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Research of readiness of teachers of rural secondary schools for innovations

Дослідження готовності вчителів сільських загальноосвітніх навчальних закладів до інновацій

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Abstract

The purpose is to establish the interdependence of key parameters and construct a factor structure of teachers' readiness to reform and deploy innovative technologies in rural secondary schools. Research methods: ANOVA factor analysis with reduction of factor proportions, standard valid and reliable psychodiagnostics methods, statistical reliability coefficients. Results. The factor structure ensures the following main factors (73.92%). It has been found that the main are "MARI" (F1) (52.56%) and "CRI" (F2) (9.28%), which are interconnected with "SLRI" (F3) ($p \leq 0.01$) and F4 "PRI" (F4) ($p \leq 0.01$). Conclusions. It has been stated that the obtained scientific facts give an objective understanding of the subject of research and its determinants. The curriculum for the initiative to modernize education in rural areas is composed of established scientific facts and argumentation of the results obtained. It was

Анотація

Мета – встановити взаємозалежність ключових параметрів та побудувати факторну структуру готовності педагогів до реформування та впровадження інноваційних технологій у сільській загальноосвітній школі. Методи дослідження: факторний аналіз ANOVA з метою зменшення співрозмірності чинників, стандартні валідні та надійні психодіагностичні методи, статистичні коефіцієнти достовірності. Результати. У факторній структурі відображено такі основні фактори (73.92%). Встановлено, що основними є "MARI" (F1) (52.56%) та "CRI" (F2) (9.28%), які взаємопов'язані з "SLRI" (F3) ($p \leq 0.01$) та "PRI" (F4) ($p \leq 0.01$). Висновки. Встановлено, що отримані результати дають об'єктивне розуміння предмету дослідження та його детермінант. Встановлені наукові факти та обґрунтування отриманих результатів складає зміст для програми модернізації освіти на селі.

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noted that results will allow to operationalize the educational and professional training of future specialists in order to prepare them for modernization of training and teaching.

Key words: educational process, health improvement, educational innovations, innovation, modernization of education.

Introduction

All aspects of society have been enveloped by innovative technology. The younger generation's physical culture and education are essential aspects of people's lives. Changing passive rest to active rest, introducing healthy eating, and enhancing an individual's vitality are all subjects that people in any region of the world, regardless of gender, ethnicity, or religion, deal with on a daily basis. Outlined human values have a close connection with the physical culture and physical education of each person. Physical culture, physical education, and motivation to engage in physical activity are laid down permanently from birth. Secondary education institutions play a key role in this process. To fulfill today's expectations, the school physical education system must be modified and innovatively updated.

Hypothesis. The authors suggest that explaining the mental state of readiness to innovate physical education teachers in rural secondary schools will provide insight into the current status of the problem and aid in developing reform and innovation strategies.

The purpose is to establish the interdependence of important characteristics and construct a factor structure of teachers' readiness to reform and deploy innovative technologies in rural secondary schools.

Literature review

Many researchers among the reasons for reforming physical education see the following: low level of physical activity of schoolchildren; low motivation to engage in physical culture; critical situation with the state of health of the young generation; an increase in the number of deaths during physical education lessons in recent years (Leonenko & Krasilov, 2017; Moskalenko, 2015). The grounds for the reform give a foundation for creating a portrayal of a modern physical education teacher who would help partially, and preferably completely, to resolve the accumulated issues. The reorientation

Значено, що результати дозволять операціоналізувати освітньо-професійну підготовку майбутніх спеціалістів з метою їх готовності до модернізації навчання та викладання.

Ключові слова: освітній процес, оздоровлення, освітні інновації, інноватика, модернізація освіти.

of secondary education institutions, particularly those in villages, small urban-type communities, and mountainous areas, necessitates rethinking teaching and training activities. The authors hypothesize that the remoteness from the administrative center is to account for the slow pace of reform and innovation in this sector. As a result, such an important and topical subject was studied.

