Technologization of the pedagogical process in preschool educational institutions

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Abstract

This article deals with the problem of preschool education. The research aims to theoretically substantiate, develop and test the author's Concept and the corresponding educational and methodological support for the technological development of the pedagogical process, as a means of increasing the effectiveness of preschool children in the context of solving the state's strategic tasks in the field of pre-school education. The study collected data through an experiment and a survey. At the various stages of the study, about 700 preschool teachers, 450 students and undergraduates, and 1500 preschool children took part in the experimental and pedagogical work. The scientific novelty consists of theoretical substantiation, development, and testing by the experimental and experimental way of the author's Concept and appropriate educational and methodological support of the technological process of the pedagogical process. The obtained results of the research will improve the pedagogical process in the pre-school educational institution.

Keywords: Pedagogical process; pre-school preparation; technological development; visual activity.

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1. Introduction

The modern stage of pre-school preparation requires the search for new educational technologies that ensure the differentiation, flexibility, and variability of the content of education. The need for their use in the context of reforming the education system is explained by the fact that technology can help improve the learning process and achieve results in the shortest time. At the same time, one of the main tasks is the armament of teachers with deep science basics, the skills of applying modern educational technologies in the conditions of the preschool, which will contribute to a more systematic and painless process of preparing preschool children for school life.

The urgency and necessity of pedagogical development of the concept of technological development of the pedagogical process in the conditions of preschool preparation are dictated by the real requirements that modern life makes for preschool education. The theoretical and methodological basis of this research is:

- theory of the integrity of the pedagogical process (Babansky,1982; Slastenin & Chizhakova, 2003);

- scientific ideas about the continuity of preschool and primary education (Vygotsky,2016; Kravtsov & Kravtsova, 2020);

- scientific work related to the introduction of innovative technologies in the educational process (Nazarova & Gospodarik,2006; Landa, 2018);

- scientific research devoted to the study of age characteristics of preschool children through the prism of psychological science (Kudryavtsev,2016; Vasilyev, 2018, and many others);

- the concept of a professional approach to pedagogical activity (Gonobolin,1975; Pautova & Zharinova, 2021 and many others)

- modern works are devoted to the study of the basics of the organization of classes in the visual and theatrical, as well as play and constructive activities in kindergarten (Dirksen, 2009, and others).

1.1. Related studies

The problems of technology introduction in kindergarten were considered by such scientists as Edwards et al. (2017), Schriever (2018), Rwacheu (2022), Turgut, Tunga, & Kışla, (2016), Nelson(2021), Higgins, Xiao, & Katsipataki, (2012). The geography of the presented studies is wide: Australia,   Turkey,   Canada,   England,   the   USA,   etc. In general, the problems of technology are associated with the introduction of information technologies in kindergarten. For example, Edwards et al. (2017), believe that «A digital disconnect perspective is founded on an assumption that technology use in the home is frequent, creative and generative, and that technology use in the early childhood centre should be the same as that found in the home. However, such arguments divert our attention from understanding the nature of the setting and thereby from an understanding of the role of technologies in education and at home. This study adopts a socio-ecological approach to explore the influence of setting, in particular the elements of activity, time, place, and role on young children's use of digital technologies. It concludes that technology use is characterized by different imperatives in each setting so that thinking about digital differences may be more productive than continuing to focus on the concept of disconnect.»

Schriever (2018) (University of the Sunshine Coast, Australia) examines the literature surrounding digital technologies within the kindergarten. It highlights how mobile devices and smart gadgets are used by early childhood teachers and young children in diverse teacher-focused and child-centered approaches. The challenges faced by early childhood teachers to successfully use and

integrate mobile devices and smart gadgets within their kindergarten will be explored. These challenges include meeting curriculum requirements, mediating parental expectations, seeing the potential of digital technologies, having the confidence and self-efficacy to use digital devices, and determining the value and place of digital technologies within a play-based environment. Each of these challenges is explored within the chapter and the ways these challenges can be overcome are detailed. The opportunities which mobile devices and smart gadgets present to maximize young children's learning, play, and engagement and which facilitate and support the role of the early childhood teacher will also be examined.

Rwacheu (2022), in the article "Technology in early childhood education" accents attention, that «those teachers who took part in the survey, 96% reported that they would like the way they used the assistance of technology in their early childhood classroom or would like to have the ability to use more technology. The vast majority of teachers also agreed that they feel confident when they integrate technical devices in the classroom or for their professional development. However, survey results indicate that many early childhood teachers would welcome the opportunity to strengthen the access to technology at their schools and increase the adoption of technology in lessons. Some teachers would like to see their school's improved Internet access to use devices more effectively. A majority also thinks that there is a need to improve access to devices and high-quality digital resources such as apps to engage young pupils more in the teaching materials.

Turgut, Tunga, & Kışla, (2016) write, that Science and technology are rapidly changing and developing in our ages. Human knowledge is being renewed and changed every day. This situation makes technology integration which accelerates accessing information into educational systems inevitable. Developing ICT skills for children starting from early age gains importance because those skills support the ability and attitude to use electronic media in their future lives. For this reason, European Union gave a significant place to the education of information technologies by naming "Technical Skills" in the 111th European Youth Program to meet changing trends in both education and the labor market in 1993(TEİAŞ, 2010). In the same manner, the State Planning Organization of Turkey declared the goal as "information and communication technologies will be one of the main tools of the education process and it will be provided that both teachers and students use those technologies effectively" in the Strategy of Information Society (2006 -2010)."

