QUASI-PROFESSIONAL EDUCATIONAL ENVIRONMENT IN THE PROFESSIONAL TRAINING OF FUTURE TEACHERS

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ABSTRACT

During the distance education process caused by COVID-19, students do not have sufficient opportunity to do pedagogical practice, which requires strengthening their practice-oriented component of learning in other forms. This article substantiates the relevance of quasi-professional educational environment in the system of professional training of future teachers, which implies the creating conditions at the university as close as possible to the realities of the teacher's work. The conditions which allowed to improve the graduates' readiness to do their professional duties were developed and experimentally proven. The peculiarities of quasi-professional tasks based on imitation of real work situations, where student has no rules or samples for the completing, are revealed. In this way, they independently develop possible models for their behavior in similar situations, based on theoretical and methodological knowledge and skills. The effectiveness of the author's system of quasi-professional tasks aimed at the development of students' pedagogical thinking and their mastery of the experience of modeling lessons is presented and examined. They are represented by three groups: didactic, methodological and technological, each of which has a specific purpose. It allows to cover all the spheres of professional development of higher education students: motivational, cognitive-operational and reflexive.

INTRODUCTION

The European community is unanimous in believing that the introduction of distance learning is a key solution to ensuring the continuity of higher education. However, its quality cannot be ensured at the same level. There are several reasons for this.

The group of scientists (Farnell et al., 2021) found that although 89.3% of students have their own computer, only 41% always have a good Internet connection. Therefore, students' opportunities for online learning are varied in terms of access to technology and learning materials. In addition, the main forms of educational process during the pandemic in European universities were real-time lectures (74.6%), presentations sent to students (44.5%) and asynchronous pre-recorded lectures available online via video (32.1%) or audio (20.6%). Under such conditions, the transition to urgent distance learning has been difficult in sectors with a practical focus. Importantly, as many as 69% of respondents said that losing physical access to universities was also negative, including library resources that provide access to learning materials and a quiet place to study, which is important for students who do not have a supportive home environment (Alain et al., 2013; Bekirova et al., 2020; Ozga et al., 2021; Vaganova et al., 2020).

The deterioration in students' academic performance was noticeable. Data summarized by G. Di Pietro, F. Biagi, P. Costa, Z. Karpinski, J. Mazza indicate that almost all higher education students who participated in distance learning have a standard deviation in the results of final testing from 6.5 to 14 score (with a maximum value of 100 score). The scientists' report contains several arguments that partially explain the current situation. Firstly, students who are under quarantine, tend to spend less time to study than when universities operate normally. Secondly, they suffer from stress and anxiety due to COVID-19, which negatively affects their ability to concentrate on learning activities at home. Thirdly, the closure of educational institutions and lack of personal communication decreases students' overall motivation to participate in learning activity (Di Pietro et al., 2020; Bekirova et al., 2020; Mantulenko, 2020).

These tendencies require a substantial modification of the type of learning activity of future teachers, which would both motivate professional activity and discourage academic dishonesty.

Moreover, the current stage of school reform reflects the modernized requirements for a new generation teacher – an educational innovator capable of changing the world around; a patriot who cherishes national identity; a professional who can create educational environment based on the values of childhood and aimed at the individual personal development of each pupil. Modern pedagogical activity requires competent and unconventional solving of varied tasks, which is impossible only if students have the knowledge and skills to design and conduct a lesson using a universal algorithm. This is an area of expression of their creative potential and flexibility of professional thinking in decision making.

A detailed study of the first experience of online education in universities (Aktar et al., 2022) allowed to identify the problem areas of distance pedagogical education with the aim of its improvement.

Therefore, the process of improving the professional training of future teachers, which should be as practice-oriented as possible, has been considerably intensified. The organization of quasi-professional educational environment, i.e., to create an environment in the university that is maximally close to the realities of the teacher's workplace, is the best strategy for achieving practice-oriented training.

THEORETICAL FRAMEWORK OR LITERATURE REVIEW

Pedagogical conditions for effective professional training of future teachers for modelling the modern lesson. There are various models of professional teacher training in the world that focus on mastering their skills in modeling and conducting lessons. In this context, it should be noted the specific approach of Singapore universities, where student learning outcomes are not limited to pedagogical competencies and knowledge of teaching methods. Educators attach great importance to the full development of the teacher's personality, which includes the development of appropriate principles and values. Often, they hold professional interview that create the context for future activities and are intended to make student-teachers reflective and effective practitioners (Practicum Handbook, 2021; Huang & Lambert, 2020).

