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Technologization of the Pedagogical Process as a Teacher Self-Improvement Factor

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Abstract

The research paper presents the concept of technologization of the pedagogical process as a mechanism for purposeful phased implementation of the elements of an integrated pedagogical process leading to effective learning outcomes for children. Technologization of the pedagogical process involves not only step-by-step following a clear algorithm of pedagogical activities, but also continuous innovation, teachers' professional improvement. The objective of the study is to find out the peculiarities of the implementation of pedagogical technologies based on the professional experience of pre-school teachers of the Republic of Kazakhstan. The method is based on a phenomenological approach: a descriptive analysis of direct experience with minimal interpretations, the use of open questions for the widest coverage of the phenomenon being studied. A written survey (intramural and extramural) of 700 pre-school teachers with work experience 1-35 years was conducted. The results represent the technologies most frequently used in the preparing of pre-schoolers (the undoubted priority of gaming methods and developmental education), the reasons for their choice are provided. Teachers prefer effective methods that allow free experimentation; they actively use innovations in their work, but don't know that their own professional growth is important. Objective and subjective barriers to the introduction of pedagogical innovations in the pre-school are specified. It has been revealed that the desire for self-improvement as a professionally important trait is not common for young professionals. With increasing seniority for teachers, the internal need for professional and personal growth increases. The desire to modernize the pedagogical process, create own technologies is a marker of satisfaction with the profession of a teacher.

Key words: *Pedagogical technology, technologization of the pedagogical process, pre-school education, innovation, professional development, professional experience, professionally important qualities of a teacher.*

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Introduction

The distinctive feature of the pre-school education system of the Republic of Kazakhstan is that it has been a compulsory part of the state system since the 40-50's of the 20th century. Owing to it, most children have access to educational services, and the country has gained experience in the systematic use of different pedagogical approaches. Pre-school education has become more variative and multifunctional as it focuses on the individual needs and specifics of the child's development. According to the statistics of 2013, there were 8,590 pre-school organisations (state, corporate and private kindergartens, short-stay groups, mini-centres, rehabilitation groups) in the Republic, and they were attended by 644,300 children and served by 60.4 thousand teachers (Ministry of Education and Science of the Republic of Kazakhstan, 2010). The state policy in the field of education is aimed at both ensuring full and equal access to quality educational services regardless of the social status of families and places of residence and at assisting families who bring up children at home. These problems are being solved by increasing the number of pre-school establishments and their modernization. At the same time, this urges the problem of ensuring the continuity of the content of education between the pre-school establishment and comprehensive school. The main way to solve the above problem is the introduction of compulsory and free *pre-school education*. Pre-school classes for children aged 5-6 are arranged in comprehensive schools (State Compulsory Education Standard,2016). The key objective of the classes is to develop a list of knowledge, skills and life competencies in children, which are outlined in the requirements of the State Compulsory Education Standard. Pupils with different levels of readiness are admitted, and the educational content stimulates and guides the development of a child, ensuring his/her subsequent adaptation to school.

Another challenging issue is staffing of pre-school system with professionally trained personnel. Intensive growth of the network of private pre-school establishments, a variety of alternative and innovative models of education, a fundamental change in the organisational and content-related component of education brought the problem of a qualitative change in the personality of a teacher, and his/her role in the pedagogical process to the forefront. It is the technologization of the pedagogical process that we see as an effective way to solve it.

We define *technologization of the pedagogical process* (hereinafter referred to as "the TPP") as "the use of modern pedagogical technologies in the phased implementation of a set of system elements of an integrated pedagogical process, leading children to high-performance outcomes in

both learning and education" (Aubakirova, 2016, p. 36). *Pedagogical technology* is a complex system that integrates the philosophical and scientific principles of education, the goals and content of education, various forms of interaction between teachers and pupils, the process of monitoring results, didactic materials and equipment.

The concept of technologization of the pre-school pedagogical process has been formulated by the author, and these days it is an important part of the scientific and methodological support for the organisation of pre-school education in the Republic of Kazakhstan. More than 30 training packages are recommended by the Ministry of Education and are used in the pre-school practice; special courses and tutorials for professional training of teachers have been implemented; a modular educational program to train specialists for pre-school educational establishment has been developed in the context of the implementation of the international program of TEMPUS (TEMPUS EDUCA JEP 517504-DE-2011, 2011).

Research Questions and Hypothesis Testing

The aim of this publication is to find out the specifics of the implementation of pedagogical technologies based on the professional experience of pre-school teachers of the Republic of Kazakhstan. We proceeded from the hypothesis that the technologization of the pedagogical process involves not only step-by-step following a clear algorithm, but also constant innovation, personal and professional improvement of a teacher.

In the context of increasing the effectiveness of the TPP, we raised the following questions:

1) What is the level of using particular educational technologies in the pre-school practice?
2) What factors contribute to and hinder the introduction of new technologies in the pre-school educational process?
3) How does experience with technology affect the desire for professional growth, teacher's need for self-expression and self-improvement?

Addressing these issues will help optimize the use of pedagogical technologies in pre-school education, namely, finding ways to effectively incorporate scientific advances and pedagogical innovations into the real pedagogical process.

This will enable more effective and psychologically comfortable preparation of children aged 5-6 to perform their social role of pupils.

Theory and Conceptual Framework of the Research

The technological approach, based on the ideas of behaviorism, became widespread in the 60's of the twentieth century. The general principle of learning was to focus on achieving clear educational goals that could be classified, identified and measured (Anderson & Krathwohl, 2001; Bloom et al., 1956; Krathwohl, Bloom &Masia, 1964). A rule, a structural algorithm and an equivalent set of procedures were specified for each goal (Scandura, 2001). The consistent implementation of the above system of actions leads to achieving the expected results. Technologies in education is a systemic method of building educational process, reproducible pedagogical cycle, based on the phased implementation of the set objective with the help of certain forms, methods and principles of work.

It should be noted that in education, the concept of "technology" is often used literally, namely: the theory and practice of using high-tech devices, software and Internet networks in the educational process (Dagdilelis, 2018; Herold, 2016; Hoffmann, 2017; Hsu et al., 2013; Karaca, 2011). In this work, the term is used in a more traditional and broad sense -as a reproducible pedagogical cycle, which is aimed at achieving planned results in any field of education; as a content-related technique for the implementation of a pre-developed educational process (Bespalko, 1995; Solas & Sutton, 2018); as "a systemic totality and the procedure for functioning of all personal, instrumental and methodological means used to achieve pedagogical goals" (Clarin, 1999, p. 48); "strict scientific development and accurate reproduction of pedagogical actions guaranteeing success"(Slasteninet al., 2013, p. 101). In this sense, the term "pedagogical technology" is used at three hierarchically subordinate levels (Selevko, 1998): *common didactic* level characterizes the educational process in a region or educational establishment, at a certain stage of educational process; *subject-related technology* is used in the meaning of a "specific methodology" as a set of means for implementing a specific educational content (methods of teaching subjects, compensatory education, educator's work);*local technology* represents the separate parts of the educational process and the solution of didactic tasks (technology of the formation of concepts, technology of the control over material, etc.).