Nelson (2021) considers technology as a means of teaching children in the article "6 Hands-On Center Ideas for Using Technology in Pre-K and Kindergarten". She writes: «Mobile devices have made it so much easier to keep kids active while they're using technology. Because they are portable, it's easy to take them along whether we're working inside or outside. Our iPads often find their way outdoors, especially during science lessons. Taking an iPad on a walk in the woods makes it easy for even pre-literate children to document their observations to create a field journal full of images. They can either take a photo or sketch what they see in the wild. Some apps will even allow kids to include narration with their images, adding a verbal language component to the activity. »

Higgins et al., (2012) received certain conclusions regarding technology: «1. The rationale for the impact of digital technology on teaching and learning needs to be clear: Will learners work more efficiently, more effectively, more intensively? Will the technology help them to learn for longer, in more depth, more productively? Or will the teacher be able to support learners more efficiently or more effectively? 2. The role of technology in learning should be identified: Will it help learners gain access to learning content, teachers, or peers? Will the technology itself provide feedback or will it support more effective feedback from others, or better self-management by learners themselves? 3. Technology should support collaboration and effective interaction for learning: The use of computer and digital technologies is usually more productive when it supports collaboration and interaction, particularly collaborative use by learners or when teachers use it to support discussion, interaction, and feedback. 4. Teachers and/or learners should be supported in developing their use of digital

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technology to ensure it improves learning. »

1.2. Conceptual framework

Scientific research on this problem is important since preschool preparation plays an important role in ensuring the continuity of pre-school and primary school education, that is, the continuity of the education system. The course on the technological development of the pedagogical process in the conditions of preschool preparation is conditioned by the new tasks of education, connected with the strengthening of innovative pedagogical processes. In Kazakhstan, in the framework of preschool education and upbringing, technologies such as "Step by Step", "Self-Cognizance" by Nazarbayeva, gaming technologies, health-saving, copyright, etc. have been mastered and quite actively used. However, they were not widely scientifically substantiated, not systematized, and little studied. Nevertheless, some work is underway to develop variational programs, including in the framework of pre-school education. Evidence of this is the alternative programs "Karlygash" (2007) and "Biz mektepke baramiz" (2011) developed in Kazakhstan.

Technological development of the pedagogical process will ensure higher effectiveness of pre-school preparation. Insufficient knowledge of this problem in the theory and practice of pedagogy leads to significant shortcomings in the technological development of the pedagogical process of the preschool. The conducted search experiment on studying the state of the problem of technological development of the pedagogical process in the conditions of pre-school preparation in theory and practice revealed several contradictions:

- between the provisions of pre-school pedagogy and child psychology on the importance of forming the preparedness of preschool children for school and the insufficiently developed pedagogical conditions for the formation of readiness in the system of preschool education based on modern pedagogical technologies;

- between new needs, requests, aspirations in the use of modern pedagogical technologies and the absence in the practice of preschool education of the concept of the organization of the pedagogical process in the conditions of preschool preparation of children based on modern pedagogical technologies;

- between the increasing role of modern pedagogical technologies in pedagogical reality and the insufficiently developed teaching and methodological support for the technological development of the pedagogical process in the conditions of pre-school preparation.

Comprehension of these contradictions allowed us to formulate the research problem, what are the conceptual basis and methodological support for the technological development of the pedagogical process aimed at actualizing its potential as a means of increasing the effectiveness of preschool preparation following modern strategic priorities in the system of pre-school education in the Republic of Kazakhstan? The need for a theoretical and practical solution to this problem led to the choice of the research topic: "Organization of pre-school preparation based on the concept of technological development of the pedagogical process (on the example of fine arts activity)."

1.3. Purpose of study

The research aims to theoretically substantiate, develop and test the author's Concept and the corresponding educational and methodological support for the technological development of the pedagogical process (on the example of fine arts activity) as a means of increasing the effectiveness of preschool children in the context of solving the state's strategic tasks in the field of pre-school education.

1.4. Research problem and Research hypothesis

The object of the study – is the pre-school preparation of preschool children. The subject of the research **–** is the technological development of the pedagogical process in the conditions of pre-school preparation and its teaching and methodological support (on the example of fine arts activity).

Research hypothesis: the concept of technological development of the pedagogical process deepens the existing ideas about the organization of preschool education based on the use of modern pedagogical technologies in the phased implementation of the totality of system elements of a holistic pedagogical process and leads to effective results in the education and upbringing of preschool children provided that:

✓ an integral pedagogical process is presented as a scientific basis for the organization of preschool education using variational programs and pedagogical technologies;

✓ methodical support of the realization of the concept of technological development of the pedagogical process was developed on the example of graphic, constructive, theatrical, and gaming activity in the conditions of pre-school preparation;

✓ the role of the teacher of the preschool as a subject in the realization of the concept of technological development of the pedagogical process is actualized.