This is also the opinion of Ciaran Sugrue who argues that teacher training should be sufficiently extensive, include personal development and go beyond the merely functional and instrumental development of the future teacher (Sugrue, 2002).

Analysis of the experience of Spanish universities shows the effectiveness of student training practices that focus on their autonomy, self-regulation in professional decision-making and cooperation, so that they can progressively manage complex knowledge in new situations. This allows to overcome the excessive abstractness and over-theoreticalisation of pedagogical education and ensure the development of students' practical capabilities, which will enable them to have a qualified and competent employment (Estrada et al., 2020).

Consider the pedagogical conditions of the quasi-professional educational environment in the university, which have proved their effectiveness in ensuring the high-quality training of future teachers for modelling and conducting modern lessons in Ukraine: organization of subject-subject interaction between lecturers and students, introduction of contextual learning technology into the educational process of the university, and activation of reflexive activity of future teachers. Briefly describe the essence of each of these pedagogical conditions.

The essence of subject-subject interaction is the creation of conditions for the exchange of experience between the participants in the educational process, which is carried out in a collaborative learning activity based on the principles of cooperation. The core of this dialogue is equality of position: the teacher's respect for the student's academic requirements, the ability to see him/her as an active participant rather than a passive consumer of knowledge and to support this role. In such conditions of the student-centered environment, the most productive cognitive activity of future teachers is possible: searching, formulating and solving creative pedagogical tasks, detailed analysis and collaborative research of professional situations, where the results are personally valuable knowledge and active decision-making (Borodavko et al., 2020).

The realization of contextual learning technology at the university provides for the creation of a special context for future professional activity by artificial modeling of its fragments. The term "context" is explained as a system of internal and external conditions and factors of human behavior and activity that influence the perception, understanding and transformation of a particular situation by a subject (Koval et al., 2019). The introduction of a professional context into the training of teachers implies organizing students' activities through context-oriented lectures, work-based games, solving quasi-professional (practice-oriented) tasks and others. In these cases, the student does not have a given sample, algorithm, or rule for solving a problematic situation, but finds a solution on his own. This ensures the development of pedagogical thinking of future teachers, which embodies the level of formation of their mental, cognitive, creative and research abilities, operational and technological skills that allow to solve any problem situation.

The specifics of teacher's work requires him to constantly self-assess his own achievements and self-improvement (Cepic, & Pejic Papak, 2021; Lavonen, 2020; Matveeva et al., 2020; Sugrue, 2002; Zholudeva et al., 2022). For this reason, it is important to stimulate students' reflective activity during their studying at the university. Reflexivity as a personal entity is defined by a combination of abilities, methods and strategies that allow to overcome possible difficulties through mental operations (awareness, analysis), and acts as a mechanism for finding ways of personal growth. The constant practice of critical analysis of the mistakes made during the modelling and conducting of the lesson with their further correction, identification of the prospects of pedagogical development makes the person a subject of its own activity, and, consequently, forms a strong internal system of the person's attitudes to professional reflective activity.

Table 1 presents a comparative characteristic of traditional and experimentally tested innovative professional training conditions for future teachers according to different criteria.

Table 1. Comparative characteristics of traditional and innovative professional training conditions for future teachers

Criterion	Traditional	Organization of subject-subject interaction of teachers and students
Orientation of the educational process	To imparting theoretical knowledge, to introducing examples of activities	to creative collaboration, active interaction in the learning of the subject
The role of the teacher	Authoritarian	Democratic, partnership-based, student-centered
Forms and methods of work	Lecture-monologue, study of practical experience	Dialogue, discussion, analysis of pedagogical situations, group discussion
	Traditional	Introduction of contextual learning technology to the educational process
The aim	Formation of professional skills and competences	Developing the student's pedagogical mindset
The student's role	Passive	Active in making independent conscious decisions
Forms and methods of work	Practicing teacher activity algorithms in different situations	Context-oriented lectures, work-based games, quasi-professional (practice-oriented) tasks
	Traditional	Activation of reflexivity for future teachers
The aim	Finding mistakes for objective evaluation	Finding mistakes to determining ways of improvement
The subject of the analysis	Teacher	Student

This table demonstrates the principle advantages of innovative educational conditions, because higher education students are given the opportunity to independently determine their own position in relation to the facts presented by the teacher. Also, future teachers become motivated to effectively build interactions, consider the diversity of pedagogical options and find optimal solutions to achieve success in their professional life.

