

Professional support technology for supplementary education teachers in children's recreational swimming

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Abstract:

The modernization of pedagogical education for coaches and supplementary education teachers in sports is crucial to enhance their professional knowledge, skills, and abilities. **Purpose:** This study aims to enhance the efficacy of professional competency development among teachers of supplementary education in recreational swimming for infants under the age of one year. It aims to develop and validate a professional support technology tailored for such specialists in early swimming centers. **Materials and methods:** The research involved 18 teachers (aged between 22 to 45 years) of supplementary education in recreational swimming for infants, with their professional experience ranging from one to twenty years. All professionals possessed a higher education in physical education. The teachers were divided into a control group (CG, n=9) and an experimental group (EG, n=9). The improvement of professional competencies in the CG was conducted in accordance with the guidelines outlined in the state professional standard for "Supplementary Education Teacher for Children and Adults." In EG the professional improvement was carried out according to the developed technology of professional support for teachers. With the help of the developed questionnaire the diagnosis of the state of formation of professional competences of teachers and the evaluation of their activity in accordance with the professional standard for this profession were carried out. **Results.** At the beginning of the research a low level of theoretical knowledge among the teachers of supplementary education in swimming for children was found. Most of the teachers were classified in the "low" and "medium" levels of professional competence formation. The teachers' work functions did not meet the professional standards for this category of specialists. At the end of the research an increase in the values of the indicators of the level of knowledge was noted in the experimental group, which was 5 times higher than this indicator in the control group. Most of the teachers in the experimental group rated their level of competence compliance as "high" in all work functions. In the control group, teachers rated their level as "average" at the end of the research. **Conclusions.** The obtained positive results of the testing of the proposed pedagogical technology for the improvement of the professional competences of teachers of children's swimming supplementary education can be used in other institutions of supplementary education. **Key Words:** physical education, physical training, infants, recreational swimming, professional competencies, pedagogical technologies

Introduction

At the present stage of society development in various countries, significant socio-economic transformations, the complexity of the educational environment, the dynamic development of science and technology are noted. It has created a need for teaching staff who are able to solve the tasks of modernization at all levels of education, including young children (Danylevych et al., 2019; Madonna, & Belfiore, 2020). Therefore, there is an increase in the requirements for competent specialists' training and their performance effectiveness of a certain work function (Li, 2022). A teacher should be ready for constant self-development, adequately respond to ongoing changes in pedagogic education, including constantly improving their professional competence (Xiong, 2022). The same requirements apply to teachers training in the field of physical culture and sports (Hoekstra et al., 2024; Sobolewski et al., 2024). Considering the various types of physical activity and sports activities of the