P. Serdyukov (2017), after examining the present status of education in the United States, finds that educational innovation should focus on teaching and learning theory and practice, as well as students, parents, community, society, and culture. The efficacy and time components of education receive special emphasis in the context of innovation research (Serdyukov, 2017). O. Tsiuniak and S. Dovbenko (2019), pedagogical innovation researchers, suggested a variety of innovative technologies and methods for implementing them. The innovation methodology is defined as the integration of the three components of the innovation process: conception, mastery, and execution. Interestingly, the main task of pedagogical innovation is the continuous search for and introduction of new, most effective teaching and education technologies, resulting in the development of highly adaptable to changing conditions, active, creative personalities capable of analyzing, overcoming challenges, and critical thinking (Tsiuniak & Dovbenko, 2019). In the context of our research, attention is paid to the study of creating an ecosystem based on creativity and innovation in complex competencies that fulfill the professional demands of the twenty-first century (Romero Carrión et al., 2020). Transversal competencies are crucial qualities that employers of modern organizations need from new professionals, according to research. Researchers have advocated that the curriculum on labor market requirements be routinely updated to close the gap between the abilities obtained by university students and those required by employers (Romero Carrión et al., 2020). R. Urcid Puga and

J. Rojas (2018) focus on a multifactor approach for educational innovation development. The model developed reflects the current state of need for educational innovations in higher education institutions. This methodology enables to systematically consider university capabilities to assess the feasibility of change and take action (Urcid Puga, R., & Rojas, J. C., 2018). M. Gusarova, D. Nikolaeva, and T. Bezhentseva (2021) emphasized the necessity of integrating the study of the existing situation in the regional market of education, research, and innovation in order to establish a strategic university growth plan. The findings of an empirical study are provided, as well as possible successful partnerships between higher education institutions and the region's and country's governments and major enterprises in order to train and retrain pedagogical workers (Gusarova et al., 2021). This articulation of the mentioned challenges demonstrates the importance of integrating the efforts of all courses of physical education teacher training for secondary schools, particularly in rural regions. We understand that teacher innovation preparedness is a complicated issue that needs a coordinated approach that includes modernizing educational and professional training, as well as developing effective training programs and creative capabilities for teachers with experience in rural settings. Young professionals who have successfully finished their education may not usually express a desire to go to the countryside and establish a job. This is also an important element that must be considered.

In the educational actions of a physical education teacher, the desire to learn something new is a specific condition of readiness. In practice, it has been discovered that a large number of teachers successfully administer the curriculum, employ a diverse range of approaches, methodologies, and educational technology, but do not strive to improve. Such physical education teachers do not strive to develop an active, creative personality in their students who will be able to overcome obstacles, face problems head-on, take initiative, and think critically. We have come to the conclusion that preparing a physical culture teacher capable of innovation necessitates specialized training, as well as internal criteria for developing new (Bartkiv, 2010), which may match the social expectations of participants in the innovation process (Popovych et al., 2021b). The authors consider physical education instructors' mental states of readiness to innovate as a distinct dominating state of activity with a combination of motivational and valued, self-regulatory and neuropsychological efforts,

responsibility, creativity, and tolerance for the educational process's topics (Tsiuniak, 2019; Popovych et al., 2020a; 2020b). We focus on the use of online education for physical education teachers' educational and professional development in a distance format (Hudimova et al., 2021; Kharytonov et al., 2021). In today's world, it's critical to employ appropriate technology to develop high-quality educational content, and therefore shouldn't neglect students' and teachers' tolerance and empathy (Know, 2020).

Materials and methods

Methodology. Special attention in the methodological dimension was paid to the research of psychological patterns, mental states in sports, competitive (Plokhikh et al., 2021), professional (Halian et al., 2021), and other human activities (Blynova et al., 2020; Blynova & Kruglov, 2019; Popovych et al., 2021a; Shevchenko et al., 2020) associated with extreme trials (Kuzikova et al., 2020a; 2020b; Nosov et al., 2020; Zinchenko et al., 2019). All of the research examined are useful in the context of defining a scientific problem.

Participants. The study involved teachers of secondary schools: Severodonetsk region (Ukraine) (n=36), Kherson region (Ukraine) (n=30), Lviv region (Ukraine) (n=22), Volyn region (Ukraine) (n=24). The sample was represented by 122 participants ranging in age from 22 to 67 years, in particular, n=81 males (66.39%) and n=41 females (33.61%) (M=43.9; SD=12.12).

Procedures and instruments. The following psychodiagnostic methods were used "Readiness for Innovation" ("RI") (Tsiuniak, 2019); the method "Motivation of Professional Activity" ("MPA") (Rean, 2008); the questionnaire "The Level of Social Expectations" ("LSE") (Popovych, 2017); Test of Life-Meaningful Orientations ("LMO") (Leontyev, 2006); the questionnaire "The Level of Subjective Control" ("LSC") (Bazhin et al., 1984) during the 2020-2021 academic year.