METHOD

In this study we used a number of scientific research methods. Theoretical: analysis of scientific literature in order to understand the status and prospects of problem development; synthesis, summarization, comparison methods to understand the specifics of professional training of future teachers; modelling method to develop a model of a quasi-professional educational environment. Empirical: diagnostic (questionnaire, interview) to determine the level of students' skills in modeling and conducting lessons; pedagogical experiment in order to examine the effectiveness of the system of quasi-professional tasks; statistical methods for quantitative and qualitative analysis of the educational experiment results and determination of scientific validity of the obtained research results.

RESULTS AND DISCUSSION

A system of quasi-professional tasks for training future teachers to modelling and conducting lessons. The variety of a modern teacher's functions demands activity and creativity in decision-making. Students acquire a minimal professional experience in the school environment, mostly during the practice period. However, current researches prove the effectiveness of local educational forms for developing high school students' readiness to work in schools. These are quasi-professional tasks based on imitation of real work situations, where student has no rules or samples for the completing. In this way, future teachers develop possible models for their behavior in similar situations, relying on theoretical and methodological knowledge and skills. Strengthening the practical component of the training of future teachers prevents the emergence of a complex set of difficult professional problems that most teachers with 1-3 years of experience face (Donina et al., 2020; Rodriguez et al., 2018; Vaganova et al., 2020). And also overcome the problem of procrastination among students, which has noticeably spread during period of the distance learning (Ucar et al., 2021).

Therefore, practical examples play an important role in the training of students. It should be cases presented on video or real-life stories, as well as demonstrations or samples and discussions. It is also effective to play the "expert game", i.e., to watch others' mistakes in the process of simulating situations with a professional context (Nagovitsyn et al., 2020; Zhou & Guob, 2016).

For example, the students were more interested in doing exercises that included watching video materials by practicing teachers who implemented some pedagogical strategies and their analysis afterwards, discussing their own variants of development with the teacher and, most importantly, the realization of artificial conditions (Century et al., 2020; Power et al., 2017; Selezneva et al., 2021; Timperley et al., 2007).

In this regard, researchers working in professional training of future teachers emphasize the importance of introducing different types of quasi-professional tasks into the educational process of the university for the implementation of contextual learning technology. The students not only demonstrate theoretical knowledge formed by the lectures, but also express their own opinion and reproduce the activities of teachers and students in an imaginary lesson, detail specific methodological cases, evaluate them from different positions, predict possible options for pedagogical events.

In 2018-2021 a number of higher education institutions in Ukraine conducted a study to determine the effectiveness of the author's system of quasi-professional tasks. The experiment involved 346 students of Berdyansk State Pedagogical University, Volodymyr Vynnychenko Central Ukrainian State Pedagogical University, Vasyl Stefanyk Precarpathian National University. In the process of experimental work during the classes of the methodological cycle we specially simulated pedagogical situations which were solved by the students by means of a system of quasi-professional tasks. This allowed them actively practicing in the complex activity of creating and conducting lessons, and making informed and responsible decisions regarding the organization of the educational process in a New Ukrainian School.

It should be noted that quasi-professional tasks have been developed and implemented systematically. They are presented by three groups: didactic, methodological and technological, each of them has a certain goal specification. This allows to cover all the spheres of professional development of higher education students: motivational, cognitive-operational and reflexive (Fig.1). Consider the examples of these tasks in more detail.

Didactic quasi-professional tasks were assigned to students for their awareness of pedagogical modelling as a personally significant process for their professional activity in implementing the educational process at school and developing a basis for its holistic vision (Gorbatiuk et al., 2019; Hurenko et al., 2017; Kravchenko et al., 2018; Shchetynina et al., 2019). For example:

1. Watch several videos of the lessons. Determine and substantiate the important professional and personal teacher's qualities which, in your opinion, affect his/her effectiveness.
2. Develop a teacher's activity algorithm for modelling the lesson. Share your ideas about the differences between pedagogical modelling and the creation of a lesson plan.
3. Group discussion of positive and negative aspects of teacher's work.
4. Brainstorm. Identify the reasons that decelerate or complicate the process of education reform.
5. Essay and discussion. Predict the possible characteristics of the lesson in the school of the future.