younger generation, it is impossible not to touch upon the issues of using swimming as an effective health remedy. Its high health-forming effectiveness has been confirmed by many scientists in recent years. According to F. Borioni et al. (2022) it was found that children aged 13 months who have been swimming since birth have more significant positive changes in the motor and cognitive areas of their life activity. Therefore, the introduction of children to swimming at an early age is becoming very popular among parents. It explains the great demand for specialists in this field of physical culture and sports activities. Among infants, physical education and wellness activities are organized and conducted by trainers-teachers or supplementary education teachers in swimming. Taking into account the early age of the child, the mental and morphofunctional characteristics of children of this age, high professional requirements are imposed on swimming coaches and teachers (Soltyk et al., 2017; Meier, 2020). It is considered important that, from the beginning of a child's visit to the swimming pool, it is necessary to establish close contact with the parents of children attending wellness groups (Yabe et al., 2021). Therefore, the coach must have a high level of communication competencies, which makes it possible to more effectively implement wellness work among children with the broad involvement of parents in these activities (Cherepov et al., 2021). The widespread use of information and communication technologies in the field of physical culture and sports places high demands on coaches and teachers in the field of knowledge and skills in IT technologies (Ferry, Romar, 2020; Schulze-Vorberg et al., 2021). According to the authors, teachers are not ready enough to use modern IT technologies. The results of the authors' research indicate the need to take into account the directions and educational topics of teaching children proposed by teachers, as well as the differentiated professional development of teachers in information and communication technologies. In the course of professional work, a supplementary education teacher in swimming for infants is faced with new circumstances for him/her that require mastering new professional knowledge, skills and abilities. It requires the development of a certain line of behavior, changes in attitudes, attitudes, beliefs and the development of new related disciplines (Sgambelluri et al., 2021). Therefore, a modern specialist in the field of physical culture and sports needs support at every stage of his/her professional path, regardless of whether he/she is a young specialist or an experienced coach. At the same time, as N. Masyagina (2015) and Reverdito et al. (2020) emphasize, "continuing education is becoming one of the main aspects of professional achievement". Meanwhile, as the analysis of the of specialists' in the field of physical culture and sports professional activities shows, they are not always ready for a new type of organization and design of the wellness process among children. It may be due to the low motivation of teachers to learn and improve their professional knowledge. In recent years, innovative pedagogical technologies have been used in the professional training and retraining of trainers and supplementary education teachers. For this purpose, project, discussion, and problem-based work has been used in the coaches' training, which have significant effectiveness in improving competencies (Prystupa et al., 2020; Sgambelluri et al., 2021). It is especially noted when taking advanced training courses (Guillermo Felipe López et al., 2018). It is believed that a coach's professional competence should be constantly updated. In some countries, such as Brazil, the process of continuous training is fixed at the legislative level. Such researchers as Monteiro, Gabriella Nell et al. (2021) believe that the persistent motivation formation in children for regular physical activity or sports largely depends on the level of professional and organizational qualities of the coach. J. Frost et al. (2024) found that the coaching staff is subject to numerous stress factors that can contribute to their mental health and well-being deterioration. In this regard, coaches should develop their competence and stress tolerance in order to preserve psychosomatic health and prevent professional burnout. It is known that the issues of professional knowledge, skills and abilities formation in the field of physical culture and sports have been studied quite fully (Soltyk et al., 2017; Meier, 2020; Pyviko, 2021; Gromov et al., 2022). The presented materials show that coaches' professional activity is multifaceted, requires significant knowledge and skills, the ability to communicate with children, their parents and colleagues in the profession. Therefore, increasing the level of professional competencies of the coaching staff and supplementary education teachers in recreational swimming for children is an important and timely task, and the development and testing of effective pedagogical technologies to improve labor functions seems to be an urgent problem. It is due to the insufficiently complete study of the theoretical and methodological foundations of professional support for supplementary education teachers in recreational swimming for children under the age of 1 year. Although the issues of communicative competencies have been partially reflected in the literature (Mischenko et al., 2021) or studied on the example of other sports (Mischenko et al., 2022). We believe that optimizing the professional training of supplementary education teachers in recreational swimming for children at the early swimming center will significantly increase the effectiveness of their professional activities and improve their professional competencies. **Purpose:** To improve the effectiveness of the development of professional competencies among supplementary education teachers in recreational swimming for children under the age of 1 year, to develop and test the technology of professional support for such specialists in the early swimming center.

Material & methods

The research work was carried out in 2022 on the basis of the early swimming center in the Siberian Federal District (Russia). At all stages of the research project, 18 supplementary education teachers in recreational swimming for children under the age of 1 participated in it. The teachers' age ranged from 22 to 45 years ($35.3 \pm$

1.6 years), professional experience ranged from one year to twenty years (11.2 ± 2.3 years). All specialists in children's recreational swimming had higher physical education. Using a randomized method, supplementary education teachers were divided into a control group CG (n=9) and an experimental group EG (n=9).

In CG, the improvement of professional competencies was carried out taking into account the instructions of the state professional standard "Supplementary education teacher for children and Adults" (Order of the Ministry of Labor of Russia dated September 22, 2021 N 652n «On approval of the professional standard «Supplementary education teacher for children and adults», 2021). At EG, professional improvement was carried out according to the developed technology of professional support for teachers. For this purpose, the stages of supplementary education teachers' in recreational swimming for infant's professional improvement have been developed, Table 1.