The "RI" questionnaire (Tsiuniak, 2019). According to the formula, the Coefficient of Knowledge for Innovation on Test Questions (CKITQ) was calculated as the ratio of the number of correct answers to the total number. The interpretation of the obtained data is Determining the Coefficient of Knowledge for Innovation According to Detailed Answers

(CKIADA). Internal homogeneity is measured as α -Cronbach $\alpha_{RI} = .822$.

The “MPA” method (Rean, 2008). The key components are the Internal Motivation Component (IMC), External Positive Motivation Component (EPMC), and External Negative Motivation Component (ENMC). The internal homogeneity is α -Cronbach $\alpha_{MPA} = .867$.

We used the questionnaire “LSE” (Popovych, 2017) in order to study the evaluation-reflexive criterion of readiness of teachers of rural secondary schools for innovation. The studied components are Level of Awareness of the Expected Events of Personality (LAEEP), Level of the Expected Attitude Towards the Participants of Interpersonal Interaction (LEATPII), Level of the Expected Performance of Personality (LEPP), and Level of Social Expectations of Personality (LSEP). The internal homogeneity is α -Cronbach $\alpha_{LSE} = .898$.

The test “LMO” (Leontyev, 2006). Five of parameters: Life Goals Component (LGC),

Locus of Control-life (LCI), Locus of Control-self (LCs), Process Component (PC), Result Component (RC). The internal homogeneity is α -Cronbach $\alpha_{LMO} = .809$.

The questionnaire “LSC” (Bazhin et al., 1984) allowed us to assess personal responsibility. The questionnaire “LSC” (Bazhin et al., 1984): IAAP, IRP, IALRP. The internal homogeneity is α -Cronbach $\alpha_{LSC} = .809$.

Statistical analysis. All analytical operations were carried out using the cutting-edge software “SPSS” v. 27.0. The research utilizes criteria and reliability factors to objectively confirm established scientific facts.

Results

Table 1 presents the results of the research by psychodiagnostic methods “RI”, “MPA”, “LSE”, “LMO”, and “LSC”.

Table 1. Respondents’ parameters on readiness for pedagogical innovative activity according to psychodiagnostic methods (n=122)

Scale	Arithmetic mean (M)	Mean-square deviation (SD)
Questionnaire “RI”		
Coefficient of Knowledge for Innovation on Test Questions (CKITQ)	.54	.18
Coefficient of Knowledge for Innovation According to Detailed Answers (CKIADA)	.52	.218
Method “MPA”		
Internal Motivation Component (IMC)	3.98	1.28
External Positive Motivation Component (EPMC)	4.24	1.07
External Negative Motivation Component (ENMC)	4.02	1.05
Questionnaire “LSE”		
Level of Awareness of the Expected Events of Personality (LAEEP)	16.11	4.40
Level of the Expected Attitude Towards the Participants of Interpersonal Interaction (LEATPII)	13.12	3.49
Level of the Expected Performance of Personality (LEPP)	36.45	8.38
Level of Social Expectations of Personality (LSEP)	58.44	11.01
Test “LMO”		
Life Goals Component (LGC)	31.12	7.12
Locus of Control-life (LCI)	19.44	4.18
Locus of Control-self (LCs)	30.25	4.13
Process Component (PC)	31.45	5.89
Result Component (RC)	25.33	5.07
Questionnaire “LSC”		
Internality in the Area of Achievements of Personality (IAAP)	51.44	7.69
Internality in Relationships of Personality (IRP)	48.15	7.49
Internality in the Area of Labor Relations of Personality (IALRP)	34.37	5.12

Source: Personal elaboration, 2020-2021.

The empirical results obtained using psychodiagnostic techniques “RI”, “MPA”, “LSE”, “LMO”, and “LSC” were within the norms.

The purpose of the Spearman (r_s) correlation analysis was to determine the association between CKITQ and CKIADA, and the parameters of other methods (Tabl. 2).

Table 2.