Figure 1. The goal specification of quasi-professional tasks system for training of future teachers for modelling and conducting lessons

By using such quasi-professional tasks, some important results were achieved: the majority of high-school students had a clear orientation towards pedagogical activity and a positive orientation towards the process of lesson modelling. Also, the important skills of performing mental operations (analysis, synthesis, prediction, generalization, reasoning, transfer of knowledge to new conditions) were recorded.

Methodological quasi-professional tasks were introduced to mastering the general algorithm of pedagogical modeling by future teachers, namely: develop skills of planning, resource selection and lesson modeling in conditions of educational variability. The participants were offered the following kinds of work:

1. The work-based game "Lesson Examination". Students are grouped into pairs. The task for the student in a role of "teacher" is to is to carry out the phased planning of the lesson (topic and class to choose from) indicating time duration of each stage; the task of "expert" is to analyze the work of "teacher", to point out the mistakes, to find out the ways of optimization of the lesson's model.

2. Model a fragment of a conversation in second grade on the topic "Excursion through the human body". Suggest any activity for pupils to support the learning of this topic. Alternatively, in the context of distance learning, prepare digital materials for the children's self-study of the topic.

3. Develop differentiated tasks for pupils' practical work on the computer on the topic "Text editor". Prove the feasibility of this differentiation.

4. Model a fragment of the lesson (choose the topic and the class yourself), in which LEGO technologies are integrated. Implement your project in an academic group (co-worker students take on the role of pupils). Discuss the results of your activity.

5. Join into groups. Each group models a particular part of the Informatics lesson that acquaints pupils with the graphics editor using a variety of software (Paint, Tux Paint, Paint-online, Canva, Crello, GIMP, Inkscape, etc.), presents and analyzes the results.

6. Prepare a presentation of the current variable Mathematics textbooks for a certain class. Describe briefly the essence of the methodological systems they represent. Discuss the results in your group.

Such tasks contributed to the development of future teachers' skills in time management and selection of optimal educational forms, methods, and tools in accordance with the lesson goal, organize subject-subject interaction of learners at different stages of the lesson, effectively select optimal resources in compliance with the goal, content and educational program results. In addition, the students' ability to analyze, compare and choose among the various textbooks, workbooks and other teaching aids as the most effective ones, and to establish the correspondence between the goals, content and results of the lesson has developed considerably. The most important result was the individual experience of each high school student in modelling lesson fragments according to their place in the New Ukrainian School system.

Technological quasi-professional tasks are implemented to develop students' ability to model, conduct and analyze a lesson (lesson system) based on the use of modern educational technologies in conditions of educational variability. Gaining such experience is a necessary condition for training future teachers to implement the concept of New Ukrainian School. Listed below are examples of these tasks.

1. Analyze the video recording of the lesson modelled and conducted by a knowledgeable teacher. Identify which modern teaching technologies were used at different phases of the lesson. Discuss in your group possible variations of other teaching technologies that could be used.

2. Model the lesson using optimal teaching technology at different phases. Choose the topic and the class by yourself. Perform the lesson in an academic group, where the role of the pupils is played by other students.

3. Develop a few integrated project tasks for pupils of the given age. Identify the difficulties they may face while working on this task.

4. Model the lesson on the basis of critical thinking technology. Choose the topic and the class by yourself. Predict its effectiveness.

5. Join into groups and make an algorithm for carrying out the reflection of the pedagogical plan. Discuss the ideas suggested by your colleagues. Create a collective universal memo for the teacher on lesson's reflection.

6. Join into groups. Analyze current electronic methodological portals for teacher self-improvement. Select courses, webinars and seminars that would be useful for modern teachers. Present in the group the results of your search.