Table 1. Stages of improving supplementary education teachers' professional activities in recreational swimming for children aged under 1

Stage No	Stage	Stage content
I	Preparatory	Testing the initial level of supplementary education teachers' professional competencies in children's swimming
II	Motivational and value-based	Development of a teacher's motivation for professional improvement; stimulation of interest in pedagogical, psychological, methodological knowledge; self-education development
III	Intensive-activity	Creation of a scientific and educational environment for a supplementary education teacher's professional improvement. Forming-up an individual educational vector
IV	Evaluative	The state of acquired knowledge and skills assessment
V	Diagnostic	Assessment of the professional competence of a supplementary education teacher in children's swimming
VI	Modificative	Correction in the teacher's personal learning trajectory based on the results of the professional dynamics of his/her development

When planning the technology of professional support for supplementary education teachers in recreational swimming for infants, organizational and pedagogical conditions were taken into account:

1. The process of improving pedagogical skills was based on a personality-oriented principle. It ensures that the level of each supplementary education teacher's professional competencies development in recreational swimming for infants is taken into account.

2. It is important to comply with the proposed stages of the developed technology implementation in organizing the process of improving professional competencies. It makes it possible to predict professional problems and difficulties for teachers and provides an opportunity to give support in the process of overcoming them.

3. The technology of improving supplementary education teachers' professional competencies in recreational swimming for children provided for their active position in solving innovative professional tasks with the support of feedback between all objects of the educational process.

In the process of designing a model of methodological support for supplementary education teachers in recreational swimming for infants, an individual vector of a specialist's development was formed, which was based on the state of the level, features and self-assessment of his/her professional development. The developed technology of professional support for supplementary education teachers is shown in Figure 1.

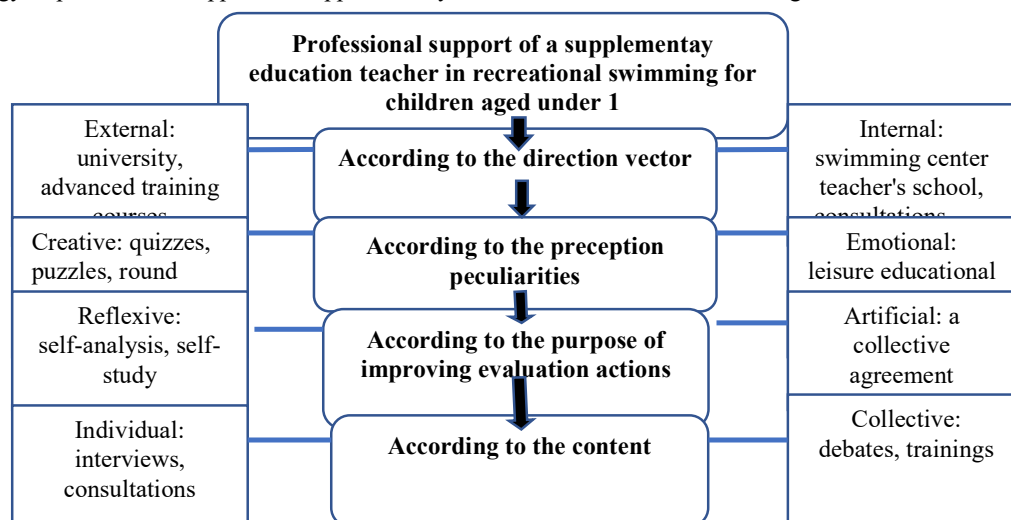


Fig. 1. Technology of professional support for supplementary education teachers recreational swimming for children aged under 1

The organization of the professional support model for the teachers was based on the stages of the developed complex of scientific and methodological support implementation (Table 1) and the advanced training courses conduct. The head of the Children's Early Swimming Center was an innovative resource to support the teachers' professional development. His activities were aimed at general guidance of professional support, coordination of actions for the exchange of experience, moral and material stimulation and activation of the specialists, working at the early swimming center overall professional development potential.

