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Technological Dimension of Pre-School Teacher Training at Tertiary School: Fine Arts Concept- based Case Study

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Abstract

The purpose of this study was to experimentally test the impact of the author's Concept and the corresponding educational and methodological support on the technological development of the pedagogical process (based on teaching Fine Arts to pre-schoolers). Quantitative research methods like surveys, interviews, questionnaires, tests, tutor observation check-lists, students' and learners' performance records experiment were utilised. Three knowledge field and measurement and evaluation experts were involved to assess the validity of the instruments. The Internal reliability of the questionnaire was validated through running the Kuder-Richardson Formula 20 that resulted in a reliability coefficient, which was 0.72 and indicated internal reliability. The variables to this experiment were the students' creativity, learning performance, computer skills, motivation of the professional growth and preschool learners' creative and cognitive thinking and communication skills. It has been found that there was the dynamics in the variables of both student-teachers and children. The mean values for the CG students increased by 0.65 points on average in every variable after the participating in the experiment and the mean figures for children improved by 0.70 points on average as well which proved that the designed model had been efficient in upgrading the pedagogical process at preschools and developing students' future job-related competencies like creating an interactive technology-mediated and game-based learning environment in Fine Arts which could encourage children's initiative, creativity curiosity (autonomous cognitive activity) and collaboration along with creation of an emotionally significant situation for autonomous activity of both an individual and a group in which a child's right to their own evaluation, opinion are welcomed. The results met objectives of this study, boosted previous knowledge, and filled the research gaps. After the treatment, there was a 10-12% improvement in learning performance, 7-9% in the EG students' creativity, 8-10% in computer skills, and 10-11% in motivation of the professional growth and 8-10% in preschool learners' creative and cognitive thinking and communication skills. The course and methodical complexes for Arts and Design can be recommended for use in the pedagogical process of preschool groups and classes of the Republic of Kazakhstan.

Key words: *technological development, pedagogical process, pre-school preparation, visual activity.*

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Introduction

The necessity of pedagogical upgrade of the concept of technological development of the pedagogical process in the settings of preschool environment has been driven by the real requirements that modern life makes for preschool education (Plowman et al., 2010; Aubakirova, 2012; 2013; Jensen & Rasmussen, 2019; Enygin et al., 2018).

This study was initiated and performed within the framework of educational policy developed by the Ministry of Education and Science of the Republic of Kazakhstan (Order of the Ministry of Education and Science of the Republic of Kazakhstan No 214, 2015). The study is theoretically and methodologically based on theory of the integrity of the pedagogical process (Samuelsson & Carlsson, 2008; Avšič & Rifel, 2016; Fominykh et al., 2016); scientific ideas about the continuity of preschool and primary education (Babić, 2017; Zarudnaya et al., 2018); scientific work related to the introduction of innovative technologies in the educational process (Garavaglia, 2016; Ilomäki & Lakkala, 2018); scientific research devoted to the study of age characteristics of preschool children through the prism of psychological science (Ansari & Pianta, 2019); the concept of a professional approach to pedagogical activity (Johnson & Hammond, 2018); latest studies revealing the basics of the organization of classes in the visual and theatrical, as well as game-based and constructive activities in the kindergarten (Ali et al., 2018; Tarman & Tarman 2011; Yan, 2019).

Review of Literature

This literature review found that different aspects of the problem of technology introduction in kindergartens were studied by Edwards et al. (2017), Schriever (2017), Rvachew (2016), Turgut et al. (2016), Higgins et al. (2012). The literature review of the sources on digital technologies applied in the kindergarten settings was conducted by Schriever (2017) (University of the Sunshine Coast, Australia) to determine and specify the ways of employing the mobile devices and smart gadgets by the instructors within both the teacher- and child-centered educational environments. Additionally, it analyses the approaches to surmounting the obstacles like lack of instructors personal/occupational potential to meet curriculum outcomes and parental expectations. It emphasises the potential of digital technologies, which are to be seen by the instructors, who are

supposed to build up their confidence and self-efficacy in using them, as a valuable and beneficial attribute to a game-based kindergarten environment.