The proposed tasks positively influenced the students' ability to implement educational technologies at different stages of the lesson, developed their skill to effectively implement their own pedagogical idea, to realize reflection, and to engage productively in professional self-development and self-improvement. Many of the experiment's participants were shown to be capable of educational creativity. The analysis of the results of the pedagogical experiment has shown that the introduction of the system of quasi-professional tasks as a means of implementing the technology of contextual learning of future teachers has increased the level of their training for lesson modelling (Table 2). Students in the experimental group with a high level of readiness to conduct lessons in primary schools (29.65%) were fully aware of the benefits of the phenomenon of educational variability and successfully used it in their activities. They were willing to model modern lessons using different methodological systems, selected the most appropriate resources, and used relevant educational technologies according to lesson phases and the expected results, organized subject-subject interaction between the learners, demonstrated interest in their own professional self-development and self-improvement, and actively reflected on the pedagogical strategy.

Table 2. Levels of project-model competence of future primary school teachers

Levels	Control group		Experimental group	
	Number of participants (174)	%	Number of participants (172)	%
At the beginning of the experiment (ascertaining phase)				
High	30	17,24	27	15,70
Medium	89	51,15	86	50,00
Low	55	31,61	59	34,30
At the end of the experiment (control phase)				
High	34	19,54	51	29,65
Medium	102	58,62	100	58,14
Low	38	21,84	21	12,21

The experiment participants who demonstrated a medium level of readiness for lesson modelling (58.14%) frequently acknowledged the importance of pedagogical modelling. However, they were not always able to find the most appropriate modern educational technologies, mainly using the limited resource of interactive activities when introducing pupils to the key definitions and types of educational activities. In order to optimally determine the resources of the lesson, students sometimes turned for help to a teacher or lecturer. They made some minor methodological mistakes during the organization of the subject-subject interaction, but they recognized them in the lesson analysis and were then able to correct them.

Future teachers with a low level of readiness (12.21%) were insufficiently sure in the correctness of the chosen profession and did not realize the essential differences between the process of lesson modelling and drawing up the lesson plan, indicating a poor development of their pedagogical mindset. Students at this level did not always consider the possibility of improving the effectiveness of the lesson by using variable programs, textbooks, worksheets and didactic materials. The most difficult task for them was to create and objectively analyze the lesson, identify an individual trajectory of self-improvement.

CONCLUSION

The quality of professional teacher training at university has a direct impact on their readiness to successfully and comfortably discharge their job duties. The COVID-19 pandemic has enabled a critical rethinking of the efficiency of traditional forms and methods for students' experience in modeling and conducting lessons. The lack of social interaction between lecturers and students during the creation of a professional context has severely complicated the educational process and led to a decline in students' learning outcomes. This encourages new creative decisions regarding the organization of students' productive learning activities.

Future teachers should not only be informed about the theoretical aspects of the organization of the educational process in school, but also have certain methodological skills. The organization of quasi-professional educational environment in a higher education institution firstly, ensures the practice-oriented approach of training future teachers through their analysis of different pedagogical situations and implementation of a system of quasi-professional tasks; secondly, it significantly influences the development of their pedagogical thinking, which allows to turn the limited experience of modeling lessons into a universal capacity for this activity.

The pedagogical conditions for organizing this environment (organization of subject-subject interaction between teachers and students, implementation of contextual learning technology in the educational process of the university, activation of future teachers' reflective activity) have proved their effectiveness, as evidenced by the results of the examination and observation of the experimental groups' participants. And the system of quasi-professional tasks proposed in this study has practical value for educators who are enhancing their professional teaching education.

Considering the current situation with the impact of the COVID-19 pandemic on all spheres of human activity, we believe it is necessary to investigate the readiness of future teachers to organize the distance education process at school and to develop effective ways to improve this aspect of their professional training in our further research.

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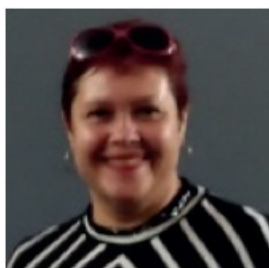
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REFERENCES

Aktar, T., Maniruzzaman, M. , Khan, H. R. & Hasan, M. (2022). Teachers' Narratives From Initial Virtual Classrooms and Professional Development During the COVID-19 Pandemic In Developing Bangladesh. *Turkish Online Journal of Distance Education*, 23(3), 230-245. Retrieved from https://dergipark.org.tr/en/pub/tojde/issue/70682/1137293

Alain, C., Alain, M., Jean-Charles, C., Dominique, B., Patrick, D., et al. (2013). Study on Policy Measures to Improve the Attractiveness of the Teaching Profession in Europe. [Research Report] *EAC-2010-1391, European Commission,* Directorate General For Education and Training, 2-22.