Correlation matrix of associations between the studied parameters of respondents' readiness for pedagogical innovative activity (n=122)

Scale	CKITQ	CKIADA
Internal Motivation Component (IMC)	.129**	.121*
External Positive Motivation Component (EPMC)	.099*	.054
External Negative Motivation Component (ENMC)	.052	.051
Level of Awareness of the Expected Events of Personality (LAEEP)	.301**	.286**
Level of the Expected Attitude Towards the Participants of Interpersonal Interaction (LEATPII)	.039	.037
Level of the Expected Performance of Personality (LEPP)	.139**	.129**
Level of Social Expectations of Personality (LSEP)	.171**	.159**
Life Goals Component (LGC)	.069	.104*
Locus of Control-life (LCI)	.062	.079
Locus of Control-self (LCs)	-.035	-.049
Process Component (PC)	.106*	.107*
Result Component (RC)	.019	.039
Internality in the Area of Achievements of Personality (IAAP)	-.014	-.031
Internality in Relationships of Personality (IRP)	-.016	-.009
Internality in the Area of Labor Relations of Personality (IALRP)	.108*	.125**

Source: Personal elaboration, 2020-2021.

Note: CKITQ – Coefficient of Knowledge for Innovation on Test Questions; CKIADA – Coefficient of Knowledge for Innovation According to Detailed Answers; ** – $p \leq .01$ and * – $p \leq .05$.

The CKITQ was shown to have a positive significant correlation with IMC ($r_s = .129$; $p < .01$) and EPMC ($r_s = .099$; $p < .05$). It was found that the parameter Coefficient of Knowledge for Innovation According to Detailed Answers (CKIADA) had a positive significant correlation only with IMC ($r_s = .121$; $p < .05$). The CKITQ had a positive significant correlation with the LAEEP ($r_s = .301$; $p < .01$), Level of the Expected Performance of Personality (LEPP) ($r_s = .139$; $p < .01$) and the Level of Social Expectations of Personality (LSEP) ($r_s = .171$; $p < .01$). It was also found that the parameter Coefficient of Knowledge for Innovation According to Detailed Answers (CKIADA) had a positive significant relationship with the Level of Awareness of the Expected Events of Personality (LAEEP) ($r_s = .286$; $p < .01$), the Level of the Expected Performance of Personality (LEPP) ($r_s = .129$; $p < .01$) and the Level of Social Expectations of Personality (LSEP) ($r_s = .159$; $p < .01$).

It has been found that the CKIADA had a positive significant correlation with LGC ($r_s = .104$; $p < .05$) and PC ($r_s = .107$; $p < .05$), also with the parameter according to the “LSC” method – IALRP ($r_s = .125$; $p < .01$).

Following that, a comprehensive statistical data processing instrument, factor analysis using the ANOVA approach, was used. The use of factor analysis allowed us to minimize the number of relevant factors from seventeen to four. That is, it grouped the factors we selected into comparable groupings. Such statistical compression of the investigated factors enabled the establishment of new scientific findings. The collected four factors included the factor structure of rural general educational institution teachers' preparedness for innovations. The coverage of the specified criteria varied by 72.69% (Tabl. 3).

Table 3.
Factor loadings of the studied parameters (n=122)

Instruments	Factors	MARI (F1)	CRI (F2)	SLRI (F3)	PRI (F4)
RI	CKITQ		.949		
	CKIADA		.949		
MPA	IMC				-.645
	EPMC	.967			
	ENMC	.819			
LSE	LAEPP		.676		
	LEATPII	-.601			
	LEPP	.698			
	LSEP	.754			
LMO	LGC			.619	
	LCI	-.889			
	LCs	-.659			
	PC	-.549			.651
LSC	RC	-.941			
	IAAP	.943			
	IRP	.807			
	IALRP	-.945			
	Dispersion, %	52.56	9.28	6.73	4.12
	∑ dispersion, %	52.56	61.84	68.57	72.69
	Value	14.85	2.53	1.81	1.11

Source: Personal elaboration, 2020-2021.

Note: MARI (F1) – Motivational and Activity Readiness for Innovations; CRI (F2) – Cognitive Readiness for Innovations; SLRI (F3) – Sense-Life Readiness for Innovations; PRI (F4) – Procedural Readiness for Innovations.

“MARI” (F1) of teachers of rural secondary schools highlighted the reliance on positive EPMC (.967), ENMC (.819), LEPP (.698), LSEP (.754), IALRP (.943), IAA (.943) and negative parameters LEATPII (-.601), LCs (-.659), LCI (-.889), IALRP (-.945). “MARI” was the key factor (52.56%) that indicated the importance of the positive dependence on the expected result of the activity, motivational component, on the general meaning of life. This factor was characterized by motivational and activity self-regulation.