Rvachew (2016) accents attention to the fact that those teachers who took part in the survey, 96% of the surveyed instructors, according to his experiment (McGill University, Canada), expressed their positive attitude and inclination to integrate technology in their classes for toddlers and 4-5-year-olds. However, while the above research data suggests that the overwhelming number of instructors advocate the use of electronic (smart) devices for the purpose of both delivering classes and their professional development, they still report the need to be provided better access to technology at their educational institutions and show their readiness to boost the use of technology in class.

Higgins et al. (2012) made a number of conclusions concerning the use technology for the instructional purpose. Those were as follows: 1. It requires a comprehensive rationale for the contribution of digital technology which it makes to instructing: whether it (digital technology) is capable to make the instructional process to be beneficial for the learner; whether it is capable to increase learner's productivity; whether it is to be supportive for the educator in terms of helping the learners. 2. It is prerequisite to define the role of technology in the involvement of a learner in education: whether it is to ensure easier interaction based on learner-content, learner-teacher, learner-peers model; whether it is supposed to be a platform for the learners to get their work commented and assessed or better self-management. 3. Technology exercises a supportive function in terms of getting learners to collaborate and interact: it seems to bring more benefits to the latter activities when used to organize discussions, communication and feedbacks. 4. It is recommended to provide any assistance to educators and learners in their attempts to boost using digital technology if it stimulates and eases learning.

Moreover, it was discovered that though computer skills are essential for the teacher, teacher's creativity (Henriksen et al., 2018; Wheeler et al, 2002) and commitment (motivation) to grow professionally (Baek et al., 2008; Pischetola & Heinsfeld, 2018; Meier, 2019) matter even more as teachers are supposed to create the technology mediated learning environment engaging students in creative activities, encouraging students' motivation, cooperation, curiosity and critical thinking (Brownell & Rashid, 2020;.Gibss, 2020).

In the view of the above, the *purpose* of this study was to experimentally test the impact of the author's Concept and the corresponding educational and methodological support on the technological development of the pedagogical process (based on teaching Fine Arts to pre-schoolers).

The research questions were:

1. To what extend does the conceptualised technology-involving learning environment affect both students' creativity, learning performance, computer skills, motivation of the professional growth?
2. How does the conceptualised technology-involving learning environment implemented by the trained students effect preschool learners' creative and cognitive thinking and communication skills?

Methods

Research Design

This was a three-stage-based experimental study of pre-test post-test experimental design using quantitative and qualitative research methods. At the first stage, which was a prior-experimental stage, best practices in technologization of the pedagogical process in the pre-schools were analysed, the course entitled "Modern educational technologies in the system of professional activity of the teacher" and educational-methodical complexes for Fine Arts and design, and manual labor (TEMPUS EDUCA JEP 517504-DE-2011, 2011) were revised and improved. Cooperation agreements with the kindergartenswere signed. The dependent variables and measurement tools were specified. Those were students' creativity, learning performance, computer skills, motivation of the professional growth and preschool learners' creative and cognitive thinking and communication skills. At the experimental stage, the pedagogical experiment was run and the surveys, interviews, questionnaires, tests, check-lists, students' and learners' performance records, observation, were utilised to collect data. At the post-experimental stage, the analysis of the statistical data was performed and the results were interpreted (see the research flow visualised in Fig. 1).