Multi-dimensional classification of pedagogical technologies by Selevko (1998) organizes technologies by: attitude to a child (authoritarian, humanistic, didactocentric, personality-oriented, technologies of cooperation, of free education, etc.); the content of education (general and professional education, training and educating, secular and religious, humanitarian and technical);

the type of organisation and management of a cognitive activity (book-based education, a system of small groups, computer-based education, etc.); educational media: reproductive, explanatory and illustrative, problem, developing, dialogical, gaming, creative, etc.

A demonstrative presentation of the technological is flow charts and diagrams, that is documents describing the didactic basis of the project (tasks, logical structure) and the stages of implementation of the pedagogical technique (Monakhov, 2016). In this case, the chain of pedagogical actions is arranged to strictly comply with the objectives in the form of a specific expected result. An integral part of pedagogical technology is diagnostic procedures that contain the criteria, indicators and instruments of measurement the results obtained.

The instrumental focus and the guaranteed results determine the potential of the technological approach. It allows effective addressing a number of important problems of building the educational process, namely: detailing and specification of learning objectives based on a certain desired standard, standardization of instructional procedures, the opportunity to automate the pedagogical process, monitoring results and effective feedback in the process of education, possibility of correction at any stage.

It is worth noting that the technological approach in modern pedagogy is personality-orientated, which allows a teacher to "brighten up" the process of pedagogical communication. We argue that the diversity of modern technologies allows the creative teacher to choose the most appropriate tools, adapt and combine them taking into account the individual characteristics of children and the resources of the educational establishment (Aubakirova, 2013).

TPP allows reaching an optimized, standardized and reproducible educational process, which guarantees a consistently positive result. This is, especially, significant in the pre-school, which prepares children for participation in the selection procedure to become the first-year pupils, and subsequently – for adaptation in the regulated school environment.

We suggest distinguishing common *characteristics of the implementation of pedagogical technologies in pre-school education*:

1. Each technology is reasonable and leads to the expected result.
2. A cyclic sequential chain of actions and elements (diagnostics, goal setting, development, implementation, analysis of the results of work) that are in strict logical sequence with each other is traced in technologies. A change made to any element of the system causes changes the whole system.

3. The selection of means, methods and techniques of education is determined by the technology's benchmarks (requirements of the educational standard, the competence model of a school leaver).
4. In terms of process, technologies are represented by operation flow charts, diagrams or step-by-step instructions for performing tasks, which, on the one hand, facilitates mastering new techniques by a child, and on the other hand, structures the teacher's work, reflecting phased mental operations and practical actions of a child.
5. Pedagogical technology relies on scientific knowledge of the psychological characteristics of this age group and the individual characteristics of pre-schoolers.

It should be noted that there are both advocates and opponents of the idea of the TPP among scholars and practitioners. The main objection concerns the fact that education is a creative process that cannot be limited by stable algorithms. Psychological risks of technologization are associated with excessive structuring and formalisation of the educational process as a whole (Lifintseva, 2009). It is necessary to understand that pedagogical technologies are simply necessary for the result of pedagogical activity to be predictable and relatively independent of the experience and abilities of a particular teacher (Baiborodova, 2015). Since the technologies inflexibly set the achievement of goal through a unified procedural algorithm, they ensure the same high result when used in different settings, by different teachers and with different children. Thus, the focus on TPP is stipulated by the basic objectives of education, by striving to maximize the development of children's potential.

It is important to understand that the development of pedagogy as a science and practice occurs through the introduction of technologies and their subsequent transformation. We see that many pedagogical technologies, having stood the test of time, turned into guiding didactic principles (for example, problem-based learning by Dewey (1938), a child's independent development technique in a didactically prepared environment by Montessori (2016), a technology of full assimilation of knowledge (Bloom, 1971; Carroll, 1963) or Elkonin-Davydov developmental education system (Davydov, 1996). On the other hand, the rapid development of society and science requires continuous improvement of educational technologies, starting from a very early age. It is necessary to constantly modernize effective methods, introduce and test innovations. New ideas and technologies regularly appear on the educational services market; their introduction often requires a global reorganization of the educational environment. Testing pedagogical innovations is a long,

complicated (and not always successful) process, requiring the involvement of children, parents, teachers and educators, professional research experts, education managers.

We accept the point of view of Shmelkova (2002), stating that technologization is a multi-level process of "scientifically grounded improvement of pedagogical objects of any nature" (p. 17). Tanurkova (2011) links the TPP with the problem of updating the quality of education. At the same time, the development of educational systems reflects the needs of families which are the direct participants in the educational process, the needs of society and the state, as well as socio-cultural standards, ideas about a successful person. It is technologization that ensures a consistent evolution of the educational space through the phased introduction of innovations, the adjustment of existing methods to solve qualitatively new and complex tasks.

The opportunity for subjects of pedagogical activity to independently choose the educational programs is an important factor in the formation of the Kazakh model of pre-school education. Variative programs and training packages that enable personality-oriented interaction with the child are actively being developed. The selection of innovative and traditional technologies in the working practice determines the teacher's professional style and position, his/her attitude to the child's personality, philosophical perception of such categories as education, development, teaching and learning.

TPP is based on *the teacher's technological culture*. This is "a set of knowledge, skills and experience of purposeful work aimed at the integrated implementation and comprehensive development of educational technology in the context of pre-school preparation" (Aubakirova, 2016, p. 96). It is obvious that in the process of work a specialist masters a whole set of pedagogical technologies focused on various aspects of child development. The individual style of activity and the proficiency of a teacher depend on the structure of the above set and the flexibility in using tools for solving pedagogical problems. As is known, the working conditions of teachers are extremely diverse, and the needs for training are constantly changing in the process of social development. Therefore, an important problem is training specialists, who, on the one hand, show the totality of knowledge, experience and personal qualities formed in the tradition of classical pedagogy, while on the other hand, being capable of independent search and finding solutions, able to adapt existing pedagogical methods, technologies both to the individual needs of a child and to the general needs of the social environment (Aubakirova, 2011).

The experience of introducing the concept of TPP in the pre-school of the Republic of Kazakhstan showed the effectiveness and justification of the described approach (Aubakirova, 2016). At the same time, a number of problems of professional personnel became noticeable: a) lack of readiness to use innovative technologies in pedagogical process; b) lack of skills to adapt existing technologies to the changes in the pedagogical situation; c) lack of opportunity to flexibly build the pedagogical process using a wide range of technologies in the context of a personality-oriented approach. It should be recognized, teachers often use methods and forms that do not take into account the individual abilities and cognitive interests of children and do not contribute to the development of their self-reliance. Therefore, it is one of the main tasks today to form teachers' competencies in the application of modern educational technologies in the context of pre-school. This work should be based on studying the real attitude of teachers to the issue in question, identifying their professional experience, potential and limitations in the technologization of the pedagogical process.

Methods

Participants

To achieve the set goal, we collected data on the peculiarities of the technologization of the pedagogical process in pre-school education. We tried to attract the maximum number of teachers with different professional positions and work experience. The invitation to participate was posted in all educational establishments of the East Kazakhstan region with pre-school classes, as well as on the websites of professional communities (master students of the Siberian State Pedagogical Institute A. Belokon and I. Oralkanova assisted in the collection and primary data processing).