“CRI” (F2) of teachers of rural secondary schools reflected: CKITQ (.949), CKIADA (.949), LAEEP (.676). “CRI” had a high level of dispersion (9.28%) and showed the importance of knowledge for innovation. This factor was important in the factor structure.

“SLRI” (F3) of teachers of rural secondary schools reflected the dependence of innovative pedagogical activities on one parameter: LGC (.619). This one parameter was named “SLRI”

and showed the importance of semantic and vital parameters in the readiness of teachers for innovations. This factor had a dispersion (6.73%), and also had high vital self-regulation and semantic activity.

“PRI” (F4) of teachers of rural secondary schools reflected PC (.651) and IMC (-.645). “PRI” is characterized by training activity that has procedural nature. The internal motivation was the focus of research subjects who were dominated by this mental state of innovative activity. “PRI” (F4) had the smallest dispersion (4.12%), and simultaneously, had high procedural self-regulation activities.

Thus, according to the results of mathematical processing, four main factors (72.69%) have been presented, which determined the factor structure of readiness of teachers of rural secondary schools for innovations in pedagogical activity (Fig. 1).

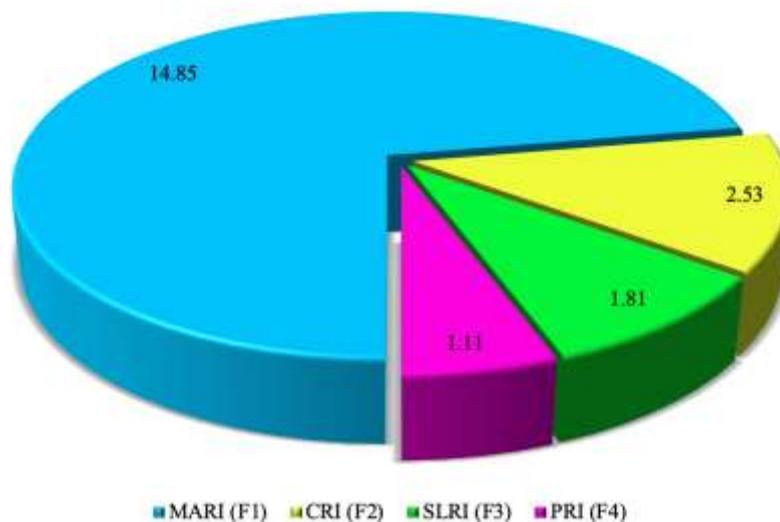


Figure 1. Factor structure of subjects.
Source: Personal elaboration, 2020-2021.

The correlation connections of the subjects' factor structure are shown. Table 4 demonstrated

the data in a form of the subjects' correlation matrix.

Table 4.
Correlation matrix of subjects (n=122)

Factors	MARI (F1)	CRI (F2)	SLRI (F3)	PRI (F4)
MARI (F1)	1.000	.121**	-.122**	-.086*
CRI (F2)	.121**	1.000	.199**	.137**
SLRI (F3)	-.122**	.199**	1.000	.045
PRI (F4)	-.086*	.137**	.045	1.000

Source: Personal elaboration, 2020-2021.
Note: ** – p≤.01 and * – p≤.05.

The most significant (p≤.01) were the ratios of CRI (F2) and SLRI (F3) (.199), MARI (F1), and CRI (F2) (.121). MARI (F1) and CRI (F2) had the most significant connections with MARI (F1), SLRI (F3), and PRI (F4). Thus, CRI (F2) was the most important in the factor structure of subjects.

Discussion

We did not find research on the mental states of readiness for innovation of teachers in secondary schools in rural areas. In the framework of the debate, research on mental states of innovation readiness (Tsiuniak et al., 2020), and innovative professional training of future professionals (Botagariev et al., 2021) are of scientific interest. The purpose of Botagariev et al.'s (2021) study is to see how effective the suggested experimental program is in forming future teachers' professional preparation. Researchers concentrated on the intellectual and creative aspects of teacher development. This finding

supports the information we got regarding the relevance of creativity in teachers' readiness for change and innovation. Another research (Fernández-Rivas & Espada-Mateos, 2019) focuses on the cognitive style of instructors, which supports our empirical findings in the factor structure, particularly the presence of the mental state "Cognitive Readiness for Innovations" (F2). It is important to note that this state is one of the most important in the pursuit of innovation. Empirical research of masters of pedagogy's inventive mental states (Tsiuniak et al., 2020) emphasizes the interrelation of important characteristics of innovation readiness and offers the factor structure. It also supports our idea of a holistic solution to this challenge that begins with professional development in higher education. Innovative technologies in children and youth have been discovered to contribute to the deepening of physical culture and health work, increased interest in regular physical education, and the development of independence, creativity, and initiative