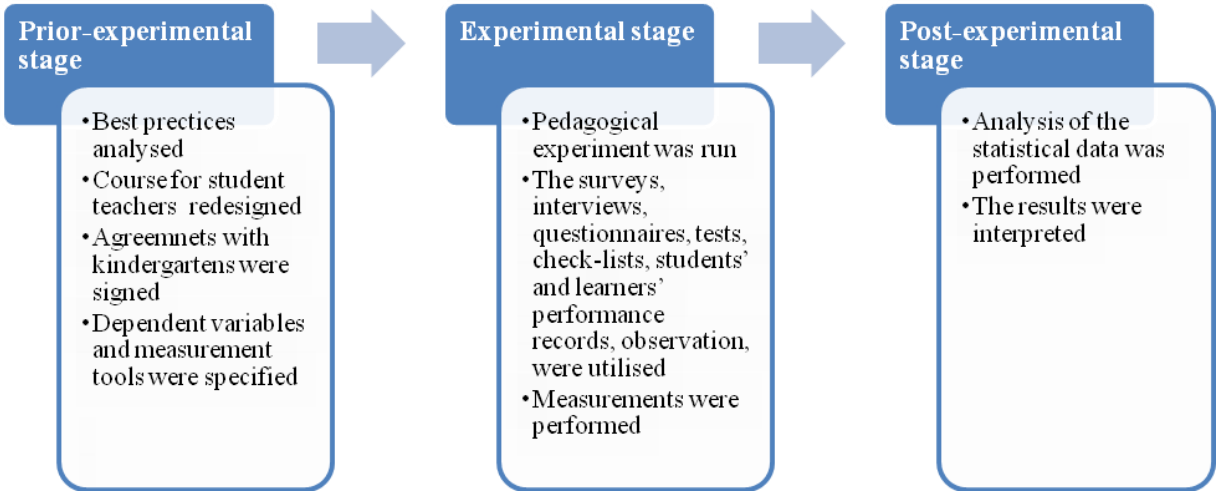

Figure 1.The research flow

Sample

Throughout the empirical and experimental stages (this comprised running two pilot projects and dissemination) of this study involved about 700 preschool teachers, 450 of Bachelor (4th year) and Master programme students majoring in "Preschool education and upbringing" of the Psychological and Pedagogical Faculty of the Semipalatinsk State Pedagogical Institute (SSPI) and the Humanities Faculty of the Semipalatinsk State University named after Shakarim, and 1500 preschool children. The preschool teachers (*n=493*), who were supposed to participate in the empirical surveys were sampled randomly. The first pilot experiment was carried out, that involved 74 students and undergraduates (68 females and 6 males) at the Semipalatinsk State Pedagogical Institute between 1999 and 2011. The second pilot study was run at the Pedagogical Faculty of the Shakarim State University Semey between 2011 and 2015 and relied on the randomly selected sample of 54 students (43 females and 11 males) obtaining the bachelor's and master's degree in "Preschool education and upbringing" (reference of speciality: Bachelor's Degree – reference # 5B010100; Master's Degree – reference # 6M010100).

For the second pilot project, whose results this study highlight, the number of 54 students the Semipalatinsk State University named after Shakarim was sampled to form experimental and control groups (EG and CG). *EG* involved 27 students (23 females aged 21-23 and 4 males aged 21-22) and *CG* comprised 27 students (25 females aged 21-23 and 2 males aged 22).

The purposefully sampled children aged 5-6 from 20 kindergartens located in Semipalatinsk were involved as the subjects of teaching for the EG students to increase the validity of the experiment.

The consolidated entry results of the measurements for EG and CG obtained through self-assessment of vocational and pedagogical motivation (see Table 1), Creative Personality Scale (see Table 2), Computer Literacy and Internet Knowledge Test andAcademic Performance records (see Table 3) are presented below.

Table 1

Entry Results of the Measurements obtained through Self-assessment of Vocational and Pedagogical Motivation (distributed by aspects, in % and grades)

Groups	PN	PI	DC	OI	EC	IA	*Mean* (12-grade scale)
EG (n = 27)	33	31	21	14	1	0	8.86
CG (n =27)	32	31	22	13	2	0	8.41

Note: PN = professional need; PI = functional interest; DC = developing curiosity; OI = ostentatious interest; EC = episodic curiosity; IA = indifferent attitude.

Table 2

Entry Results of the Measurements obtained through Creative Personality Scale

Group	Multiple correlation coefficient ***R***	R^2	*F* value	Net *F* value	Standardized regression coefficient	Comparative Fit Index
EG (n=27)	0.622	0.382	45.589	18.115	0.309	.974
CG (n=27)	0.631	0.410	45.554	18.121	0.307	.963

Note: *P<0.001*

Table 3

Means of Entry Grades for Computer Literacy and Internet Knowledge Test (CLIT) and Academic Performance Records (APR)

Group	CLIT (20-grade scale)	APR (ECTS100-grade scale)
EG (n=27)	17	74
CG (n=27)	16	77

As the above suggests, both groups (EG and CG) were homogeneous and could participate in the experiment.