There were 700 pre-schoolteachers/educators aged 25 to 58 (average age 39.8), which were surveyed. The average work experience of the interviewed teachers/educators was 14.5 years; the detailed distribution of the data is shown in Figure 1.

Among the surveyed teachers, 13.8% taught in Kazakh, 86.2% – in Russian. 82.6% of respondents had a higher pedagogical education. They were all women.

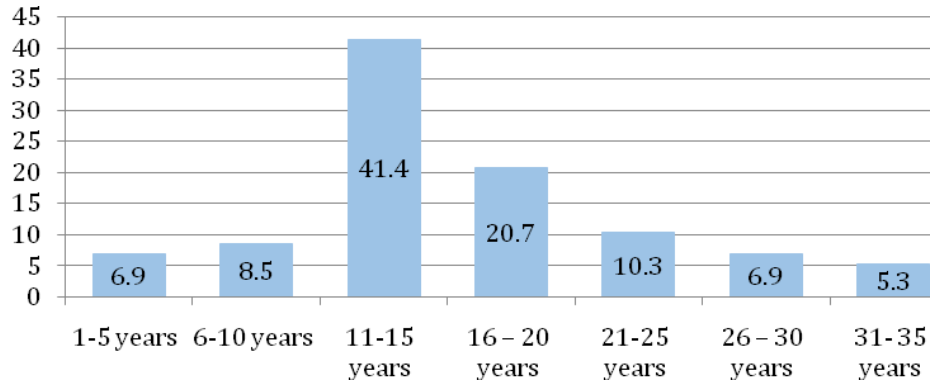

Figure 1. Work Experience of the Surveyed Teachers/Educators (Frequency Distribution in %, N=700)

Ethical Considerations

Participation in the survey was voluntary. The survey suggested obtaining personal data of respondents: surname and name, age, place of employment, level of education and professional qualification level. This information was used in the initial analysis solely for identification purposes; all scientific reports contain only generalized and impersonal data. In the cover letter to the questionnaire, we guaranteed that the information obtained would be used solely for scientific purposes, that personal data would not be disclosed under any circumstances and would in no way affect the professional career or reputation of the survey participants.

Instruments

A written form containing questions about participants' direct experience in the implementation of pedagogical technologies was used. Most of the questions were open in nature, which made it possible to cover a wide phenomenological field of the phenomenon being studied and to study it fully enough. Content of the questions:

1) What educational technologies do you consider the most relevant in your work?
2) Why did you choose these technologies?
3) How often do you use the below technologies in your work? Namely: modular-based education, gaming technology, differentiated education, developmental education, critical thinking technology, problem-based learning, information technology, collaboration technology, computer-assisted learning, anticipatory education.
4) How would you interpret the term "innovation"?

5) What, in your opinion, shows the effectiveness of the application of innovative technologies?
6) Please, rank the factors influencing the use of innovative technologies in pre-school (order them from the most significant to the least significant): State Educational Standards; regulatory documentation of the Department of Education; philosophical, special, scientific and educational literature; mass media; refresher courses; studying best practices of other schools and institutions.
7) What prevents you from applying technology in your work?
8) Do you have experience in creating your author's technologies?
9) Are you involved in educational research activity?
10) What personal and professional qualities do you consider the most important for self-realisation in teaching?
11) Please, rank the below qualities in order of importance in the work of an educator/teacher with pre-schoolers: professional knowledge, love for children, pedagogical tolerance, communicativeness, patience, purposefulness, creativity, eruditeness, responsiveness, striving for self-improvement.
12) When did you last take refresher courses?
13) To what extent are you satisfied with these courses?
14) Are you generally satisfied with your profession?
15) Having gained work experience, do you think that you have chosen the right profession? If you had the opportunity to change your profession, would you choose it again?

Procedure

There were 198 respondents, who filled out a questionnaire form in the presence of researchers during group training at refresher courses. The rest of the teachers filled out the questionnaire form in absentia and sent the result to the researchers by email.

Different types of data were presented in the interview. For quantitative values, we used descriptive statistics. To summarize the rank answers, an average arithmetic rank was calculated, based on which the final ranking (ordering) was constructed. Concerning the ready-to-answer questions (the nominal data reflecting the facts: yes or no, level of professional qualification, etc.), the frequency of answers was calculated and summary tables were made. The phenomenological analysis of

open-ended answers (short narratives showing private opinion and understanding of teachers) was aimed at identifying the prevailing meanings. To distinguish the significant units, we used content analysis (categories of content were selected and calculated manually, while trying to reflect the wording of respondents as accurately as possible).

The rate percentage (frequency of response of a certain category relative to the total number of respondents) was used to quantitatively interpret the categories of content analysis; the most popular categories were assigned ranks, reflecting a kind of "top rating" of pedagogical technologies.

To test the hypothesis about the connection of experience in the use of pedagogical technologies and the desire for professional growth (as well as other professional qualities of teachers), the sample was divided into two groups depending on work experience: teachers with work experience from 1 to 20 years (542 teachers) and from 21 to 35 years (158 teachers), the results obtained were compared using the Spearman's rank correlation criterion.

The hypothesis of changing the structure of professionally important personal qualities of teachers with more than 20 years of experience has been tested. There were quite a few of them in the sample (22.6 of the total sample). This figure does not reflect the real demographic situation, just young teachers more actively participated in the study (especially in the online form). During the interview, the participants made a ranking list of ten qualities that they consider the most important in the work of a teacher. We synthesized these data and compared using the Spearman correlation criterion (H1 implies the similarity of rank structures, H0 - lack of relation, that is, a significant difference between the teachers' ideas about professionally important qualities). The data collection and analysis allowed drawing conclusions about the change in the orientation of professional and personal development over time.

Results and Discussion

The results of the survey of teachers/educators illustrated the specifics of the implementation of modern pedagogical technologies in the pre-school.

First of all, we suggested the intended teachers to evaluate innovative technologies in terms of their frequency of use and the degree of current relevance. The final list is as follows (Table 1).

Table 1

Ranking of Learning Technologies According to the Level and Frequency of Use by Respondents

Rank	Pedagogical technologies	The level of use	Number of respondents	%
1	Game-based technology	high	700	100
2	Developmental education	high	696	99.43
3	Information (computer) technology	high	630	90.00
4	Problem solving-based learning	high	624	89.14
5	Modular-based learning	medium	459	65.57
6	Collaboration technology	high	420	60.00
7	Differentiated education	high	356	50.86
8	Anticipatory education	high	315	45.00
9	Programmed education	high	244	34.86
10	Critical thinking technology, RWST	high	95	13.56

The greatest number of respondents ranked a game-based technology first (primarily because role playing are best suited to the features of children aged 5-6). In addition to games-based technologies and methods, developmental education is often used in the pre-school educational process, as it focuses on the development of the potential abilities of pupils and their application in various activities. Information (computer) technologies are also highly ranked and they imply the introduction of a large number of innovations. In addition, teachers/educators have a high rank to the technology of problem solving-based learning, which supposes consistent cognitive tasks for pupils, which might be solved by application of the search methods. It is easy to note that these technologies are united by a high degree of variability in the ways of achieving the goals set. In this regard, they qualitatively differ from the technologies that occupied the lowest positions in the ranking: RWST and programmed education.