The research problem, its purpose, object and subject, hypothesis stipulated the following tasks:

1. Through the content analysis of sources in the domestic and foreign literature to identify and characterize the social, psychological, pedagogical, and scientific-methodological prerequisites for the development of the concept of technological development of the pedagogical process in the conditions of pre-school education in the Republic of Kazakhstan;

2. To develop the concept of technological development of the pedagogical process in the conditions of pre-school preparation and methodological support of the implementation of the concept of technological development, using the example of the fine arts activity of preschool children;

3. To reveal the professionally significant qualities of the teacher, necessary in the implementation of the concept of technological development of the pedagogical process in the conditions of pre-school preparation;

4. To identify, characterize and adapt for the work of modern pedagogical technologies used in the conditions of preschool preparation;

5. Experimentally test the effectiveness of the proposed concept of technological development of the pedagogical process in the conditions of pre-school preparation.

The leading idea is that if we theoretically justify the concept of technological development of the pedagogical process in the conditions of preschool preparation and develop its basic educational and methodological support ensuring the introduction of modern educational technologies, this will contribute to more effective preparation of preschool children for schooling and education in school.

2. Materials and Methods

The research conducted a theoretical analysis of scientific and pedagogical literature and educational and methodological documentation, systematic analysis of pedagogical publications, processing of the presented information with the help of scientific research apparatus, analogies of comparison and typology, analysis and synthesis, modeling, pedagogical experiment, methods of statistical processing of experimental data.

2.1. Participants

At the various stages of the study, about 700 preschool teachers, 450 students and undergraduates, and 1500 preschool children took part in the experimental and pedagogical work. The basic research work was carried out in the groups of students and undergraduates majoring in "Preschool education and upbringing" of the Psychological and Pedagogical Faculty of the Semipalatinsk State Pedagogical Institute (SSPI), the Humanities Faculty of the Semipalatinsk State University named after Shakarim from 1999 to 2011, the Pedagogical Faculty of the Shakarim State University Semey from 2011 to 2015.

2.2. Data collection tools

The research collected data using an experiment and a survey. Educational and methodical complexes for a visual activity for preschool children were introduced in the terms established by the Ministry of Education and Science of the Republic of Kazakhstan from September 2002- 2003 of the school year in 50 preschool groups and classes of the Republic of Kazakhstan. After successful approbation, the teaching and methodological complexes were recommended by the Ministry of Education and Science of the Republic of Kazakhstan for use in the pedagogical process of preschool groups and classes of the Republic of Kazakhstan from 2004 to 2016.

2.3. Procedure

The results of the experimental work were obtained during the scientific management of the experimental site (Semey city) in the framework of the research on "The scientific basis of technological development of the pedagogical process in the conditions of pre-school preparation" (2003-2011), as well as in the process of supervising the students' fulfillment of the specialty "Preschool training and education of the Semipalatinsk State Pedagogical Institute of course and final qualification works (2009). Elements of experimental work were presented in the NIRS (problem research group and scientific circle), as well as in the content of various elective courses and disciplines of specialization taught at the faculties of pedagogy and psychology (preschool) of the Semipalatinsk State Pedagogical Institute and the Department of Psychology of Semipalatinsk State University named after Shakarim since 1998 for 2011, as well as in the results of the experimental work of the international program TEMPUS No. 517504 "Modernization and development of educational programs in pedagogy and education management in Central Asia" from 2012 to 2016 at the Shakarim State University, Semey.

The study was conducted in five stages:

The first stage - the definition of the research problem and its conceptual provisions, the analysis of theoretical sources to establish the degree of development of the problem being studied, and the study of the experience of pedagogical activity. As a result of pedagogical observation, a variety of empirical material was accumulated. The problem, goal, subject, hypothesis, and tasks of the study were determined. The theoretical base of the research was prepared.

The second stage is the definition of the research hypothesis, its goals, and objectives; carrying out separate elements of the ascertaining experiment to substantiate an urgency of a problem, work out the plan of carrying out experimental work. Continuation of the exploratory experiment and theoretical studies related to the problem of technological development of the pedagogical process in the conditions of pre-school preparation. The features of the implementation of modern pedagogical technologies in the pre-school were studied. The tasks of technological development of the pedagogical process were solved within the framework of classes on visual activity, design, and manual work in the preschool.

The third stage is the main stage at which the pedagogical experiment was carried out, which made it possible to identify scientific approaches to the problem of technological development of the pedagogical process, to determine the structure, content, main directions of its implementation, and

to develop the methodological basis for its organization. Analysis and generalization of the results of experimental work served as the basis for the development of teaching and methodological complexes for fine arts activity, design, manual work in the conditions of pre-school preparation and their introduction into the practice of teachers of pre-school educational institutions and schools of the Republic of Kazakhstan. Organization and conduct of a formative pedagogical experiment to test the hypothesis of the study. At scientific conferences of various levels held in the cities of Kazakhstan and abroad, the results of experimental work were discussed.

The fourth stage is the final stage, during which the experimental verification of theoretical and practical conclusions obtained during the research was carried out, their effectiveness was studied, the introduction of scientific and pedagogical and methodological recommendations into the practice of education; registration of work. Systematization, synthesis, and presentation of research results, development of appropriate methodological recommendations, their introduction into practice, structuring of the content of the dissertation.

The fifth stage. Accumulated scientific facts, the main results of the study received generalization and textual design in the form of an abstract and a thesis.