The sampled children aged 5-6 from were diagnosed using Bayley Scales for Infants and Toddlers (III) (see Table 4).

Table 4

*Entry results of measurement from Bayley Scales for Infants and Toddlers (III) (*n=72*)*

Variables	*Mean*	95% CI	*p value*
Adaptive behaviour	10.4	10.1-10.7	<0.001
Physical development	89.2	88.5 – 91.3	0.863
Cognitive abilities	91.9	89.7 – 93.1	0.775
Receptive and expressive language skills	102.2	99.4 – 105.4	0.001
Interpersonal and self-regulatory skills	93.4	91.2 – 96.3	0.004

The scores from the above test indicates that children were within the normal range for their function of adaptive behaviour, physical development, cognitive abilities, receptive and expressive language skills, and interpersonal and self-regulatory skills.

Instrumentation including validity and reliability testing

Multiple data collection tools were used in this study to respond both research questions. They were: surveys, interviews, questionnaires, tests, tutor observation check-lists, students' and learners' performance records, self-monitoring. Three knowledge field experts and the expert in the field of measurement and evaluation were involved to assess the validity of the instruments. The Internal reliability of the questionnaire was validated through running the Kuder-Richardson Formula 20 that resulted in a reliability coefficient, which was 0.72 and indicated internal reliability.

A set of diagnostic methods were used to identify levels of formedness of the future teachers' pedagogical competencies making the technological development in the pedagogical process possible (see Table 5). Experts in this field of the research were involved to establish validity of the content of the diagnostic methods below.

Table 5

Diagnostic Methods, which are correspondent to the Indicators of Pedagogical Process Effectiveness

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

The outline of the research procedure

The research involved three basic stages, which were the empirical, experimental and summative evaluation and interpretation stage.

The empirical stage was intended to work out the components and indicators of the overall effectivenessof Technological Development of the Pre-school Pedagogical ProcessModel so that it could be assessed (see Table 6 below).

Table 6

The Components and Indicators ofTechnological Development of the Pre-school Pedagogical Process Model Effectiveness

#	Components	Indicators
1	The technology of establishing pedagogically efficient relationships in a pre-school	Analysis of relationships in the "Teacher- pupil" system
		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 modelling 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	Technology of 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	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 modelling 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 for the purpose of improving the FPP of the preschool

The experiment was aimed at pursuing pedagogical tasks through the developed mechanisms. See the outline of the experimental stage in Table 7 below.

Table 7

The Outline of the Experimental Stage

No.	The tasks of the experiment	The mechanism for realizing the tasks
1	To develop educational and methodological complexes for fine arts activity, design and manual activity in solving the problems of teaching, developing and educating children in the pre-school settings	Approbation of educational and methodical complexes for fine arts activity, design and manual activity in the preschool settings
2	To develop a special course for the purpose of forming 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 pre-school education on the basis of 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 on the basis of technological development of the pedagogical process among future teachers
4	To 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 (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".

At the summative evaluation and interpretation stageresearch data were consolidated and processed.

Data collection procedure

The statistical data were collected at both prior-, while- and post- experimental and stages. There was administered the methodology of self-assessment of vocational and pedagogical motivation (Fetiskin et al., 2009), Creative Personality Scale (Gough, 1979), Computer Literacy and Internet Knowledge Test (CLIK) (n. /d.), academic performance records to assess the student-teachers. Bayley Scales for Infants and Toddlers (III) were used to measure the involved preschoolers' (aged 5-6) adaptive behavior, physical development, cognitive abilities, receptive and expressive language skills, interpersonal and self-regulatory skills (Bayley, 2006) before and after the experiment.The pedagogical process run in 20 kindergartens was also assessed by application of the checklists. IBM SPSS Statistics 25.0.0.1. software was used to process research data.

Data analysis technique

Quantitative analysis was used to analyse the changes in pedagogical process and children's performance.

The three-level scale – *low efficiency level, medium efficiency level and high efficiency level* – was developed to assess the effectiveness of the structural model of technological development of the pedagogical process run in the pre-school settings (see the detailed description of the efficiency levels in Table 8 below).