(Leonenko & Krasilov, 2017). This remains true for both students and teachers who are interested in innovation, confirming our previously identified mental state of “Motivational and Activity Readiness for Innovation” (F1), which accounts for the majority of factor load variance (52.56%). Another research found and stated that introducing new approaches into the physical education system raised motivational performance as well as physical attributes, affected the formation of spiritual values, and improved respondents’ health (Korkishko et al., 2019). The validity of the applied measures of innovation readiness and the effect derived from the application of innovative technology is confirmed in this study. Teachers view blended learning, which combines full-time and distant learning, to be an alternative to full-fledged online learning in today’s reality of the COVID-19 pandemic. In the current circumstances, the combined format can meet the expectations of students’ health and education. It should be noted that a continuous active search for teachers is capable of ensuring the best possible outcome in current societal transitions (López-Fernández et al., 2021).

The obtained empirical facts, theoretical analysis, generalization, and discussion provide justification for asserting that the obtained data should be operationalized into educational and professional training, refresher courses, and competence formation technologies for future teachers to implement successful reforms and innovations. The findings will make it possible to operationalize future specialists’ educational and professional training in order to prepare them for the modernization of training and teaching.

Conclusions

1. It is generalized that teachers’ mental state of readiness for innovative activity is a unique dominant state of activity involving a combination of motivational, self-regulatory, and neuropsychological efforts and responsibility, creativity, and tolerance for the educational process’s subjects.
2. The ANOVA factor analysis constructs the structure of factors affecting teachers’ readiness for innovation, reforms, and innovations in rural secondary schools. The factor structure includes four primary components that account for the coating’s entire variation (72.69%).
3. It has been found that the main is “Motivational and Activity Readiness for Innovations” (F1) (52.56%) and “Cognitive Readiness for Innovations” (F2) (9.28%), which are interconnected with “Sense-Life Readiness for Innovations” (F3) ($p \leq 0.01$) and F4 “Procedural Readiness for Innovations” (F4) ($p \leq 0.01$).
4. It is substantiated that the gathered scientific facts, theoretical analysis, and generalization provide a basis for their operationalization in training, refresher courses, and technologies for the development of competencies for future teachers to successfully reform and innovate. These methods will help in the excellent organization of change management in the secondary school educational process in rural areas.
5. The hypothesis has been confirmed. The findings will make it possible to operationalize future specialists’ educational and professional training in order to prepare them for the modernization of training and teaching.

Bibliographic references

- Bazhin, E. F., Golyntin, E. A., & Etkind, A. M. (1984). A method for studying the level of subjective control. *Psychological Journal*, 5(3), 152–162. <http://base.psy.spbu.ru/index.php/klass1/sredstva-psikhodiagnostiki/item/91-oprosnik-urovnya-sub-ektivnogo-kontrolya-usk>
- Bartkiv, O. (2010). Readiness of the teacher to innovate professional activity. *Problems of preparing a modern teacher*, 1, 52–58. http://nbuv.gov.ua/UJRN/ppsv_2010_1_10
- Blynova, O., Kisil, Z., Tkach, T., Semenova, N., Semenov, O., Kaminska, S., & Popovych, I. (2020). Psychological manifestations of professional marginality of future social welfare professionals. *Revista Inclusiones*, 7(SI), 218–233. <http://www.revistainclusiones.org/index.php/inclu/article/view/1229>
- Blynova, O., & Kruglov, K. (2019). The value of social capital for the psychological well-being of employees. *Insight: the psychological dimensions of society*, 1, 72–78. <https://doi.org/10.32999/2663-970X/2019-1-11>
- Botagariev, T., Khakimova, Z., Andrushchishin, J., Akhmetova, A., & Konisbaeva, S. (2021). Professional Readiness and Efficiency of Future Physical Education Teachers. *International Journal of Instruction*, 14(2), 271–288. <https://doi.org/10.29333/iji.2021.14216a>
- Fernández-Rivas, M., & Espada-Mateos, M. (2019). The knowledge, continuing