3. Results

The developed concept reveals the understanding, the main content, and the specifics of technological development of the pedagogical process in the conditions of pre-school preparation, determines the application of forms, methods, means, technologies of education, and upbringing in modern conditions. The concept contains not only the basic ideas, provisions that reveal the meaning of technological development of the pedagogical process, but also the approach to the implementation of this activity in the conditions of pre-school preparation, taking into account the continuity of the primary school and pre-school educational institution.

The Concept presents a structural model of technological development of the pedagogical process in the conditions of preschool preparation.

Table 1
Structural model of technological development of the pedagogical process

№	Components	Indicators
1	2	3
1	The technology of establishing pedagogically efficient relationships in a pre-school	Analysis of relationships in the system "Teachers - pupils" Regulation of interaction in the educational mechanisms of the pedagogical process of the preschool Self-improvement of the teacher's personality
2	The technology of modeling the pedagogical process of the preschool	Awareness of the general pedagogical goal and tasks Forecasting and designing the pedagogical process of the preschool Planning of educational activities in the conditions of pre-school preparation
3	The technology of the pedagogical process in pre-school	Realization of the content of education Application of effective forms, methods, and ways of the pedagogical process in the preschool Creative design of the pedagogical process in the preschool
4	The technology of controlling the pedagogical process	Step-by-step monitoring of the implementation of the goal and objectives at each stage and in each microelement of the

		pedagogical process
		Introduction of elements of the scientific organization of pedagogical work
5	Analysis of the implemented technology of the pedagogical process and modeling of a new one for solving another pedagogical problem	Analysis of the initial data in a specific pedagogical situation
		Comprehension of the pedagogical goals and tasks at each stage and in each microelement of the pedagogical process of the preschool
		Further transformation of the technology taking into account the introduced corrections to improve the FPP of the preschool

The effectiveness of the implementation of the structural model of technological development of the pedagogical process is manifested in the levels introduced by us: low, medium, and high.

The low level of technological development of the pedagogical process in the conditions of pre-school preparation characterizes the presence of an untimely diagnosis of relationships in the system "Teachers and pupils", the unstable regulation of interaction in the educational mechanisms of the pedagogical process, the lack of self-improvement in the personality of the teacher. There is no awareness of the general pedagogical goal and tasks, which is not always adequate for the goals and tasks of forecasting and designing the pedagogical process. Planning the educational activities in the conditions of pre-school preparation is not connected with the implementation of the content of education. With the non-systematic application of effective means, forms, methods, and ways of the pedagogical process, there is no place for the creative construction of the pedagogical process. There is no step-by-step monitoring of the implementation of the goal and objectives at each stage and in each trace element of the pedagogical process. A minimum implementation of elements of the scientific organization of pedagogical work. There is no analysis of the initial data of a specific pedagogical situation. Episodic interpretation of the pedagogical goal and tasks at each stage and in each trace element of the pedagogical process. Further transformation of the technology, taking into account the corrections introduced to improve the FPP, is not systematic.

The average level of technological development of the pedagogical process in the conditions of pre-school preparation characterizes the availability of timely diagnosis of relationships in the system of "Teachers and pupils", a constant regulation of interaction in the educational mechanisms of the pedagogical process, episodic self-improvement of the teacher's personality. There is an awareness of the overall pedagogical goal and tasks, which is not always adequate for the goals and tasks of forecasting and designing the pedagogical process. Planning the educational activities in the conditions of pre-school preparation is not always sufficiently related to the implementation of the content of education. With the non-systematic application of effective means, forms, methods, and ways of the pedagogical process, there is no place for the creative construction of the pedagogical process. There is a phased control of the implementation of the goal and objectives at each stage and in each microelement of the pedagogical process. Sufficient level of introduction of elements of the scientific organization of pedagogical work. There is an analysis of the initial data of a specific pedagogical situation. Characteristic is the comprehension of the pedagogical goals and tasks at each stage and in each microelement of the pedagogical process. Further transformation of the technology taking into account the corrections introduced to improve the FPP is non-systemic.

The high level of technological development of the pedagogical process in the conditions of preschool preparation characterizes the availability of timely diagnosis of the relationship in the system "Teachers - pupils", the constant regulation of interaction in the educational mechanisms of the pedagogical process, the constant self-improvement of the teacher's personality. There is an awareness of the general pedagogical goal and tasks, always adequate to the goals and tasks of forecasting and designing the pedagogical process. Planning the educational activities in the

conditions of pre-school preparation is connected with the implementation of the content of education. Systemic application of effective means, forms, methods, and ways of the pedagogical process, there is a place for the creative construction of the pedagogical process. There is a phased control of the implementation of the goal and objectives at each stage and in each microelement of the pedagogical process. High level of introduction of elements of the scientific organization of pedagogical work. Constant analysis of the initial data of a specific pedagogical situation. Characteristic is the comprehension of the pedagogical goal and tasks at each stage and in each microelement of the pedagogical process. Further transformation of the technology, taking into account the corrections introduced to improve the FPP, is systemic.

The levels of the phenomenon being investigated can be judged based on the availability of indicators. The fewer signs are found, the lower level of formation. A high level is characterized by 75% to 100% of the indicators in the total volume. On average - from 40% to 74% of the indicators. A low level corresponds to 1% to 39%.