A high-stakes testing of proficiency in professional competencies was conducted. The testing was organized on the following topics: "Basic concepts of infant swimming", "Anatomical and physiological features of the development and illness of a child of the first year of life", "Basic techniques of infant swimming", "Methods of teaching children of the first year of life swimming in the pool", "Methods of a children of the first year of life body conditioning", "Features of classes under the conditions of diseases and pathologies". For this purpose, the questionnaire "Self-assessment of a teacher to determine the level of professional competencies development" was developed, which reflected the requirements of the state professional standard «Supplementary education teacher for children and adults». The assessment of the teachers' knowledge level was carried out on a 5-point assessment scale. One point corresponded to a lack of competence, 2 points – a low level, 3 – satisfactory, 4 – good, 5 – an excellent level of competence development. The compliance of the professional competencies of supplementary education teachers with the requirements of the professional standard for this category of professions was assessed on a 4-point scale.

The results of the primary diagnosis of the state of professional competencies development formed the basis for modifying the methodological tools content for the individual route of the EG teachers' professional development. The work among the teachers in this group was carried out in the form of group, collective, individual and independent activities. The methodological base of the early swimming center was replenished, an electronic bank of consultations, educational developments, scientific articles was created, and a plan for methodological support for teachers was also created.

The data obtained were processed using parametric statistical methods. The arithmetic mean, its error and sigma were calculated. The reliability was assessed according to the t – Student criterion. The difference in indicators was considered reliable at $p < 0.05$. Prior to the research, all participants gave written voluntary consent to participate in a project that does not contradict the ethical requirements for biomedical research involving humans, as set out in the Helsinki Declaration of 2008.

Results

It was found that at the beginning of the research, the theoretical level of knowledge, which reflects the state of the supplementary education teachers' professional competencies in swimming for children under 1 year in CG and EG, practically did not differ from each other and amounted to a five-point score of 3.4 ± 1.12 and 3.6 ± 1.17 points, respectively, $p > 0.05$. The distribution of the number of supplementary education teachers according to the level of professional competencies formation based on the questionnaire is presented in Table 2.

Table 2. Distribution of respondents in the experimental and control groups according to the level of professional competencies formation at the beginning and at the end of the research, %

Points/Levels	At the research beginning		At the research end	
	CG, n=9	EG, n=9	CG, n=9	EG, n=9
1 – Lack of competence	0	0	0	0
2 - Low level	33.3	33.3	0	0
3 – Satisfactory level	44.4	55.5	66.7	0
4 – Good level	22.2	11.1	33.3	44.5
5 – Excellent level	0	0	0	55.5

At the research beginning, no supplementary education teachers with the levels of «lack of competence» and «excellent» were identified. At this stage of the research, the levels of professional competence formation «satisfactory» and «low» were mainly recorded in both groups. At the research end, the results of the teachers' self-assessment of their proficiency level in professional competencies showed that the teachers of the experimental group rated their level mainly as "good" and "excellent". While the teachers of the control group noted that they possess mostly «satisfactory» and «good» levels. The value of the knowledge level indicator at the research end was 4.7 ± 1.32 points in EG, 3.6 ± 1.27 points in CG, $p > 0.05$ and was 30.5% and 5.9% higher, respectively, compared with the beginning of the experiment.

An important area of the teachers' professional improvement is to study their compliance with the existing level of professional development with the necessary labor functions, which are specified in the professional standard "Supplementary education teacher for children and adults". The results of the analysis indicate that at the beginning of the research, teachers of both observation groups estimated their level of compliance with the standard no more than 3 points (on a four-point scale), Table 3.

Table 3. The value of indicators of compliance with the level of professional development of the observed supplementary education teachers at the beginning and at the end of the research, $M \pm m$

Labor functions of the professional standard	At the research beginning		At the research end	
	CG, n=9	EG, n=9	CG, n=9	EG, n=9
1. Mastering by students of a supplementary general education program	2.8 \pm 0.13	2.7 \pm 0.11	3.1 \pm 1.22	3.7 \pm 1.37*
2. Implementation of extracurricular activities with students	2.6 \pm 0.17	2.5 \pm 0.16	2.9 \pm 1.16	3.6 \pm 1.29*
3. Ensuring interaction with the students' parents	2.9 \pm 0.15	2.8 \pm 0.14	3.2 \pm 1.28	3.8 \pm 1.45*

Note. * - a significant difference in the indicators values between CG and EG, $p < 0.05$

At the research beginning, there were no statistically significant differences between the results of teachers' responses in the control and experimental groups, $p > 0.05$.