The respondents answered very diversely to the question No. 2 “Why did you choose this technology?”. We performed a content analysis of textual data and identified categories that reveal the primary ***reasons for choosing a specific technology*** in the work of a pre-schoolteacher:

- personal interest: compliance of technology with abilities and inclinations of a teacher/educator;
- optimally solves the educational task set: quickly, with saving of time, effort and resources;
- technology can be adapted to the individual needs and characteristics of the child’s development;
- the application of technology does not require expensive materials and equipment, sophisticated hardware;
- shows a good result in different conditions and with different children;

- adequateness to time, social context and general tasks of education;
- offers a new solution to the existing problem;
- well-observed and recorded effectiveness of the technology (rapid development of a child).

In general, the choice of specific education technologies is determined to the greatest extent by effectiveness in the context of a child's mental and physical development. This was noted by 82% of the surveyed teachers/educators.

The participants of the survey suggest different interpretation to the term "***innovation***". The most typical formulations are provided below: *"Novelty"; "The introduction of new non-standard teaching methods"; "A variative part of the educational process"; "Effective methods and techniques that produce good results"; "This is the imperative of our time, the use of modern technologies needed by society; "New, but with valuable elements of the earlier accumulated best practices"; "Methods, technology or a program is created for the benefit of a child and contributes to the high development of a personality."*

The interviewed teachers are explicit in understanding innovation as the "introduction of something new" into the learning process. The majority of respondents emphasize the importance of innovation in the process of child development, in his/her adapting to the requirements of society. At the same time, none of the survey participants wrote that the introduction of innovations is an important component of the professional development of a teacher/educator herself/himself. Question No. 5 reveals the positive results of the application of innovative technologies. Respondents most often point to the activation of the educational process, the development of communicative competency, the formation of cognitive and practical skills of pre-schoolers – Table 2. At the same time, a small proportion of the respondents (9.5%) confidently asserted that only traditional, time-proven technology provides solid and deep knowledge.

Table 2

Benefits of the Application of Innovative Technologies while Working with Pre-Schoolers

Category of Content Analysis	Explication
Activation of the educational process	children's cognitive activity
	quickly obtained result of learning
	stimulates interest in learning
	monitoring the quality of knowledge
Cognitive development of a child	a large volume of information assimilated
	development of thinking
	encourages search for answers to questions, to make discoveries
Social development of a child	development of communication skills

	ability to work in a group
	development of inter-personal skills
Moral education	understanding of moral values
	learning to respect the opinions of others
	formation and manifestation of personal qualities
Development of creative abilities	Widening the spheres of interests
	freedom of expression
Acquisition of important skills and life competencies	computer skills
	overcoming behavioural problems

While responding to Question No. 5, teachers noted that a positive result of application of technologies depends on the systemacy of work. This implies the provision of necessary methodological and didactic materials, support of the administration, sharing experience with colleagues, assistance and understanding of parents. During the study, we suggested the teachers/educators to rank a separate group of factors, which are seen as sources of knowledge that influence the use of technology in their work (Table 3).

Table 3

Ranking Sources of Knowledge that Influence the Use of Technology

Rank	Pedagogical technologies	Number of respondents	%
1	Regulatory documentation of the Department of Education	700	100
2	State Educational Obligatory Standards	696	99.43
3	Scientific and pedagogical literature	695	99.29
4	Refresher courses	513	73.29
5	Studying best practices of colleagues and other educational establishments	488	69.71
6	Specialized scientific literature	475	67.86
7	Philosophical literature	156	22.29
8	Mass media	144	20.57

The results showed that the main factors determining the use of innovative technologies in the pre-school are the official requirements and regulatory documents of the state education authorities. The ranks from 3 to 6 deal with the study of the current best practices of implementing pedagogical innovations from various professional sources. Teachers/educators regularly study an extensive range of educational technologies, track current trends in pedagogy. This, in turn, determines the professional competence and mastery.

In order to identify objective and subjective factors hindering the use of innovations, we asked a direct question: “What prevents you from applying technologies?”. 62.1% of respondents answered that nothing prevents them; 20.7% noted high workload at work; 17.2% gave other reasons (among the most common reasons are lack of resources, lack of support from the

administration, schools and pre-school establishments are insufficiently equipped materially and technically).

The ***need of teachers for self-improvement*** is the internal motive. Its external manifestation is the regular participation in refresher courses and validation of professional qualifications. In the Republic of Kazakhstan, like many other countries, the level of professional competence of teachers is determined by the qualification category. To be certified for a qualification category, a teacher/educator is supposed to complete a number of tasks and meet standard requirements. The certification of teachers/educators is an obligatory procedure that is carried out at least once every five years. Its goal is to enhance the level of professional skills, to develop creative initiative, to promote the growth of both the prestige and remuneration to teachers for their work (Order of the Minister of Education and Science of the Republic of Kazakhstan No. 83, 2016). The qualification level provides the teacher with the opportunity to solve more complex professional tasks. 20.7% of the respondents have the highest qualification category (Table 4). In accordance with the requirements of the Department of Education, this means that they are authors of publications, textbooks, training package, they are winners of pedagogical competitions, participants in conferences and seminars at the republican or international level. In addition, 37.9% of the total number of respondents are engaged in scientific and educational activities (respectively, 62.1% are not engaged).

Table 4

Experience of Completing Refresher Courses and Satisfaction with The Profession of Teachers (N=700)

Components of experience of completing refresher courses		n	%
Professional education level	specialized secondary pedagogic education	145	20.7
	incomplete higher education	25	3.6
	higher pedagogic education	530	75.7
	have second higher education	48	6.9
Professional category of respondents	without category	48	6.9
	certified first category	314	44.8
	certified second category	193	27.6
	certified higher category	145	20.7
When did you last complete refresher courses?	less than 6 months ago	97	13.9
	6 months ago	120	17.1
	a year ago	217	31.0
	2-3 6 years ago	241	34.4
	4-5 years ago	25	3.6
	more than five years ago	-	0
To what extent are you satisfied with these courses?	completely satisfied	265	37.9
	partially satisfied	338	48.2

	not satisfied	97	13.9
Are you satisfied with your profession?	yes, satisfied	676	96.6
	no, not satisfied	24	3.4
If you had the opportunity to change your profession, would you choose it again?	yes, would take this opportunity	676	96.6
	no, wouldn't take this opportunity	24	3.4

The need of teachers/educators in self-improvement is realized, among other things, in regular completing the refresher courses. The results of the survey showed that during the current year more than 60% of the teachers surveyed completed the refresher course to improve their qualification. This indicates a qualitative approach to their professional activities. At the same time, only 37.9% of teachers/educators express full satisfaction with the refresher courses, while 13.9% of surveyed were not satisfied with their results.

In the pedagogical environment, it is widely believed that the teacher's professional self-improvement (as well as the quality of the educational process as a whole) depends on how much she/he loves her/his work, and is satisfied with the profession. The respondents' answers to Questions No.14 and 15 showed that 89.7% of them were confident that they had chosen the right profession; 6.9% indicated that they had made a mistake in choosing a profession; 3.4% found it difficult to answer. At the same time, the overwhelming majority of respondents (96.6%) would not change the occupation provided such an opportunity.