Bekirova, E., Harabadjah, M., Makarenko, J., Vaganova, O., & Sundeeva, L. (2020). Model formation of future teachers readiness to innovative activity. *Amazonia Investiga, 9(29),* 22-28. https://doi.org/10.34069/AI/2020.29.05.3

Borodavko, L., Silkin, N., Shakhmatov, A., & Chelysheva, O. (2020). Organization of Education Using Modern Distance Learning Technologies in the Context of the COVID-19 Pandemic (on the example of Russian law schools). *Amazonia Investiga, 9(33),* 51-58. https://doi.org/10.34069/AI/2020.33.09.6

Century, J., Ferris, K. A., & Zuo, H. (2020). Finding time for computer science in the elementary school day: A quasi-experimental study of a transdisciplinary problem-based learning approach. *International Journal of STEM Education, 7(1).* https://doi.org/10.1186/s40594-020-00218-3

Cepic, R., & Pejic Papak, P. (2021). Challenges of Curriculum Planning and Achieving Learning Outcomes: A Case Study of Croatian Elementary School Teachers' Experiences. *Revista Romaneasca Pentru Educatie Multidimensionala, 13(1Sup1),* 78-100. https://doi.org/10.18662/rrem/13.1Sup1/386

Di Pietro, G., Biagi, F., Costa P., Karpinski Z., & Mazza, J. (2020) The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets: JRC Technical Report. *Luxembourg: Publications Office of the European Union.* 50 p. https://publications.jrc.ec.europa.eu/repository/bitstream/JRC121071/jrc121071.pdf

Donina, O., Ivanushkina, N., Aryabkina, I., Chernykh, A., Gemranova, A., & Chernova, Y. (2020). Genesis of methodological approaches to definition and organization of university information and education space. *Amazonia Investiga, 9(29),* 417-426. https://doi.org/10.34069/AI/2020.29.05.46

Estrada, F.J. P., Garcia-Prieto, F. J., & Conde-Velez, S. (2020). Learning Styles in University Students: Types of Strategies, Materials, Supports, Evaluation and Performance. Case Study. Published in the Slovak Republic *European Journal of Contemporary Education, 9(2),* 394-416. https://doi.org/10.13187/ejced.2020.2.394

Farnell, T., Skledar Matijevic, A., & Scukanec Schmidt, N. (2021). The impact of COVID-19 on higher education: a review of emerging evidence. NESET report, *Luxembourg: Publications Office of the European Union.* https://doi.org/10.2766/069216

Gorbatiuk, L.V., Kravchenko, N.V., Alekseeva, H.M. & Rozumna T.S. (2019). Mobile applications as a means of foreign language lexical competence formation of non-philological specialties' students. *Information Technologies and Learning Tools, 74 (6),* 150-164. https://doi.org/10.33407/itlt.v74i6.2529.

Huang, L., & Lambert, J. (2020). Another arrow for the quiver: A new methodology for multilingual researchers. *Journal of Multilingual and Multicultural Development, 41(7),* 567-580. https://doi.org/10.1080/01434632.2019.1596115

Hurenko, O. I., Alekseeva, H. M., Lopatina, H. O., & Kravchenko, N. V. (2017). Use of computer typhlotecnologies and typhlodevices in inclusive educational space of university. *Information Technologies and Learning Tools, 61(5),* 61-75. https://doi.org/10.33407/ITLT.V61I5.1782

Koval, L., Popova, O., & Nikonenko, T. (2019). Practice-Oriented Direction of Professional Preparation of Future Teachers of Primary Education in the Context of European Integration Processes. *Journal of History Culture and Art Research, 8(2),* 85–90. http://dx.doi.org/10.7596/taksad.v8i2.2060

Kravchenko, N., Alyeksyeyeva, H., & Gorbatyuk, L. (2018). Curriculum Optimization by the Criteria of Maximizing Professional Value and the Connection Coefficient of Educational Elements, Using Software Tools: (ICTERI 2018: 14th International conference on ict in education, research, and industrial applications). *CEUR Workshop Proceedings, 1,* 365-378. http://ceur-ws.org/Vol-2105/

Lavonen, J.(2020). Curriculum and Teacher Education Reforms in Finland That Support the Development of Competences for the Twenty-First Century. *Audacious Education Purposes: How Governments Transform the Goals of Education Systems,* 65-80.