Table 8

The Detailed Descriptions of the Efficiency Levels

Efficiency Level	*Description*
Low efficiency level	Use of technological advances is insufficient; Teachers are unaware of general pedagogical goals and tasks, they are loose-handed in performing their duties and running the pedagogical process; The teachers are reluctant to self-improvement and professional self-development; Teacher-pupil system and pedagogical situation are not regularly monitored; The implementation of the content of education is needed. Further transformation of the technology to comply with the FPP is not systematic.
Medium efficiency level	Use of technological advances is progressing but still insufficient; Teachers are generally aware of pedagogical goals and tasks; they are situational in performing their duties and running the pedagogical process; The teachers self-improve and professionally self-develop but not consider it a priority; The implementation of the content of education is not always sufficient. Teacher-pupil system and pedagogical situation are not regularly monitored; Further transformation of the technology to comply with the FPP is non-systematic in nature.
High efficiency level	Use of technological advances is sufficient, is rapidly progressing, and is updated; Teachers are aware of pedagogical goals and tasks; they are committed to performing their duties and running the pedagogical process; The teachers are reluctant to self-improvement and professional self-development; The implementation of the content of education is always sufficient. Teacher-pupil system and pedagogical situation are regularly monitored; Systemic application of effective means, forms, methods and ways 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.

A three-grade scale – low level, average level and high level – was applied to interpret the results of the above diagnostics.

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 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.

Results and Discussion

The experiment results proved the relationship between the research model and changes in students' creativity, learning performance, computer skills, motivation of the professional growth.

The consolidated results of the post-experimental measurements that are presented below prove that the conceptualised technology-involving learning environment effects positively on both teacher-students and pre-schoolers(see the measurements based on self-assessment of vocational and pedagogical motivation (see Table 9), Creative Personality Scale (see Table 10), Computer Literacy and Internet Knowledge Test, Academic Performance records (see Table 11), and Bayley Scales for Infants and Toddlers (III).

Table 9

Results of the Measurements obtained through Self-assessment of Vocational and Pedagogical Motivation (distributed by aspects, in % and grades)

Groups	PN	PI	DC	OI	EC	IA	*Mean* (12-grade scale)
EG (n = 27)	36	37	18	9	0	0	10.06
CG (n =27)	33	32	23	11	1	0	9.11

Note: PN = professional need; PI = functional interest; DC = developing curiosity; OI = ostentatious interest; EC = episodic curiosity; IA = indifferent attitude.

Table 10

Results of the Measurements obtained through Creative Personality Scale

Group	Multiple correlation coefficient ***R***	R^2	*F* value	Net *F* value	Standardized regression coefficient	Comparative Fit Index
EG (n=27)	0.669	0.457	47.327	19.025	0.389	.994
CG (n=27)	0.621	0.415	45.774	18.219	0.317	.973

Note: *P<0.001*

Table 11

Means of Grades for Computer Literacyand Internet Knowledge Test (CLIT) and Academic Performance Records (APR)

Group	CLIT (20-grade scale)	APR (ECTS100-grade scale)
EG (n=27)	19	88
CG (n=27)	17	79

To confirm the statistically significant relation between the conceptualised technology-involving learning environment and the results obtained from the measurements descriptive statistics analysis was applied (see Table 12).

Table 12

Descriptive statistics analysis of the variables

Variable	Experimental Group						Control Group						ANOVA	
	Pre-test		Post-test		Post-Pre		Pre-Test		Post-Test		Post-Pre		Post-Pre	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	F(1,113)	2
SC	2.34	.56	3.10	.60	.28	.44	2.41	.54	2.39	.55	.08	.28	14.12***	.075
LP	2.67	.57	4.23	.68	.27	.47	2.59	.55	2.59	.61	.02	.26	11.25**	.064
CS	2.41	.59	4.11	.71	.32	.51	2.44	.61	2.51	.62	.07	.22	12.03**	.068
MPG	2.47	.58	3.93	.57	.29	.53	2.43	.60	2.49	.62	.05	.25	17.51***	.095

Note: **p<.01; ***p<.001; SC – students' creativity; LP – learning performance, CS – computer skills, MPG – motivation of the professional growth

Furthermore, the results obtained through the experiment showed the relation between the research model and preschool learners' creative and cognitive thinking, adaptive behaviour, and communication skills. It is clear that the latter improved due to interferences performed (see Table 13).