An important result of the survey is the statement of the fact that a third of respondents have a desire to create their author's technologies, and 13.8% of the surveyed specialists are already implementing their own developments in practice: methods, techniques, planning sheets (Figure 2). Very few teachers/educators (only 3.4% of the sample) declare their unwillingness to create something new. It is a common thing that these are the same persons who point out to their dissatisfaction with the profession.

To explore what place the desire for self-improvement occupies in the system of professionally important qualities, we used the open and closed questions in the questionnaire. At the beginning, with the help of content analysis of answers to open Question No. 10, we formed a list of qualities that teachers considered most important for them to realise themselves in the profession in the current conditions and educational technologies they find necessary for use. In Table 5, we have distinguished, as a separate category of content analysis, a group of skills and competencies that provide the teacher with competitive advantages in the modern labour market. It is this category that includes the desire for self-development as the basis of professional and personal development.

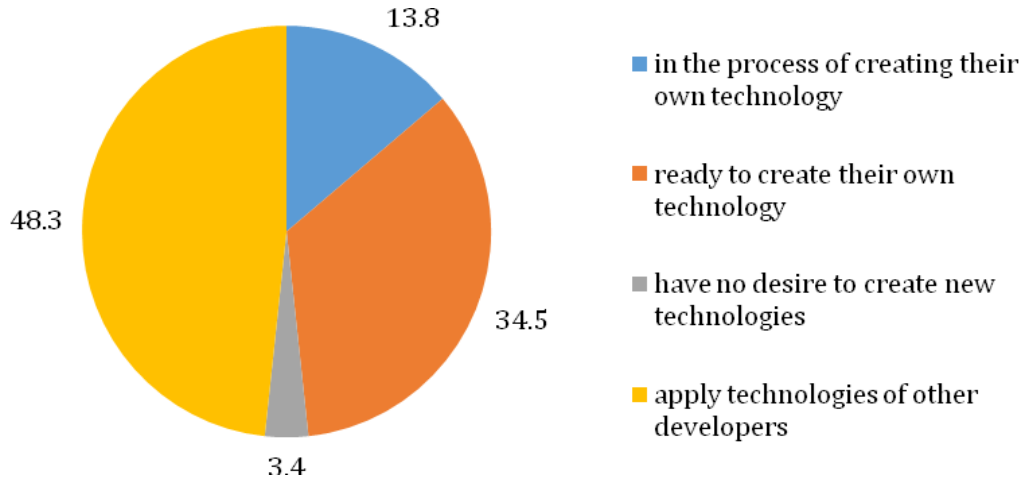

Figure 2. Experience in Creating the Author's Technologies by Teachers/Educators (Frequency Distribution, N=700)

Table 5

Professionally Important Qualities of a Modern Teacher/Educator

Category of Content Analysis	Explication
Professional competence	professional knowledge, awareness, fluency in the state language, pedagogical tolerance, conscientious attitude to work, commitment
Attitude to children	love for children, responsiveness, tolerance, understanding, patience
Organisational skills	insistence on high standards, purposefulness, steadiness, decisiveness
Socially important skills and qualities	interpersonal skills, tact, politeness, respect for others
Cognitive abilities	attentiveness, creativity, eruditeness
Personal traits	kindness, openness, emotional balance, optimism, generosity, spirituality, tidiness
Competitiveness	computer literacy, creative approach, mobility, individuality, multiplicity, desire for development, self-improvement

The below professionally important qualities of teachers are typically mentioned in the scientific literature and empirical studies. They are as follows: knowledge, love for children, pedagogical tact, sociability, patience, dedication, creativity, eruditeness, responsiveness and desire for self-improvement.

We suggested the respondents to rank them in order of importance when working with pre-schoolers (Question No 11 of the questionnaire). As usual, such qualities as "love for children" and "professional knowledge" rank first. The pursuit of excellence is often found in the lowest positions. At the final stage of data analysis, we divided the sample into two groups depending on their work experience: teachers/educators with work experience of 1-20 years and 21-35 years. The groups were suggested to make separate ratings of the significance of the above ten leading professional qualities. At a later stage, the obtained ranking results were compared using the Spearman's rank correlation criterion – Table 6.

Table 6

Comparison of the Ranks of Professionally Important Qualities in Groups of Teachers/Educators with Different Work Experience

Top 10 teacher/educator qualities	The results of ranking in the group with the experience of 1-20 years	The results of ranking in the group with the experience of 21-35 years	d	d^2
Professional knowledge	1	3	-2	4
Love for children	2	1	1	1
Pedagogical tact	6.5	3	3.5	10.5
Sociability	4	6	-2	4
Patience	3	9	-6	36
Dedication	6.5	6	0.5	0.25
Creativity	6.5	9	-2.5	6.25
Eruditeness	6.5	3	3.5	10.5
Responsiveness	9.5	9	0.5	0.25
Desire for self-improvement	9.5	6	3.5	10.5
Total Σ	*55*	*55*	*0*	*83.25*

The empirically calculated rank correlation coefficient is r_s=0.42 (the critical value of r when N=10 for $\rho \leq 0.05$=0.64). Thus, the correlation between the professionally important qualities of the groups of "Teachers with 1-20 years of experience" and "Teachers with 21-35 years of experience" is not statistically significant. This allows speaking about significant changes in the structure of professional qualities. The greatest discrepancy concerns "patience" (its significance decreases by 6 positions in the rating). This may indicate a violation of the emotional regulation of the behaviour of teachers/educators with work experience of more than 20 years. At the same time, the importance of such qualities as pedagogical tact, eruditeness and striving for self-improvement grows quite strongly (by 3-4 positions in the ranking).

Thus, the desire for self-improvement as a professionally important trait is not common for young specialists. With increasing work experience of teachers, the internal need for professional and personal growth increases.

The data obtained from the survey of pre-school teachers allows making the following inferences:

The Use of Pedagogical Technologies in the Pre-School Practice

Pre-school teachers/educators demonstrate a predominantly high level of implementation of modern pedagogical technologies, which implies continuous self-improvement of the personality and the development of professional competencies. A high level of the TPP supposes the constant regulation of interaction in the system of "teacher/educator-pupils" (Aubakirova, 2013; 2016). In this case, the content of education is delivered through the systemic application of effective means, methods and techniques, where there is an opportunity for the creative building of the pedagogical process. It is important to understand pedagogical goal and tasks at each stage, in each element of the educational process, and the phased control of their implementation. The systematic application of technology is characterized by a constant updating of the pedagogical system: the improvement of tools, the introduction of new technological tools, methods and techniques. In such settings, the teacher/educator introduces elements of the scientific organisation of work and systematically transforms technologies, improving the pedagogical process and own skills.

We believe that the high level of the use of technology is due, primarily, to the organizational features of the pre-school. The teacher has a very limited time during which he/she must: establish interaction with pupils, assess the level of their cognitive and social development, "level out" the shortcomings of previous education and training and prepare the child for school. The survey results confirmed that a characteristic feature of the TPP in the pre-school is the constant search for a way of teaching that, at the lowest cost of manpower and resources, will provide the highest effect (ensuring compliance of the child's level of development with age standards and meeting the requirements for entering primary school). The selection of specific learning technologies is mostly determined by its effectiveness with regard to mental and physical education of children, by possibility to solve modern development problems. The controllability of technology, its adaptability to individual goals and learning conditions is important.