The research work carried out led to an increase in the value of indicators of professional development compliance with the necessary labor functions, which are indicated in the professional standard «Supplementary education teacher for children and adults» (on a four-point scale), Table 3.

The results of the analysis of the indicators values show that at the end of the research, teachers of both groups had changes in the assessment of compliance with the professional standard. The indicators values of the EG teachers' answers to the questions posed turned out to be significantly higher than the values of the indicators of the CG teachers, $p < 0.05$. The distribution of the number of teachers by levels of professional development according to the requirements of the standard for a supplementary education teacher for children is presented in Table 4.

Table 4. Distribution of the number of respondents by the level of professional development, according to the labor functions of the professional standard, %

Points/ Levels	Labor functions											
	Mastering by students of a supplementary general education program				Implementation of extracurricular activities with students				Ensuring interaction with the students' parents			
	Beginning of the project		End of the project		Beginning of the project		End of the project		Beginning of the project		End of the project	
	CG	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG	EG
1 – Low	0	0	0	0	0	0	0	0	0	0	0	0
2 – Below average	44.4	55.5	22.2	0	55.5	55.5	44.4	0	44.4	44.4	22.2	0
3 – Average	55.5	44.4	66.7	44.4	44.4	44.4	66.7	44.4	55.5	55.5	66.7	22.2
4 - High	0	0	11.1	55.5	0	0	0	55.5	0	0	11.1	77.8

At the research beginning, the distribution of the number of teachers by professional development levels was approximately the same in both observation groups and corresponded to the «average» and «below average» levels. At the research end, the largest number of teachers in the experimental group was found, who assessed their level of compliance mainly as «high» for all analyzed labor functions. Teachers in the control group at the research end still had difficulties in implementing work functions and most of them rated their level as «average».

The results of the analysis of the answers of supplementary education teachers to the question of the existing difficulties in the implementation of professional competencies at the research beginning are presented in Figure 2.

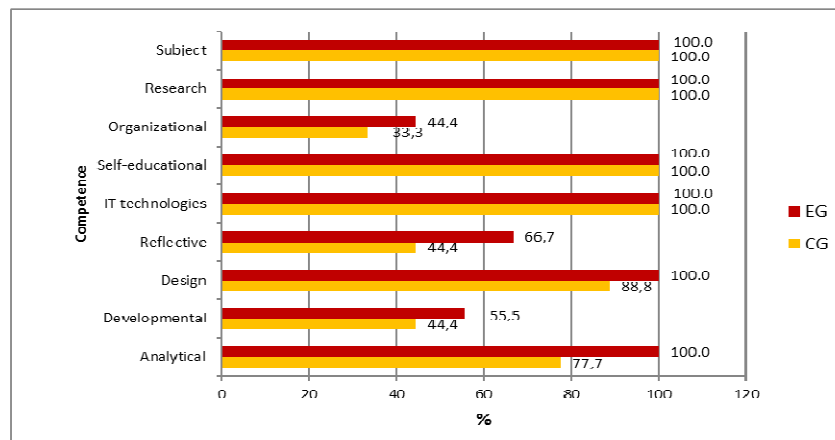


Fig.2. Distribution of the number of respondents according to the existing difficulties in the implementation of professional competencies at the research beginning

The analysis of the results showed that supplementary education teachers in both groups had difficulties in implementing such competencies as: subject, IT competence, research, analytical, self-educational and project. It was revealed that teachers have good command of competencies: reflexive and organizational, Figure 2.

At the end of the research, a repeated survey was conducted based on a questionnaire survey of supplementary education teachers in order to identify their degree of difficulties in implementing professional tasks. The analysis of the results showed that the supplementary education teachers in the experimental group, developed for each of them, did not experience serious difficulties in solving professional tasks at the end of the research, thanks to the individual professional route. They demonstrated a good and high level of proficiency in subject, IT competence, research, analytical, self-educational, project, developmental, and reflective competencies.