- education and use of teaching styles in Physical Education teachers. *Journal of Human Sport and Exercise*, 14(1), 99–111. <https://doi.org/10.14198/jhse.2019.141.08>
- Gusarova, M. S., Nikolaeva, D. R., & Bezhtentseva, T. V. (2021). Methods of the current situation analysis in the regional education, research, and innovation markets in order to establish the strategic development program for universities. *Apuntes Universitarios*, 11(3), 260–273. <https://doi.org/10.17162/au.v11i3.705>
- Halian, A., Halian, I., Popovych, I., Zavatskyi, Y., Semenov, O., & Semenova, N. (2021). Stress Resistance in the Situation of Uncertainty as a Factor of Development of Adaptive Ability of Medical Personnel. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 12(1), 251–264. <https://doi.org/10.18662/brain/12.1/181>
- Hudimova, A., Popovych, I., Baidyk, V., Buriak, O., & Kechyk, O. (2021). The impact of social media on young web users' psychological well-being during the COVID-19 pandemic progression. *Amazonia Investiga*, 10(39), 50–61. <https://doi.org/10.34069/AI/2021.39.03.5>
- Korkishko, O.V., Leshkevych, S.A., Antonchenko, N.V., Davidenko, R.V., & Zhukov, M.A. (2019). Implementation of innovative technologies of physical education and sports education and health improvement of students. *Development of education*, 4(6), 27–30. <https://doi.org/10.31483/r-53641>
- Kharytonov, E., Kharytonova, O., Kolodin, D., Tkalych, M., Larkin, M., Tolmachevska, Y., Rojas-Bahamon, M.J., Arbeláez-Campillo, D.F., & Panchenko, O.I. (2021). Distance learning in the conditions of Covid-19: problems and prospects of their solution. *Amazonia Investiga*, 10(48), 157–169. <https://doi.org/10.34069/AI/2021.48.12.17>
- Know, E., H. (2020). Review of online learning in physical education teacher education (PETE) program. *Journal of Physical Education and Sport*, 20(6), 3560–3568. <https://doi.org/10.7752/jpes.2020.06480>
- Kuzikova, S., Kuzikov, B., Shcherbak, T., Blynova, O., Vavryniv, O., Khmiliar, O., & Popovych, I. (2020a). Research of predisposition to risk of participants of extreme sports. *Revista Inclusiones*, 7(SI), 43–58. <http://www.revistainclusiones.org/index.php/inclu/article/view/1740>
- Kuzikova, S., Shcherbak, T., Popovych, I., Blynova, O., & Skyba, O. (2020b). Psychological features of subjective vitality and hardiness of representatives of parachute sports. *International Journal of Applied Exercise Physiology*, 9(9), 172–177. <http://ekhsuir.kspu.edu/123456789/12265>
- Leonenko, A. V., & Krasilov, A. D. (2017). The use of innovative technologies in physical education of children and youth. *Young Scientist*, 3.1(43.1), 190–193. <http://molodyvcheny.in.ua/files/journal/2017/3.1/49.pdf>
- Leontyev, D. (2006). Test of life-meaningful orientations (“LMO”). Psychodiagnostic series. Moscow: Smysl. <https://www.twirpx.com/file/83225/>
- López-Fernández, I., Burgueño, R., & Gil-Espinosa, F.J. (2021). High School Physical Education Teachers' Perceptions of Blended Learning One Year after the Onset of the COVID-19 Pandemic. *Int. J. Environ. Res. Public Health*, 18, 11146. <https://doi.org/10.3390/ijerph182111146>
- Moskalenko N. (2015). Innovative activity in physical education of secondary schools. *Physical Education, Sports, and the Culture of Health in Modern Society*, 4, 35–38. http://nbuv.gov.ua/UJRN/Fvs_2015_4_10
- Nosov, P., Palamarchuk, I., Zinchenko, S., Popovych, I. S., Nahrybelnyi, Y., & Nosova, H. (2020). Development of means for experimental identification of navigator attention in ergatic systems of maritime transport. *Bulletin of the University of Karaganda – Physics*, 1(97), 58–69. <http://ekhsuir.kspu.edu/handle/123456789/10472>
- Plokhikh, V., Popovych, I., Zavatska, N., Losiyevska, O., Zinchenko, S., Nosov, P., & Aleksieieva, M. (2021). Time Synthesis in Organization of Sensorimotor Action. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 12(4), 164–188. <https://doi.org/10.18662/brain/12.4/243>
- Popovych, I., Arbeláez-Campillo, D. F., Rojas-Bahamón, M. J., Burlakova, I., Kobets, V., & Bokshan, H. (2021a). Time perspective in the professional activity of specialists of economic sphere. *Cuestiones Políticas*, 39(69), 424–445. <https://doi.org/10.46398/cuestpol.3969.27>
- Popovych, I., Blynova, O., Zhuravlova, A., Toba, M., Tkach, T., & Zavatska, N. (2020a). Optimization of development and psycho-correction of social expectations of students of foreign philology. *Revista Inclusiones*, 7(SI), 82–94. <https://revistainclusiones.org/index.php/inclu/article/view/1657>