The results obtained are supported by data of predecessors, who revealed determinants of the use of educational practices in different countries and cultures. In this regard, surveys of teachers in the pre-school education system of Greece and Turkey showed that it is the child development that

is the main criterion for the selection of educational technologies (Buldu & Tantekin Erden, 2017; Rentzou & Sakellariou, 2011). Stoner et al. (2008) point to the peculiarities of the perception of technology by the teachers/educators themselves, as well as to their experience in its use. A personal standpoint (philosophical, religious, ideological, professional) and beliefs about teaching determine the choice of educational technology according to Luchkina (2009), Thomas (2013), Çobanoğlu (2015). The study of Shin (2015) shows the importance of teacher's personal convenience as a factor having an impact on the choice of modern technology in the Korean elementary school. The results of a survey of pre-school teachers in the Republic of Kazakhstan show the same trends.

The leading positions in terms of frequency of use are occupied by game-based technologies: they correspond to the age characteristics of children of 5-6 years old, for whom the main activity is still the game. It has long been known that the game is the main source of children's development: it teaches to act in an imaginary situation, fulfil one's desires independently and arbitrarily, and master social roles (Vygotsky, 2005). Nowadays, the child's right to play as fundamental, essential part of childhood needs support: "playing is a vital, universal behaviour, essential for children to be children and thrive in the modern world. … it is a biological, social, cognitive necessity for individual children, but also has benefits for society and the human species" (International Play Association, 2014). In the system of formal education, the game provides interaction and socialization, fostering self-regulation and contributes to handle complexity, promotes individual creativity and initiative. Therefore, gamification (pedagogies of games) is recognized as one of the key "clusters" of innovative pedagogies (Paniagua & Istance, 2018). To prepare for schooling, games aimed at developing the ability to adhere to established rules are especially important (Smirnova & Ryabkova, 2017).

Pre-school teachers also often use developmental education, information technologies and problem solving-based approach in their work. A common feature of these technologies is the active assimilation of knowledge and the development of creative autonomy of pupils while performing activities. They also share the possibility of free experimentation of the teacher herself/himself, the introduction of innovations in traditional ways of interaction with children. This promotes the possibility of free planning and development of the educational process, making adjustments in case of changes in the baseline pedagogical situation. As a result, while modern

educational technologies offer step-by-step algorithms for organizing the pedagogical process, they also provide the teacher/educator with the right to work creatively.

Factors that Contribute to and Hinder the Introduction of New Technologies in the Pre-School Educational Process

Pre-school teachers/educators emphasize the importance of pedagogical innovations in the process of raising and educating children in a general social context. However, they do not realize the importance of innovations in the process of their own professional and personal development. It is important to make teachers/educators understand that regular upgrading of their 'toolbox' of working methods they use is the key to professional competence and to their competitiveness in a constantly transforming society.

In her previous studies (Luchkina, 2000) proved that the innovative activities of teachers are associated with personal and professional self-development, with confident progress towards professional maturity. This is a powerful driver in the self-"cultivation" of a teacher/educator as a valuable personality and competent professional. It is also known that the transition to the innovative level of performing activities is an effective means of overcoming the professional and personal crises of experienced professionals (Zeer & Symanyuk, 2002). We believe, that regular introduction of innovations protects teachers from the emotional burnout and related professionally destructive processes. Our research has proved that innovative technologies are widely used in the practice of pre-school establishments. They stimulate the educational process, and they make it possible to effectively develop creative and cognitive abilities of children, to form their practical and social skills.

The introduction of innovations is limited by objective factors: regulations and rules of the state department of education, as well as shortage of working time, lack of material resources and moral support in pre-school establishments. The problems described are characteristic not only of the Republic of Kazakhstan. The data of American researchers (Hirschler & Darcy, 2002) suggest that pre-school teachers/educators are limited in time and resources, which does not allow them to sufficiently use traditional professional development opportunities. Because of this, they make methodological mistakes in their work, and they lack effectiveness in the use of pedagogical technologies. Studying the use of innovative project technologies in Turkey, Arıkan and Kimzan (2016) found that kindergarten educators suffer from difficulties in planning educational processes. Flexible modelling of the pedagogical process contributes not only to the development

of children, but also to the education and professional development of teachers/educators. In addition, research in countries that have experienced a totalitarian regime has shown that it is sometimes difficult for teachers to adopt a pupil-centered teaching philosophy, and especially to understand how these approaches can be implemented in classroom settings (Zabeli, Anderson & Saqipi, 2018).

Modern educational standards stimulate the modernization of the educational process. Therefore, the main external limiter of the introduction of innovations can be the high workload, as well as insufficient common orientation of the professional environment to development. In addition, there is a subjective factor, which is the need of teachers for self-improvement (personal and professional growth). It is no accident that that the concept of lifelong learning is one of the main trends of modern education both in the Republic of Kazakhstan and in the entire civilized world. Acquiring practical skills lifelong is a prerequisite for the survival of a person in a complex social world (Commission of the European Communities, 2000). Modern studies show that teachers are highly competent in lifelong learning, they really want to assimilate new skills in the field of modern technologies (Selvi, 2011; Kazu & Erten, 2016).

Given the internal need for self-development, as well as the external support of this need by other participants in the educational process, teachers prove their skills by raising the qualification category, publishing scientific and methodological works, participating in professional competitions, seminars and conferences, as well as in scientific and educational activities. Pre-school teachers regularly review, analyze and adapt the experience of innovations of colleagues, study the scientific and special literature. Refresher courses show great potential in the development of technological culture of teachers, but the opportunities of such courses are insufficiently used (as evidenced by dissatisfaction of some teachers after completing those courses).

At this stage, it is important to provide teachers with quality information, professional and moral support. Zeichner (2005) emphasizes that the task of pedagogical education involves developing the ability of teachers to evaluate and decide when to use specific practices and how to adapt them to the settings in which they teach. The studies by Bell et al. (2013) underline the importance of the environment of the teacher training. Çakmak (2016) argues that the training delivered to teachers influences their attitude to and behaviour in the occupation. The use of active methods in

teacher training enhances creativity, research skills, teamwork skills. The subsequent introduction of these qualities in work with pupils allows slow but sure improving the entire educational system. The idea of communities of practice has proved to be effective, which are flexible structured professional groups aiming at sharing ideas. Teachers/educators, united in "communities of practice", share concerns or passion for the specific issue, deepen their knowledge and experience in this area, implement teaching models with support and apprenticeship (Shatunova et al., 2019; Wenger et al., 2002). Arikan et al. (2017) showed, that when teachers mastered novel technologies, the presence of colleagues who followed the same path and experienced a similar struggle created a "ground for cooperation" and a source of support.