Table 13

Results of measurement from Bayley Scales for Infants and Toddlers (III) (n=72)

Variables	*Mean*	95% CI	*p value*
Adaptive behaviour	11.1	10.1-10.7	<0.001
Physical development	90.1	89.3 – 93.1	0.869
Cognitive abilities	94.6	91.3 – 96.2	0.784
Receptive and expressive language skills	107.1	103.5 – 109.2	0.001
Interpersonal and self-regulatory skills	98.2	95.1 – 99.1	0.004

As it can be seen for the above tables, there was the dynamics in the variables of both student-teachers and children. However, the figures suggest that due to implementation the model and the modular educational program and educational and methodological support their improvements in EG sampled students were greater compared to the CG students. The same dynamics is seen in those children who were the subjects to this study. As it can be seen in Tables 12 and 13, the mean values for the CG students increased by 0.65 points on average in every variable after the participating in the experiment and the mean figures for children improved by 0.70 points on average as well which proved that the designed model had been efficient in upgrading the pedagogical process at preschools and developing students' future job-related competencies like creating an interactive technology-mediated and game-based learning environment in Fine Arts which could encourage children's initiative, creativity curiosity (autonomous cognitive activity) and collaboration along with creation of an emotionally significant situation for autonomous activity of both an individual and a group in which a child's right to their own evaluation, opinion are welcomed. Furthermore, the students improved in using the technology tools and interactive media like Keynote, HaikuDeck, 30hands etc., incorporating the developmental technology in the lessons appropriately and teaching children to freely explore the functions of a computer, experience digital storytelling, taking photos of artwork that children have created, recording their stories about their drawings etc which was the expected outcome of the project.

The results met objectives of this study, boosted previous knowledge, and filled the research gaps.

After the treatment there was dynamics of approximately 10-12% in learning performance, 7-9% in the EG students' creativity, 8-10% in computer skills, and 10-11% in motivation of the professional growth and 8-10% in preschool learners' creative and cognitive thinking and communication skills.

This study complies with the previous research revealing the impact of using technology in the classroom on learners' engagement, social interactions, and mathematics skills, sequencing, visual perception, creative thinking, and fine motor capability (Zomer & Kay, 2016). It goes in line with the research of Blackwell et al. (2013), Garavaglia (2016), Ilomäki and Lakkala (2018) suggesting, that it is easier to change the teacher attitudes to the use of technology through the initial

pedagogical training at university. It supports the research findings of Jónsdóttir (2015) claiming that cooperation between the university and a preschool can be fruitful for both.

The novelty of this study was that it contributed to the improvement of the quality of preschool purpose pedagogic education in the Republic of Kazakhstan.

Conclusions and Recommendations

Thus, the use of modern pedagogical technologies in the preschool provides an increase in the effectiveness of the pedagogical process if the technology is expedient and leads to a definite result. The choice of methods, ways of training is supposed to be determined by the technology targets and 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. The pedagogical process should be based on the principles of the integrity of the, the system and the sequence of the actions to be formed, and the age and individual characteristics of children of preschool age. The implementation of the concept of technological development of the pedagogical process for fine arts activity, design and manual activity in the preschool is easier if based on the design 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. The result of our experimental and pedagogical work has a potential to bring a significant change to the formation of pedagogical competencies in the preschool students-teachers, which is proved by significant dynamics in the future teachers. 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 pre-school institutions, including in the preschool. The course "Modern educational technologies in the system of professional activity of the teacher" and educational-methodical complexes for fine arts activity, design and manual labor are 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.

The further study is needed in the formation of the technological culture of the teacher, the study of the conditions for the use of computer technologies in the pre-school.

Pedagogical Implication

There are several implications to this study to mention. First, it might be difficult to establish partnership between a university and a preschool establishment as children at the age of 5-6 should be treated especially delicately – infants are easy to establish the emotional ties but it is commonly difficult for them to part with those who become dear to them. In this regard, the cooperation should be long-term and regular. The latter is also important for both students and infants to succeed in training and learning.

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