Teachers of the pre-school of the East Kazakhstan region took part in the ascertaining experiment on verifying and implementing the developed concept. The survey of teachers made it possible to identify several important points for the work.

Criteria for the effectiveness of pedagogical technologies such as optimality, adaptability, effectiveness, the possibility of application in mass experience were revealed. Respondents also ranked the most relevant innovative technologies at the moment. Ranking of new technologies of training showed that the majority of respondents put on first place in the game technology. In the next stage, there are such technologies as the technology of developing methods and information technology. The following places fall on the technology of modular and problem-based learning. Technologies such as differentiated training, programmed instruction, advanced training, the technology of cooperation, and technology of critical thinking (RWST) complete the rating. Based on the above, it can be concluded that gaming technology is the most optimal, efficient, adaptive from the point of view of the respondents participating in the experiment, and developing methodological support for the technological development of the educational process is necessary with support on it and orienting on other most significant technologies.

In addition, in the course of ascertaining experiment levels of possession by teachers of certain technologies; difficulties of teachers in the use of pedagogical technologies were found. In the course of the pilot work, we also determined the qualities that occupy the leading and significant places in the professional activity of teachers of preschool groups. The first place was given to professional knowledge by teachers, the second to love for children, the third pedagogical cycle, the fourth and fifth places were shared by communication and patience, the sixth, seventh, eighth, and ninth places are divided by the following qualities: dedication, creativity, erudition, responsiveness and tenth place is awarded to such quality as the desire for self-improvement.

During a survey among teachers, the time dynamics (depending on the length of work experience) of the importance of personal qualities were revealed for successful fulfillment of professional duties and fulfillment of duties while using certain pedagogical technologies. Similar dynamics during the ascertaining experiment also was revealed among high school students. The results were analyzed.

Correlation between the professionally significant qualities of fourth-year students and teachers of preschool classes is mainly statistically significant, this indicates that the training of future specialists of the latest course year corresponds to the level of training of teachers of preschool classes, and therefore, is in the right direction. According to the research, we determined that the main discrepancies fall on such qualities as "Discipline" and "Justice". The correlation between the professionally significant qualities of 1st year and the 4th year students

is less significant. There is a weak correlation in the training of first-year students of the specialty "Preschool education and upbringing" and students of the 4th year.

The correlation between professionally significant qualities of 1st-year students and teachers of preschool classes is close to zero. Consequently, in the first year of university, only the foundations of the chosen profession are laid, freshmen' ideas about it do not correspond to the ideas of teachers of preschool classes. At the stage of the forming experiment, the analysis made it possible to pay attention to and adjust the pedagogical process mainly in the junior courses and part in the senior ones.

On the strength of theoretical conclusions, analysis of the results of the ascertaining experiment, based on the developed concept of the pedagogical process of the preschool, a methodology and content of experimental work was developed at the stage of the forming experiment.

Table 2
Content of experimental work

№	The tasks of experimental work	The mechanism for realizing the tasks of experimental work
1	To develop educational and methodological complexes for fine arts activity, design, and manual labor in solving the problems of teaching, developing, and educating children in the conditions of pre-school	Approbation of educational and methodical complexes for fine arts activity, design, and manual labor in the conditions of preschool
2	To develop a special course to form a teacher's readiness to use modern educational technologies	Approbation of the special course "Modern educational technologies in the system of professional activity of the teacher"
3	To reveal the level of the formation of professionally significant qualities in the organization of preschool education based on the technological development of the pedagogical process in the future teachers	Diagnostics of the level of the formation of professionally significant qualities in the organization of pre-school education based on the technological development of the pedagogical process among future teachers
4	Implement a modular educational program and educational and methodological support in the specialty 5B010100 - "Preschool education and upbringing" taking into account innovative technologies.	Implementation of the International Project TEMPUS EDUCA JEP 517504-DE-2011 in the countries of Central Asia on the theme "Modernization and development of curricula in pedagogy and management of education", taking into account innovative technologies in the bachelor's degree 5B010100 - "Preschool education and upbringing".

In the course of experimental work, educational and methodological complexes on fine arts activity were created based on innovative technologies. Developed in co-authorship with Abremskaya I.B. the complexes were tested in Kazakhstan from 2002-2003 in 50 preschool groups and classes of the Republic of Kazakhstan (Order of the Ministry of Education and Science of the Republic of Kazakhstan №533 of April 22, 2002, "Public Procurement Contract") and are used up to the present time in the practice of preschool (2015). During the approbation of educational and methodical complexes, the potentialities of technological development of the pedagogical process in solving the tasks of teaching, developing, and educating children through fine arts activity in the conditions of the pre-school were studied. The possibilities of pedagogical technologies in terms of

education of interest in various types of fine arts activity, the formation of abilities to understand the content of works of fine art, and the teaching of work with various graphic materials are revealed.