The Teacher's Work Experience: Influencing Professional Skills, Striving for Innovation, the Need for Self-Expression and Self-Improvement

There is a logical relationship between the TPP and pedagogical skills: the main sign of teacher's skills – reproducibility of a planned result – is also a key sign of pedagogical technology. Sidorov (2015) describes two ways to achieve this level: to master a ready-made scientifically developed technology or to develop your own technology as a result of accumulated experience. The pedagogical mastery acquired in the process of understanding personal experience is a difficult, long trial-and-error path; the use of already created technologies helps to make this path shorter.

Our study found that 45% of pre-school teachers/educators demonstrate the desire and ability to create new technology products in their work. 48% of them use ready-made technologies trying to modernize them, adapt to the age of children and to the certain materially and technically equipped pedagogical process. To clarify the data obtained we suggest using Rogers's innovation diffusion theory, which is relevant as it explains the process of disseminating ideas and products in social systems. The scholar classifies five types of the subjects-innovators: innovators, early implementers, a preliminary and later majority, and hesitant ones (Rogers, 2010). In accordance with the description of these ideal types, pre-school teachers/educators make up the later majority as they master innovations when they meet their own needs or under the pressure of a social (professional) environment.

Teachers with different work experience and employment duration have different points of view on professionally significant qualities. As work experience enhances, the internal need for professional and personal growth increases significantly. In the psychology of professional development, the transition to the highest stage of mastery is traditionally associated with the

development of an individual style of activity, as well as with the manifestation of creativity: going beyond the limits of current practice, creating your own tools and working methods. Buldu and Tantekin Erden (2017) claim that the level of education, professional experience and qualifications significantly influence the self-esteem of teachers and the practices they use in their work. The data obtained by Rahayu et al. (2018) confirm the direct link between the level of pedagogical skills and the inclination of teachers to innovate; at the same time, professional competence of the teacher mediates the impact of innovation on school effectiveness and security. We agree with the opinion of Pudinova and Shepilova (2014) that every teacher/educator and teaching staff has the right to introduce innovations. However, in this case, she/he "must assume certain obligations for the preparation and organization of innovation, since children become the objects of any pedagogical initiative" (Pudinova & Shepilova, 2014, p. 34).

The modern system of pre-school training in the Republic of Kazakhstan requires the search for new pedagogical technologies that ensure the flexibility and variability of the educational process. This requires, on the one hand, the study and synthesis of real pedagogical experience, and on the other, rapid practical implementation and dissemination of the achievements of pedagogical science. As a result, the most promising innovations are accumulated, integrated into the existing pre-school educational systems and become continuously used. It is the TPP that ensures the safe and responsible introduction of innovations in pre-school education settings.

Conclusion

This study showed that the introduction of new technologies in pre-school settings provides a variety of forms of activities (game, search, cognitive activity), creates an emotionally significant development situation for both the child and the teacher. The technologization of the pedagogical process involves creativity, professional and personal development of a teacher/educator. The desire for self-improvement makes up a part of the system of professionally significant qualities of a teacher/educator, and it determines her/his adaptive abilities and competitiveness. So, the desire to create something new (practical techniques, technologies and methods) is an important marker of overall satisfaction with the profession and the ability to grow professionally.

This research and other studies to follow will contribute to the awareness of technologization of the pedagogical process and improving the quality of the refresher courses for teachers/educators of pre-school establishments. The results of this study suggest that we have to think about

improvement of the refresher courses for teachers/educators of pre-school establishments, and our next research and publications will cover this issue. Delivering TPP principle as the key to competent and safe innovation will allow intensifying this process, the creation of author's technologies based on the acquired experience, and the modernization of existing methods. This is a matter of mastery and a condition of job satisfaction. The identified features of the implementation of modern pedagogical technologies in the pre-school are the basis for the development of training packages and their implementation in practice.

References

Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. New York: David McKay Company.

Arıkan, A., & Kimzan, İ. (2016) The Project Approach in Preschool Education: The Inquiries of Dendrologists Project, *Elementary Education Online*, 15(2), 498-528. DOI: http://dx.doi.org/10.17051/io.2016.37190

Arikan, A. Fernie, D. E., & Kantor R. (2017). Supporting the Professional Development of Early Childhood Teachers in Head Start: A Case of Acquiring Technology Proficiency, *Elementary Education Online*, 16(4), 1829-1849.

Aubakirova, R. Z. (2011). Pedagogical technologies in pre-school education, *Professional education. Capital*, 12, 42-43.

Aubakirova, R. Z. (2013). The problem of technologization of pedagogical process in preschool, *Modern problems of science and education*, 1. Retrieved March 25, 2019, from http://www.science-education.ru/ru/article/view?id=8121

Aubakirova, R. Z. (2016). *The organization of pre-school training based on the concept of technologization of the pedagogical process (for example, visual activity).* Doctorate dissertation. Shakarim State University, Kazakhstan.

Baiborodova, L. V. (2015). Theory and Practice Problems of Pedagogical Technologies Use in Education. Yaroslavl Pedagogical Bulletin, *Psychological and pedagogical sciences,* 2(2), 69-76.

Bell, R. L., Maeng, J. L., & Binns, I. C. (2013). Learning in Context: Technology Integration in a Teacher Preparation Program Informed by Situated Learning Theory, *Journal of Research in Science Teaching*, 50(3), 348-379.

Bespalko, V. P. (1995). *Pedagogy and progressive learning technologies*. Moscow: Institute of Professional Education.

Bloom, B. S. (1971). Mastery learning. In Block J. H. (Ed.), *Mastery learning: Theory and practice* (pp. 37-41). New York: Holt, Rinehart & Winston.

Buldu, M., & Tantekin Erden, F. (2017). An Investigation of Turkish Early Childhood Teachers' Self-Reported Beliefs and Practices Regarding Assessment, *Journal of Education and Future*, 11, 29-49.

Çakmak, M. (2016). A Study in Teacher Education: Effects of Activity-Based Instruction on Student Teachers' Achievement, *Elementary Education Online*, 15(3), 1043-1053.

Carrol, J. B. (1963). A model of school learning, *Teachers College Record*, 64(8), 723-733.

Clarin, M. V. (1999). *Technology training: the ideal and reality*. Riga: Experiment.

Çobanoğlu, R. (2015). A Review of Research in Turkey on Beliefs about Teaching, *Hacettepe University Journal of Education*, 30(3), 48-59.

Commission of the European Communities. (2000). *A Memorandum on Lifelong Learning*. Commission staff working paper. Brussels.

Dagdilelis, V. (2018). Preparing teachers for the use of digital technologies in their teaching practice. *Research in Social Sciences and Technology*, *3*(1), 109-121. Retrieved from http://ressat.org/index.php/ressat/article/view/345

Davydov, V. V. (1996). *Theory of developing learning*. Moscow: INTOR.

Decree of the Government of the Republic of Kazakhstan No. 292. (2016). *State obligatory standard of preschool education and training.* Retrieved March 25, 2019, from http://base.spinform.ru/show_doc.fwx?rgn=58838#A4ND0LNZZ6

Dewey, J. (1938). Experience and Education. New York: Collier Books.

Gronlund, N. E. (1991). *How to write and use instructional objectives* (4th ed.). New York: Macmillan Publishing Co.

