for this. Softly conveys the meaning of teaching.
2.	The process of searching for and highlighting the necessary information is included in the educational activity. Conscious goal-setting (setting an educational task) is carried out on the basis of correlating of what a student can do and what has not been mastered yet. The sequence of intermediate goals has been determined, taking into account the final result; drawing up a plan and sequence of actions.	3. Organizes students' activities to search for and highlight the necessary information. Develops the ability of students to comprehend, analyze information; involves pupils in the discovery of new knowledge, determination of the sequence of actions. 4. Determines differentiated learning tasks for students on the basis of correlating of what they already know how to do and what they have not yet mastered. Strives to measure the real progress of each student, encourages and supports minimal success. 5. Ability to keep records in digital format. 6. Ability to organize pupils' activities to determine the sequence of intermediate goals, taking into account the final result; drawing up a plan and sequence of actions. Provides the ability to independently choose tasks from the suggested ones. Teaches students to set goals and look for ways to achieve them, as well as solutions to emerging problems; teaches the ways of organizing and self-organizing activities.
3.	Organization of educational cooperation as interaction for subject educational activities, including the assessment of results in resolving conflicts.	7. Creates conditions for educational cooperation (style, tone of relations set at the lesson, creates the atmosphere of cooperation, co-creation, psychological comfort). Accepts and encourages own opinions and different points of view expressed by a student, teaches to formulate them correctly. Teaches different ways of expressing thoughts, the art of arguing, defending own opinion, respecting the opinions of others; teaches group work techniques; encourages learning collaboration and competition (Tarasova & Karas, 2016).
4.	Reflection of methods, conditions and results of educational activity is carried out. In the structure of the lesson, time is allocated for the development of self-regulating skill, as the development of the ability to mobilize strength and energy, to volitional effort and overcome obstacles. A student constantly evaluates what has already been mastered and what else should be mastered. Awareness of the quality and level of assimilation; evaluation of work results. A student masters the methods of predicting the result, receives tasks for control, in the form of comparing the method of action and the result with a given standard in order to detect deviations and differences from the standard. In case of differences between the standard, the actual action and its result, makes the necessary additions and adjustments to the plan and method of action.	8. Uses techniques of conflict resolution. Masters the pedagogical mediation technique. 9. Carries out pedagogical control using the methods of developing reflective thinking. 10. Uses techniques and methods of developing self-regulation skills during physical exercises. The structure of the lesson includes time for the forming and developing self-regulative skill as the ability to mobilize strength and energy, to volitional effort and overcoming obstacles. 11. Teaches methods of forecasting and adjusting the result.
5.	During the studying process, personality-oriented techniques are used, such as design, research, health-saving, gaming, problem learning technologies, case studies, dialogue, differentiated, technology for the development of critical thinking, ICT technologies.	12. Chooses educational technologies in accordance with the purpose of the lesson, teaches students to work according to the rules and using creative approach, apply digital, health-saving teaching technologies.

## 6. Findings

New educational results in the context of the digital transformation of society include educational, information, communication literacy, health literacy, which are formed through universal learning activities.

The deficiencies in the professional training of physical education teachers include the following:

- readiness for teaching activity - 66%;
- connections with the real needs of education - 54%;
- independence, initiative - 47%.

To ensure the pupils' literacy in the field of health, it is necessary to make changes in the professional training of future physical education teachers in terms of creating organizational and pedagogical conditions aimed at developing the following skills:

- to use means and methods of enhancing pupils' cognitive interest;
- use techniques aimed at disclosing the goals and personal meaning of a student's educational activity;
- teach schoolchildren to search and analyze information, determine the sequence of actions;
- to define differentiated educational tasks for students;
- to keep records in digital format;
- to organize activities of students to master the methods of organizing and self-organizing activities (defining goals, taking into account the final result, drawing up a plan and sequence of actions);
- to create conditions for cooperation;
- to use the techniques of conflict resolution;
- to carry out pedagogical control of universal learning activities using techniques for reflective thinking development;
- to use techniques and methods of developing self-regulation skills doing physical exercises;
- to teach methods of forecasting and adjusting the result;
- to choose educational technologies adequately for the purpose of the lesson;
- to master the methodology for assessing indicators of literacy in the field of health and safety.

Indicators of functional literacy in the field of pupils' health and safety include:

- willingness to independently use available methods of monitoring and determining one's physical health, personal well-being and physical activity, as well as methods for diagnosing physical development to assess the effectiveness of personal efforts to achieve the desired result;

- to master the methods of selecting exercises in accordance with the set goal, methods of monitoring the compliance of intermediate and final results of the state of health, the ability to perform physical exercises according to the plan;
- readiness to independently perform complexes of exercises for improving or corrective orientation in compliance with safety precautions.

## 7. Conclusion

Taking into account the conditions of the society digital transformation, the requirements for the results of education in the professional training of the future teacher of physical education, it is necessary to make changes aimed at mastering the professional skills of the development of universal learning activities among pupils in educational activities at physical education classes. These are the changes that will significantly increase the likelihood of training personnel able to implement new digital technologies, new technological solutions, think systematically and critically, be ready to be responsible leaders and work in a team. In this regard, this will benefit to increase the economic efficiency, legal and professional responsibility of educational organizations for the educational standards of higher pedagogical education implementation (Adolf et al., 2021b).

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