Identification of the levels of the formation of pedagogical abilities for the technological development of the pedagogical process in the future teacher was carried out through the following diagnostic methods:

Table 3

Diagnostic methods

№	Indicators	Diagnostic methods
1	2	3
1	Diagnosis of relationships in the system "Teachers-pupils" Regulation of interaction in the educational mechanisms of the pedagogical process of the preschool Self-improvement of the teacher's personality	Testing Questionnaires Observation Ranging Scaling Self-monitoring Statistical methods of research
2	Awareness of the general pedagogical goal and tasks Forecasting and designing the pedagogical process of the preschool Planning of educational activities in the conditions of pre-school preparation	Survey Methods Observation Ranging Scaling Self-monitoring Studying the products of pedagogical activity
3	Realization of the content of education Application of effective forms, methods, and ways of the pedagogical process in the preschool Creative design of the pedagogical process of the preschool	Studying the products of pedagogical activity Experiment Self-analysis of pedagogical activity
4	Step-by-step control of the implementation of the goal and objectives at each stage and in each microelement of the pedagogical process of the preschool Introduction of elements of the scientific organization of pedagogical work	Studying the products of pedagogical activity Experiment Self-analysis of pedagogical activity Survey methods
5	Analysis of the initial data of a specific pedagogical situation Comprehension of the pedagogical goal and tasks at each stage and in each microelement of the pedagogical process Further transformation of the technology taking into account the introduced corrections to improve the FPP of the preschool	Self-analysis of pedagogical activity Survey Methods Mathematical methods of research

To diagnose the level of formation of pedagogical knowledge, abilities, opportunities for technological development of the pedagogical process in future teachers in the conditions of pre-school preparation, we developed the corresponding scale.

During the experiment, the control and experimental groups were determined. The control and experimental groups included 100 students and undergraduates. In the control group, classes with students were conducted following the traditional methodology, the experimental group used the methodological support we developed and also carried out work following the concept and the special course materials developed by us. In particular, the developed methodological support contains technological maps, schemes, that relies on gaming activity. In the experimental learning

process, training was conducted with maps and diagrams, students used not only pre-made maps, but also their own. In the process of work, attention was drawn to the fact that students showed an element of creativity when working with children, they were able to create an emotional atmosphere in classrooms.

Methodical materials at the same time were introduced in preschool groups and classes of the Republic of Kazakhstan. Results of introduction and approbation of methodical grants and wishes of teachers were reflected in the university educational process.

In the experimental group, the organization of the formative experiment was connected with the introduction and approbation of a modular educational program and educational and methodological support in the major 5B010100 - "Preschool education and upbringing" based on the concept of technological development of the pedagogical process. The Bachelor's and master's programs were updated within the framework of the international program TEMPUS No.517504 "Modernization and development of curricula on pedagogy and management of education in the countries of Central Asia" through the development of descriptors of the above specialty based on innovative technologies. In the course of the research, the model developed by the experimental group for the bachelor's degree 5B010100 - "Preschool education and upbringing" and the magistracy 6M010100 - "Preschool education and upbringing", curricula, descriptors, educational and methodical complexes by specialty and disciplines, catalogs of elective disciplines bachelor's and master's degrees in the major "Preschool education and upbringing". At each stage of the formative experiment, a "slice" was conducted, after which the experimental group assessed the impact of educational and methodological support based on the concept of technological development of the pedagogical process.

The experimental group also used the special course "Modern educational technologies in the system of professional activity of the teacher", developed by us (co-authored by A.S. Magauov and S.D. Duisembekov). This special course was recommended by the Ministry of Education and Science of the Republic of Kazakhstan for use in the pedagogical process of pedagogical colleges and universities. This indicates the effectiveness of the work done in this direction.

Monitoring of training and methodological complexes was carried out by both internal experts and external partners. While in the control group the educational process was carried out traditionally. To assess the differences in the level of formation of pedagogical abilities for the technologization of the pedagogical process in the experimental and control groups, the method of mathematical data processing was used, namely, the Mann-Whitney test. As a result, the hypothesis was confirmed that the experimental group is superior to the control group in terms of the level of formation in future teachers of pedagogical abilities for the technologization of the pedagogical process in the conditions of pre-school preparation.

The result of our experimental-experimental work was a gradual change to the direction of the necessary high level of the formation of pedagogical abilities for the technologization of the pedagogical process in future teachers. This is evidenced by "slices" that were carried out at each stage of experimental and pedagogical work with the use of methods of observation, expert evaluation, the study of the products of the pedagogical activity, self-analysis of pedagogical activity to determine the dynamics of changes in the level of formation of the phenomenon under study:

Table 4

Condition of formation of the investigated phenomenon in the control and experimental groups (in %)

Groups	Levels	The results of the	Results of the forming experiment

		ascertaining experiment	I stage	II stage	III stage
Control	Low	35%	33%	31%	29%
	Average	65%	67%	69%	68%
	High	–	–	–	3%
Experimental	Low	33%	28%	23%	19%
	Average	67%	64%	62%	58%
	High	–	8%	15%	23%

Analysis of the data in the table shows significant differences that characterize the percentage of the levels of the phenomenon under study in future preschool teachers in the control and experimental groups. Conclusions about the effectiveness of the proposed methodology cannot be done without an analysis of the dynamics of changes in levels among future teachers of the preschool in the experimental and control groups. The final section showed an increase in the number of future teachers with a maximum level and a reduction in the number of future teachers with a minimum level of pedagogical abilities in the technology of the pedagogical process in the preschool.