Herold, B. (2016). Technology in Education: An Overview. *Education Week*. Retrieved March 25, 2019, from http://www.edweek.org/ew/issues/technology-in-education/

Hirschler, J., & Darcy, C. (2002). Using Technology to Support Preschool Teachers' Professional Development. In D. Willis, J. Price & N. Davis (Eds.), *Proceedings of SITE 2002-Society for Information Technology & Teacher Education International Conference* (pp. 2550-2551). Nashville, Tennessee, USA: Association for the Advancement of Computing in Education (AACE).

Hoffmann, M. (2017). An exploratory study: Mobile device use for academics. *Research in Social Sciences and Technology, 2*(1), 18-52.

Hsu, Y. C., Hung, J. L., & Ching, Y. H. (2013). Trends of Educational Technology Research: More than a Decade of International Research in Six SSCI-Indexed Refereed Journals, *Educational Technology Research and Development*, 61(4), 685-705.

International Play Association. (2014). *IPA Declaration on the Importance of Play*. Retrieved March 25, 2019, from http://ipaworld.org/ipa-declaration-on-the-importance-of-play/

Karaca, F. (2011). Teacher and Student Perceptions about Technology Use in an Elementary School in Ankara, *Journal of Social Studies Education Research*. 2(2), 43-59.

Kazu, Y., & Erten, P. (2016). Teachers' Lifelong Learning Competencies, *Elementary Education Online*, 15(3), 838-854.

Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1964). *Taxonomy of educational objectives, the classification of educational goals. Handbook II: Affective domain.* New York: David McKay Co.

Lifintseva, N. I. (2009). Tecnologization of education and psychological health in education of personality, *Scientific bulletin of Belgorod State University. Humanities Sciences,* 4(14), 66-71.

Luchkina T.V. (2000). *The role of innovation in the personal-professional self-development of a young teacher*. Proquest Dissertations. Khabarovsk State Pedagogical University, Russia.

Luchkina, T. V. (2009). Professional and Personal Position of a Young Teacher in the Modern School, *Scholarly Notes of Transbaikal State University*, 6, 90-98.

Ministry of Education and Science of the Republic of Kazakhstan. (2010). *State Program for the Development of Education of the Republic of Kazakhstan for 2011–2020*. Retrieved March 25, 2019, from http://control.edu.gov.kz/ru/gosudarstvennaya-programma-razvitiya-obrazovaniya-na-2011-2020-gody

Monakhov, V. M. (2016). Designing of methodical ensuring system of educational standards functioning, *Pedagogika*, 3, 17-25.

Montessori, M. (2016). A full course of education (collection). Moscow: AST.

Order of the minister of education and science of the Republic of Kazakhstan No. 83. (2016). *On approval of the Rules and conditions for certification of pedagogical workers and persons equivalent to them, occupying positions in educational organizations, implementing general educational curricula of pre-school education and training, primary, basic secondary and general secondary education, educational programs of technical and vocational, post-secondary, additional education and special educational programs, and other civil servants in the field of education and science.* Retrieved March 25, 2019, from http://base.spinform.ru/show_doc.fwx?rgn=84793

Pudinova, A. S., & Shepilova, N. A. (2014). Innovative activities in pre-school educational institutions, *International journal of experimental education*,7(2), 34-35.

Paniagua, A., & Istance, D. (2018). *Teachers as Designers of Learning Environments. The Importance of Innovative Pedagogies*. Paris: OECD's Centre for Educational Research.

Rahayu, S., Ulfatin, N., Wiyono, B. B., Imron, A., & Wajdi, M. B. (2018). The Professional Competency Teachers Mediate the Influence of Teacher Innovation and Emotional Intelligence, *School Security Journal of Social Studies Education Research*, 9(2). 210-227.

Rentzou, K., & Sakellariou, M. (2011) Greek pre-service kindergarten teachers' beliefs about and practices of developmentally appropriate practices in early childhood education, *Early Child Development and Care*, 181(8), 1047-1061.

Rogers, E. (2010). Diffusion *of Innovations*. New York: Simon and Schuster.

Scandura, J. M. (2001). Structural Learning Theory: Current status and new perspectives, *Instructional Science*, 29(4/5), 311-336.

Selevko, G. K. (1998). *Modern educational technology*. Moscow: Narodnoeobrazovanie.

Selvi, K. (2011). Teachers' lifelong learning competencies, *Uluslararası Eğitim Programları Ve Öğretim Çalışmaları Dergisi*, 1(1), 61-69.

Shatunova, O., Anisimova, T., Sabirova, F., &Kalimullina, O. (2019). STEAM as an Innovative Educational Technology, *Journal of Social Studies Education Research*, 10(2), 131-144.

Shin, W. (2015). Teachers' use of technology and its influencing factors in Korean elementary schools, *Technology, Pedagogy and Education*, 24(4), 461-476.

Shmelkova, L. V. (2002). *Technologization of the educational process*. Kurgan: IPKPRO.

Sidorov, S. V. (2015). The place of pedagogical technology in the system of activity of a teacher. *Teacher-researcher website*. Retrieved March 25, 2019, from http://si-sv.com/publ/1/ped_tekhnologii/14-1-0-511.

Slastenin, V. A., Isaev, I. F., & Shiyanov, E. N. (2013). *Pedagogy*. Moscow: Academy.

Smirnova, E. O., & Ryabkova, I. A. (2017). *Psychology and pedagogy of the game*. Moscow: Yurayt.

Solas, E., & Sutton, F. (2018). Incorporating Digital Technology in the General Education Classroom. *Research in Social Sciences and Technology*, *3*(1), 1-15. Retrieved from http://ressat.org/index.php/ressat/article/view/338

Stoner, J. B., Parette, H. P., Watts, E. H., Wojcik, B. W., & Fogal, T. (2008). Preschool Teacher Perceptions of Assistive Technology and Professional Development Responses, *Education and Training in Developmental Disabilities,* 43(1), 77-91.

Tanurkova, E. I. (2011). New quality of education as a result of the technologization of the educational process. P*roceedings of the International Scientific Conference: Problems and prospects of the development of education.* Perm: Mercury.

TEMPUS EDUCA JEP 517504-DE-2011. (2011). *Modernization and Development of Curricula on Pedagogy and Educational Management in the Central Asian countries.* Compostela, Spain.

Thomas, M. (2013). Teachers' Beliefs about Classroom Teaching – Teachers' Knowledge and Teaching Approaches, *Procedia - Social and Behavioral Sciences*, 89, 31-39.

Vygotsky, L. S. (2005). The game and its role in the mental development of the child. Transcript of a lecture given in 1933 at the Leningrad State Pedagogical Institute A. I. Herzen, *Preschool education*, 5. Retrieved March 25, 2019, from https://dob.1sept.ru/article.php?ID=200500510

Wenger, E., McDermott, R. A., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston: Harvard Business Press.

Zabeli, N., Anderson, J., & Saqipi, B. (2018). Towards the Development and Implementation of Learner-centered Education in Kosovo, *Journal of Social Studies Education Research,* 9(4), 49-64.

Zeer, E. F., & Symanyuk, E. E. (2002). Emotional component in the professional development of the teacher, *Psychology world*, 4(32), 194-203.

Zeichner, K. (2005). Becoming a teacher educator: a personal perspective, *Teaching and Teacher Education,* 21(2), 117-124.