- Popovych, I., Halian, O., Geiko, Ie., Zaverukha, O., Sptyska, L., Bokhonkova, Y., & Fedyk, O. (2020b). Research on the Correlation between Subjective Control and the Indexes of Study Progress of Bachelors of the Faculty of Physical Education and Sport. *Revista Inclusiones*, 7(SI), 497–511. <https://revistainclusiones.org/index.php/inclu/article/view/1306>
- Popovych, I., Chervinskyi, A., Kazibekova, V., Chervinska, I., & Machynska, N. (2021b). Empirical research of the typology of social expectations of the personality. *Amazonia Investiga*, 10(43), 112–122. <https://doi.org/10.34069/AI/2021.43.07.11>
- Popovych, I. S. (2017). Psychological dimensions of social expectations of personality. Kherson: KTPH. <http://ekhsuir.kspu.edu/handle/123456789/6466>
- Rean, A. A. (2008). *Psychology of personality adaptation*. St. Petersburg: Prime-EUROSNAK. <http://portal.iapm.edu.ua/portal/media/books/1fd5366754d940159f1525e47aaaa992.pdf>
- Romero Carrión, V. L., García Flores, S. A., & Palacios Sánchez, J. M. (2020). Ecosystem with creativity, research and innovation based on transversal competences facing the professional demands of the 21st century. *Apuntes Universitarios*, 11(1), 386–400. <https://doi.org/10.17162/au.v11i1.592>
- Serdyukov, P. (2017). Innovation in education: what works, what doesn't, and what to do about it? *Journal of Research in Innovative Teaching & Learning*, 10(1), 4–33. <https://doi.org/10.1108/JRIT-10-2016-0007>
- Shevchenko, R., Cherniavskyi, V., Zinchenko, S., & Palchynska, M. (2020). Research of psychophysiological features of response to stress situations by future sailors. *Revista Inclusiones*, 7(SI), 566–579. <http://www.revistainclusiones.org/index.php/inclu/article/view/1780>
- Tsiuniak, O. P., & Dovbenko, S. Yu. (2019). *Pedagogical Innovation*. Ivano-Frankivsk: Publisher Kushnir GM. <http://lib.pnu.edu.ua:8080/handle/123456789/7961?locale=uk>
- Tsiuniak, O., Pyslar, A., Lialiuk, G., Bondarenko, V., Kovtun, O., Los, O., & Popovych, I. (2020). Research of interdependence of variables and factor structure of masters' readiness for innovative pedagogical activity. *Revista Inclusiones*, 7(3), 427–452. <http://www.revistainclusiones.org/index.php/inclu/article/view/1645>
- Tsiuniak, O. P. (2019). The role of educational space of a higher education institution professional preparation of future masters of primary education. *Psychological and Pedagogical Problems of Modern School*, 125, 2019: 138–144. <https://doi.org/10.31499/2706-6258.1.2019.178255>
- Urcid Puga, R., & Rojas, J. C. (2018). Multidirectional model to generate educational innovation. *Apuntes Universitarios*, 8(3), 1–23. <https://doi.org/10.17162/au.v8i3.328>
- Zinchenko, S., Nosov, P., Mateichuk, V., Mamenko, P., Popovych, I., & Grosheva, O. (2019). Automatic collision avoidance system with many targets, including maneuvering ones. *Bulletin of university of Karaganda*, 96(4), 69–79. <https://physics-vestnik.ksu.kz/apart/2019-96-4/8.pdf>