4. Discussion

Through an informative analysis of sources in domestic and foreign literature, the social prerequisites for the development of the Concept for the Technological Development of the Pedagogical Process of the Preschool in the Republic of Kazakhstan were identified and characterized: they are in line with the interests of the Republic of Kazakhstan, more comprehensive coverage of children with pre-school education and training, regardless of the social status of their families and place of residence. The system of preschool education began to be a multifunctional network of pre-school organizations, oriented to the needs of society and providing a diverse range of educational services, taking into account the age and individual characteristics of the child's development. There were kindergartens of compensating type, child development centers, mini-centers, short-term children's groups, and weekend groups, ensuring the most complete coverage of children with preschool education. Creation of conditions for helping families raise preschool children at home to develop a variety of models of pre-school organizations, developed and approved by the order of the Ministry of Education and Science of the Republic of Kazakhstan "Standard rules for organizing family kindergarten activities". An alternative to state kindergartens, as in the practice of foreign education, kindergartens for large companies, organizations, enterprises, mini-centers are created in many schools, ensuring the requests of families who need groups with a not full day of stay; ensuring families' requests for inclusive education.

The psychological, pedagogical, and scientific-methodological prerequisites for the development of the concept of technological development of the pedagogical process in the conditions of pre-school preparation are revealed. This includes improving the system of preschool preparation to ensure the continuity of preschool educational institutions and primary schools, eliminating mechanisms that mitigate the contradictions of preschool and primary school preparation, ensuring the psychological and physical health of children, introducing the pedagogical process of the preschool pedagogical technologies that provide inclusive computer and didactic equipment based on the requirements of international standards;

The concept of technological development of the pedagogical process in the conditions of pre-school preparation, including the main content and specifics of technological development of the pedagogical process in the conditions of pre-school preparation, was developed (Elmira et al., 2021). This contains not only the main ideas, provisions that reveal the meaning of technological development of the pedagogical process but also approaches to the implementation of this activity in

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the conditions of preschool preparation, taking into account the continuity of the primary school and preschool educational institution; defining the goals, objectives, principles, directions, and content of activities, forms and methods, as well as the conditions for ensuring the effectiveness of pre-school preparation;

Methodical support for the realization of the concept of technological development of the pedagogical process in the conditions of pre-school preparation is exemplified by the example of classes in visual activity, design, manual work, theatrical activities, and games, including methodological aids and albums in Kazakh and Russian for pre-school children, a special course for teachers on the use of modern educational technologies;

The meaning of the terms "technology" and "technologization" as pedagogical categories is clarified, differentiation of these concepts is made. Pedagogical technology is considered as 1) a meaningful technique for implementing the educational process (Bespalko, 1989;1995); 2) a description of the process of achieving the planned learning outcomes (Volkov,1986;1990); 3) the system settings and the order of functioning of all personal, instrumental and methodological tools used to achieve pedagogical goals (Clarin; 1994;1995;2005); 4) organized, purposeful, deliberate pedagogical influence and impact on the educational process (Likhachev, 1979); 5) model of joint pedagogical activity in designing, organizing and conducting educational process with the unconditional provision of comfortable conditions for students and teachers (Monakhov, 1995;1997;2001). The concept of "technologization" is considered in the context of a multi-level and step-by-step process, directions in science, procedures for the transformation of innovative methods, modernization of the educational process. Technology is also associated with information technology; the phenomenon of technological development is determined by taking into account the structural elements of the pedagogical process, namely **"*the technological development of the pedagogical process in the conditions of pre-school preparation - the use of modern pedagogical technologies in the phased implementation of a set of system elements of a holistic pedagogical process leading to effective results of education and upbringing of preschool children and based on the use of adequate to the goals and pedagogical technologies of methodological support .*"**

The modern pedagogical technologies used in the conditions of pre-school preparation have been highlighted and characterized, the ranking of which showed that the majority of respondents highlighted the game technology, which is the most optimal, effective, adaptive from the point of view of the respondents participating in the experiment. In the next stage, there are such technologies as the technology of developing training and information technology, the following places fall on the technologies of modular and problem training. The following technologies complete the rating: differentiated training, programmed instruction, advanced training, the technology of cooperation, the technology of critical thinking (RWST).

The role of the teacher in the implementation of the concept of technological development of the pedagogical process in the conditions of pre-school education is revealed. The modernization of the preschool education system requires improving the training of pedagogical staff, realizing the creative potential of the teachers of the preschool educational establishment, developing personal and professional qualities based on the ideas of humanistic psychology and pedagogy; there are transformations in the system of professionally significant qualities of the preschool teacher, which is generally adequate not only for subjective reasons but also for the objective, including socio-economic and political changes in the state, transition to a 12-year education system, the focus on improving pre-school education, etc.; the pedagogical process is in constant development and enrichment, is modernized taking into account the accumulated positive experience of teachers of pre-school educational institutions.

Technological development of the pedagogical process in the conditions of preschool preparation is the use and adaptation of modern pedagogical technologies in the phased implementation of the totality of system elements of a holistic pedagogical process leading to effective results in the education and upbringing of preschool children. The modern stage of preschool preparation also requires the search for new pedagogical technologies that ensure the differentiation, flexibility, and variability of the content of education (Uaidullakyzy, 2021). The need for their use in the context of reforming the education system is explained by the fact that technology can help improve the learning process and achieve results in the shortest possible time.