All participants in the research work in both groups indicated that in order to overcome difficulties in solving professional tasks, it is necessary for the teacher to participate in master classes, webinars, trainings and mutual visits to classes. 77.8% of teachers in CG and 88.9% of people in EG chose to participate in seminars. 77.8% of people in the CG and 66.7% of people in the EG preferred to take advanced training courses. Such forms of overcoming difficulties as consultations also aroused interest. This form was chosen by 55.5% of people in CG and 66.7% of teachers in EG. Such a form as «self-education» was interesting to 77.8% of teachers in CG and 88.9% of people in EG. Scientific forms (scientific conference, round table) of overcoming difficulties also aroused interest, but they were chosen by fewer teachers. The information received was taken into account when developing an individual educational route for a supplementary education teacher in recreational swimming for children aged under 1. The assessment of the supplementary education teachers' theoretical preparedness level in recreational swimming of infants at the end of the research recorded significant positive results among teachers of the experimental group compared with the control one, Table 5.

Table 5. Distribution of the number of supplementary education teachers in recreational swimming for children aged under 1 by the level of theoretical preparedness in the study of «Theory and methodology of infant swimming» discipline, %

Level of theoretical preparedness	The initial research stage		The final research stage	
	CG, n=9	EG, n=9	CG, n=9	EG, n=9
Low	55.5	44.4	22.2	0
Average	44.4	55.5	55.5	33.3
High	0	0	22.2	66.7

In EG, the number of teachers with the «high» level increased to 66.7%, decreased from the «average» one from 55.5% to 33.3% and there are no specialists with the «low» level. In CG, supplementary education teachers with the «high» level increased to 22.2%, their number with the «low» level decreased from 55.5% to 22.2% and increased with the «average» level from 44.4 to 55.5%.

The obtained positive results of the research work gave grounds to assert that the developed technology of professional and methodological support for teachers is effective and can be recommended for use in the teachers' of supplementary educational organizations professional activities.

Dicussion

Of the many sports, swimming is a powerful health-improving means of physical activity among young children. Therefore, swimming is very popular among children and their parents. This fact necessitated the training of coaches - teachers and supplementary education teachers in this type of sports activity. At the same time, coaches, instructors and teachers of recreational swimming should possess various professional competencies. Such requirements are conditioned by the need for the teacher to know the morphofunctional and psychological characteristics of the child's body (Soltyk et al., 2017; Meier, 2020) and compliance with the safety requirements of children's behavior on the water. Therefore, a supplementary education teacher in recreational swimming for children should have knowledge in related disciplines, as indicated by the results of a study by R. Sgambelluri et al. (2021). An important role is assigned to the teacher's well-developed communication competencies for working with children and their parents, which increases the effectiveness of recreational swimming (Yabe et al., 2021).

In order to increase the effectiveness of supplementary education instructors' professional knowledge, skills and know-how development in recreational swimming for children under the age of 1, we have developed and tested the technology of professional support for specialists on the basis of the early swimming center. We agree with the opinion of researchers Danilevich et al. (2019); Madonna and Belfiore (2020) argue that the search for effective pedagogical technologies to enhance professional competencies is becoming increasingly important in the training of teaching staff in the field of physical culture and sports (Hoekstra et al., 2024; Sobolewski et al., 2024). Variants of routes for individual professional development of supplementary education instructors in recreational swimming for infants were developed and tested, which were implemented in the process of organized methodological support for instructors under the conditions of the early swimming center. For this purpose, six stages of professional improvement of supplementary education teachers in recreational swimming for infants have been developed. The proposed stages of improving professional competencies make it possible to

ensure the continuity of training for teachers of recreational swimming for children. Other researchers have expressed the need to organize a continuous learning process for teachers (Masyagina, 2015; Reverdito et al., 2020). In the process of implementing the model of methodological support for supplementary education teachers, an individual vector of a specialist's professional improvement was used. It was based on the state of the level, personality and self-assessment of his/her professional activity. Professional support of teachers was provided at the courses of their professional development. These data are consistent with the opinion of other researchers on the importance of teachers taking advanced training courses (Guillermo Felipe López et al., 2018).