Mantulenko, V. (2020). Effective Ways of Digital Media Usage in School Education. Amazonia Investiga, 9(30), 138-145. https://doi.org/10.34069/AI/2020.30.06.14

Matveeva, S., Akatova, N., Shcherbakov, Y., & Filinova, N. (2020). Digitalization of Higher Education and Professional Development of Educators: Technologies and New Opportunities. *Amazonia Investiga, 9(29),* 77-86. https://doi.org/10.34069/AI/2020.29.05.10

Nagovitsyn, R., Bartosh, D., Evtushenko, I., & Neverova, N. (2020). Information space of a higher school based on mobile technologies. *Amazonia Investiga, 9(29),* 359-367. https://doi.org/10.34069/AI/2020.29.05.40

Ozga, J., Larsen, P. D., Segerholm, C., & Simola, H. (2011). Fabricating quality in education: Data and governance in europe, 1-190. https://doi.org/10.4324/9780203830741

Power, T., McCormick, R. & Asbeek-Brusse, E. (2017). English in Action (EIA). A Quasi-Experimental Study of the Classroom Practices of English Language Teachers and the English Language Proficiency of Students, in Primary and Secondary Schools in Bangladesh. Dhaka, Bangladesh: EIA.

Practicum Handbook (2021). NIE, Office of Teacher Education (OTE), *Practicum. Nanyang Technological University National Institute of Education. Singapore.*

Sanchez Rodriguez, L. I., Dominguez Saldivar, A., & Mendoza Jimenez, G. de J. (2018). The Professional Practice of Beginning Teachers in Primary Education in Mexico. A Case of Study in Monterrey, Nuevo León, Mexico. *Revista Romaneasca Pentru Educatie Multidimensionala, 10(4)*, 201-216. https://doi.org/10.18662/rrem/82

Selezneva, I.P., Selezneva, N.V., & Gorbova, S.N. (2021). Perederii. Constructing a quasi-professional educational environment as a condition of future teachers' professional and communicative competence formation. *SHS Web of Conferences* 113(2):00015. https://doi.org/10.1051/shsconf/202111300015

Shchetynina, O., Kravchenko, N., Alyeksyeyeva, H., & Gorbatyuk. L. (2019). Project Management Systems as Means of Development Students Time Management Skills, Using Software Tools: (ICTERI 2019: 15th International conference on ict in education, research, and industrial applications). *CEUR Workshop Proceedings, 1,* 370-384. http://ceur-ws.org/Vol-2387/20190370.pdf

Sugrue, C. (2002). Irish teachers' experiences of professional learning: implications for policy and practice. *Journal of In-service Education, 28:2,* 311-338. https://doi.org/10.1080/13674580200200185

Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). Teacher Professional Learning and Development: Best Evidence Synthesis Iteration Wellington, *New Zealand: Ministry of Education.* http://educationcounts.edcentre.govt.nz/goto/BES.

Ucar, H., Bozkurt, A. & Zawacki-richter, O. (2021). Academic Procrastination And Performance In Distance Education: A Causal-Comparative Study In An Online Learning Environment. *Turkish Online Journal of Distance Education*, 22 (4), 13-23. DOI: 10.17718/tojde.1002726

Vaganova, O., Bakharev, N., Kulagina, J., Lapshova, A., & Kirillova, I. (2020). Multimedia technologies in vocational education. *Amazonia Investiga, 9(26)*, 391-398. https://doi.org/10.34069/AI/2020.26.02.45

Vaganova, O., Kirillova, I., Kozlova, A., Gorbunova, N., & Chelnokova, E. (2020). The willingness of teachers to use modern educational technologies in educational process. *Amazonia Investiga, 9(29),* 137-146. https://doi.org/10.34069/AI/2020.29.05.16

Zholudeva, S., Ulybysheva, I., & Ivanova, L. (2022). Professional representations of students in context of the development of digital technologies. https://doi.org/10.1007/978-3-030-80946-1_56

Zhou J., Guob W. (2016). Imitation In Undergraduate Teaching and Learning. *The Journal of Effective Teaching, Vol. 16, No.3,* 5–27. https://www.researchgate.net/publication/312118205_Imitation_In_Undergraduate_Teaching_and_Learning.