The organization of pre-school education based on the concept of technological development of the pedagogical process contributes to:

- forming a creative atmosphere in preschool educational institutions,

  cultivating interest in the scientific and pedagogical community in pedagogical technologies;

- creating the pedagogical conditions for acceptance and action of various

  educational technologies;

- initiating a search for educational systems and mechanisms for their full support in the conditions of pre-school education;

- integration of the most perspective innovations and productive projects into really functioning pre-school educational systems and the transfer of accumulated innovations into the regime of permanently operating search and experimental educational systems.

Technologization of the pedagogical process cannot be carried out without the formation of professionally significant qualities of the teacher, affecting the effectiveness of the results of pedagogical activity. The teacher needs to be able to determine the prospects and priorities of a particular technology, predict the desired results; be able to model the strategy and tactics to achieve the predicted results; have pedagogical skills, creativity (Stambekova et al., 2021). The technological development of the pedagogical process does not in any way mean stagnation, the dogmatism of pedagogical thinking, but directly implies the creativity, eccentricity, professionalism of the teacher.

The introduction of technologies in the conditions of pre-school education cannot be done without methodological support, including technological maps and diagrams, gaming, search elements of cognitive activity, creation of an emotionally significant situation as conditions for independent practical activity of the individual and society, recognition of the child's right to own evaluation, opinion, initiative statement, the creation of a developing environment in preschool institutions.

5.   Conclusion

Thus, we summarized the main results of the study and formulated the conclusions. The main one is the confirmation of the correctness of the hypothesis we proposed. This statement is based on those assumptions that formed the basis for the development of the concept of technological development of the pedagogical process:

1. The use of modern pedagogical technologies in the preschool provides an increase in the effectiveness of the pedagogical process. Each technology is expedient and leads to a definite result. Practically in all technologies, the technological chain chasing the final target is traced. That is, each technology is a system of sequential actions or elements that are with each other in a strict logical sequence. The choice of methods, ways of training is determined by the technology targets. Many

technologies are represented by technological maps, technological information, or the technique of performing tasks, which greatly facilitates the work on the formation of the required qualities or abilities, as it reflects the step-by-step nature of the child's mental actions. Each of these technologies is based on the age and individual characteristics of children of the senior preschool age, based on the psychological characteristics of cognitive activity. Pedagogical technologies contain elements of goal-setting, design, implementation of structural components, analysis of the results of cognitive activity, diagnosing the results of work at every stage of pedagogical technology. The main principles of pedagogical technology are the principles of the integrity of the pedagogical process, the system and the sequence of the actions to be formed, and the age and individual characteristics of children of preschool age.

2. The introduction of technologies in the conditions of pre-school education cannot be done without methodological support, including technological maps and diagrams, gaming, search elements of cognitive activity, creation of an emotionally significant situation as conditions for independent practical activity of the individual and society, recognition of the child's right to own evaluation, opinion, initiative statement, creating a developmental environment in preschool institutions.

3. The developed concept reveals the understanding, the main content, and the specifics of technological development of the pedagogical process in the conditions of pre-school preparation, determines the application of forms, methods, means, technologies of education, and upbringing in modern conditions. The concept contains not only the basic ideas, provisions that reveal the meaning of technological development of the pedagogical process, but also the approach to the implementation of this activity in the conditions of pre-school preparation, taking into account the continuity of the primary school and pre-school educational institution. The concept of technological development of the pedagogical process in the conditions of pre-school preparation determines the goals, objectives, principles, directions, and content of activities, forms, and methods, as well as the conditions for ensuring the effectiveness of pre-school preparation.

4. The implementation of the concept of technological development of the pedagogical process for fine arts activity, design, and manual labor in the preschool is associated with the organizational and methodological support of the pedagogical process, namely, the creation of educational and methodological complexes containing technological maps, diagrams, information not only about drawing, modeling, and other activities, but also the methodological tools for their implementation.

5. The result of our experimental and pedagogical work was a significant change to the high level of the formation of pedagogical abilities for the technologization of the pedagogical process in the preschool. The revealed presence of significant positive dynamics in the future teachers of the preschool gives grounds to believe that the content and methodology of the experimental and pedagogical work developed by us are effective.

6. A modular educational program and educational and methodological support for the specialty 5BO1O100 - "Preschool education and upbringing" was implemented within the framework of the TEMPUSEDUCAJEP 517504-DE-2011 Project "Modernization and development of curricula in pedagogy and management of education". The developed materials have a certain potential for the preparation of future teachers for the technological development of the pedagogical process in preschool institutions, including in the preschool. The special course "Modern educational technologies in the system of professional activity of the teacher" (co-authored by A.S. Magauov and S.D. Duisembekova) and educational-methodical complexes for fine arts activity, design, and manual labor developed by us (co-authored with Abremskaya I.B.) is recommended by the Ministry of Education and Science of the Republic of Kazakhstan for use in the pedagogical process of preschool

groups and classes of the Republic of Kazakhstan (2003-2015). This indicates the effectiveness of the work done in this direction.

The solution to the stated research problems confirmed the formulated hypothesis. Our research does not claim to be an exhaustive solution to the problem of technological development of the pedagogical process in the conditions of preschool preparation. Prospects for the study, in our opinion, consist in the further detailed study of this problem, namely, in the formation of the technological culture of the teacher, the study of the conditions for the use of computer technologies in the preschool.

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