The results of our testing of the professional competencies development among teachers at the beginning of the research indicate an insufficient level of their knowledge and skills. It was found that the level of knowledge of professional competencies in the experimental and control groups of teachers of recreational swimming for children was 3.4 ± 1.12 and 3.6 ± 1.17 points, respectively, $p > 0.05$, on a five-point scale. The data obtained by us are consistent with the opinion of Ferry, Romar (2020) and Schulze-Vorberg et al. (2021) on the insufficient level of development of professional competencies among teachers and the need to improve their professional knowledge, skills and abilities.

The following competencies caused the greatest difficulties for teachers in the experimental groups: «Knowledge of special methods of adaptive physical culture allowing them to be used in work» and «Opportunities for business cooperation with other specialists within the framework of a psychological, medical and pedagogical council». The following competencies turned out to be difficult: "Knowledge, skills and abilities in teaching methods that exceed the scope of the lesson: scientific work, pedagogical experiments" and "The ability to use equipment, devices and methods of examination and analysis of indicators of a child's body formation".

At the beginning of the research, the distribution of the number of teachers by professional development levels was approximately the same in both observation groups and corresponded to the "average" and "below average" levels. In both observation groups, difficulties were found in the implementation of such competencies as: subject, IT competence, research, analytical, self-educational and project. It was revealed that teachers have a good command of reflexive competence, which assumes a focus on the teacher him/herself and is determined by control and evaluation activities, as well as organizational competence. It assumes that the teacher has the ability to organize a situation of success for children, provide them with psychological and pedagogical support, and develop motivation for children's educational activities.

At the beginning of the experiment, a low initial level of professional competence formation was revealed in accordance with the established professional standard by the labor functions and actions of supplementary education teachers at the early swimming center. The difficulties and the ways preferred by teachers to overcome them in the context of the introduction of the professional standard "Supplementary education teacher for children and adults» on the basis of teachers' self-analysis are determined.

The introduction of technology to improve the professional competencies of supplementary education teachers in recreational swimming for children under 1 year of age has significantly increased the level of professional competencies of teachers in the experimental group. At the research end, the largest number of teachers in the experimental group was found, who assessed their level of compliance mainly as «high» for all analyzed labor functions. Teachers in the control group still had difficulties in implementing work functions and most of them rated their level as «average» at the end of the research. The value of the indicator of the EG teachers' level of knowledge increased by 30.5% and the CG by 5.9% compared with the beginning of the experiment. These data indicate the significant effectiveness of the proposed technology for improving the knowledge, skills and abilities of supplementary education teachers in recreational swimming for children under the age of 1 year compared with the result obtained from teachers of the control group.

Conclusions

To increase the level of professional competencies of supplementary education teachers in recreational swimming for children under the age of 1, a pedagogical technology has been proposed, which provides for the allocation of work stages, continuity of pedagogical education, the individual educational routes construction, the use of diagnostic testing to assess the degree of difficulties for teachers and advanced training courses.

At the beginning of the research work, a low level of theoretical knowledge was established, which reflects the state of professional competencies of supplementary education teachers in swimming for children. Most of the teachers were assigned to the «low» and "average" levels of professional competence formation. The work functions of teachers did not meet the professional standards for this category of specialists.

At the end of the research project, an increase in the values of knowledge level indicators was established in the experimental group by 30.5%, in the control one by 5.8%. The largest number of teachers in the experimental group were registered, who assessed their level of compliance mainly as "high" in all analyzed labor functions of the professional standard. In the control group, at the research end, teachers still had difficulties in implementing work functions and most of them rated their level as "average".

In the process of carrying out the research work, difficulties and the ways preferred by teachers to overcome them were identified in the context of the introduction of the professional standard "Supplementary education teacher for children and adults" based on self-analysis.

In the experimental group, a positive dynamics of the level of supplementary education teachers' professional competencies formation in recreational swimming for children was established, the quality of performance of labor functions in accordance with the professional standard "Supplementary education teacher for children and adults" significantly improved. It allows us to recommend pedagogical technology for use in other institutions of supplementary education.

Conflicts of interest. The authors declare no conflict of interest.

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