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## Research of readiness of pedagogical workers for innovations

### Дослідження готовності педагогічних працівників до інновацій

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#### Abstract

The purpose is empirical research of the interdependence of variables and construction of the factor structure of the readiness of pedagogical workers for innovation. Research methods: theoretical analysis and generalization, valid test methods with standardized questionnaires, factor analysis. The structure of readiness of pedagogical workers for innovative pedagogical activity has been determined using ANOVA factor analysis with Varimax rotation. The most significant interdependencies of variables and researched relationships were established at the statistically significant level ( $p \leq .01$ ;  $p \leq .05$ ). The structure of readiness of pedagogical workers for innovations united five main factors. It has been found that the main is F2 "informational readiness", which is positively correlated with F1 "motivational operational readiness", F3 "sense readiness", F4 "procedural readiness" and F5 "distat-resulting preparedness". It is expedient to implement the

#### Анотація

Метою є емпіричне дослідження взаємозалежності змінних та побудова факторної структури готовності педагогічних працівників до інновацій. Методи дослідження: теоретичний аналізування та узагальнення, валідні методи тестування зі стандартизованими анкетами, факторний аналіз. Визначено структуру готовності педагогічних працівників до інноваційної педагогічної діяльності за допомогою факторного аналізу ANOVA з обертанням Varimax. Найбільш значущі взаємозалежності змінних і досліджуваних зв'язків встановлено на статистично значущому рівні ( $p \leq .01$ ;  $p \leq .05$ ). Структура готовності педагогічних працівників до інновацій об'єднала п'ять основних факторів (75.77%). Встановлено, що основним є F2 "інформаційна готовність" (9.38%), що позитивно корелює з F1 "мотиваційно-операційною готовністю" ( $r_s = .132$ ;  $p \leq .01$ ), F3 "сенсовою готовністю"

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acquired knowledge into the program of reforms and development of primary and secondary education. The research of a specific type of readiness for innovation with the development of an implementation algorithm requires further attention.

**Key words:** primary education, education, upbringing, innovation, educational space, educational process.

## Introduction

Researchers are paying increasing attention to the use of the latest innovative technologies in the educational process of primary and secondary schools as a result of dynamic educational changes that span a number of countries on different continents. According to N. Machynska (2018), the current stage of modernization of Ukraine's higher education system is marked by increased attention to personality, teachers' efforts to develop the creative potential of educational participants, combining traditions with new ideas related to Ukraine's entry into the European and global educational space. The use of innovative teaching technologies in higher education, the creative search for new or improved concepts, principles, and approaches to education, significant changes in content, forms, and methods of teaching, and the management of the pedagogical process are all required for the implementation of new vectors of educational development (Machynska, 2018; Machynska et al., 2021).

The present assures promotion of a healthy lifestyle, active forms of recreation, a combination of hobbies with sports activity. At the same time, the problem of reforming the school system of physical education becomes rapidly relevant. (Kachan, 2017). Such rhetoric leads us to consider that any educational institution requires pedagogical workers who will consider social changes, be willing to reorient one's own thinking, and recognize new requirements for innovative educational activities. Special attention should be paid to primary and secondary education institutions located in rural areas (Sirant, 2018). Remoteness from the center can cause slowing down and inhibiting innovation in this area.

Also, the relevance of the outlined issues is explained by a number of factors that are presented in the works of researchers of innovation (Dychkivska, 2012; Tsiuniak, 2019; Tsiuniak et al., 2020). The first factor is updating the content of education, rethinking the

( $r_s = .201$ ;  $p \leq .01$ ), F4 "процесуальною готовністю" ( $r_s = .137$ ;  $p \leq .01$ ) і F5 "дистатно-результуючою готовністю" ( $r_s = .086$ ;  $p \leq .01$ ). Набуті знання доцільно впровадити в програму реформ і розвитку початкової і середньої освіти.

**Ключові слова:** початкова освіта, навчання, виховання, інноватика, освітній простір, освітній процес.

technologies of teaching and education. The second one includes a significant expansion of the professional functions of a pedagogical worker of a modern school. The teacher must change the approach to learning, propose a model that will contribute to the formation of competencies required by modern realities. The subject of professional activity of such a teacher is education of a pupil with deep moral values of personality, citizen, patriot on the basis of innovative renewal and humanistic paradigm. The third factor includes innovation. This innovative activity is directly related to the educational and upbringing activities of pedagogical workers. Its essence is the continuous improvement of work, the search for new innovative forms and methods of teaching and education. These are landmarks of the main directions of modernization of education. The key is the ability to build conceptual principles of pedagogical innovations that combine diagnostics, prediction, psychocorrection, and reflection of innovative actions.

In primary and secondary education, according to the unanimous opinion of scientists and practitioners, the transition to a competency-based approach means a reorientation from the process to the result of education in the activity dimension. Consideration of this result, taking into account the needs of society, is the ability of a graduate of secondary education to meet the new demands of today, to have the appropriate potential for practical solutions of life's problems (obtaining a profession, starting a family, etc.). In this regard, it is worth talking about the new roles of pedagogical workers, not as a sole mentor and source of knowledge, but as a coach, facilitator, tutor, moderator in the individual educational trajectory of the child (Petrova, & Sivka, 2019).

The readiness of a pedagogical workers for innovative pedagogical activity is a special personal state, which presupposes that the teacher has motivational and value attitude to professional activity, a high level of responsible

attitude, effective ways and means to achieve pedagogical goals, ability to creativity and reflection (Halian, 2019; Halian et al., 2020; Tsiuniak, 2019). The results of the researcher I. Dychkivska (2012) show that the readiness for innovative pedagogical activity of a teacher is outlined by such indicators as awareness of the need to implement pedagogical innovations at the level of own pedagogical practice; awareness of the latest pedagogical technologies, knowledge of innovative methods of work; focus on creating own creative tasks, methods, conducting experimental work; readiness to overcome difficulties related to the content and organization of innovation activities; possession of practical skills of mastering pedagogical innovations and creating new ones I. Dychkivska (2012). Attracts the scientific interest research regarding different styles of teaching physical education by a teacher in which attention has been emphasized to the importance of conducting physical education lessons based on the purpose of the exercises. Teaching styles and their features were studied in a sample of 455 physical education teachers in primary and secondary schools. It has been found that the use of teaching styles differs depending on the pedagogical experience: teachers with experience (more than six years) use more traditional styles (such as team style), than teachers with less experience (from one to five years). In contrast, teachers with 1 to 5 years of teaching experience are more likely to use cognitive style as problem-solving than teachers with more than 21 years of experience. At the same time, senior teachers (over 31 years old) also use more traditional teaching styles (Fernández-Rivas & Espada-Mateos, 2019). This research suggests that teachers with more than six years of experience and not adults (more than 31 years) are more likely to tend to innovative technologies.

Modern research of online education in order to train teachers in a distance format is worth noting. Researchers have focused on creating a quality educational space, taking into account several aspects, such as curriculum development for online education, teaching and psychological support for teachers and students (Goad & Jones, 2017).

Summarizing the results of the analysis of scientific literature, we understand the pedagogical conditions of forming the readiness of pedagogical workers for innovation in the process of general, preventive and educational work with students as a set of external and internal circumstances. The implementation of

which will provide education for pupils with deep moral values as a personality, citizen and patriot.

Pedagogical workers, in addition to their readiness and desire to innovate, must be properly qualified to perform their duties. As practice shows, it often happens that a teacher can successfully implement the requirements of the program in the educational process, have a variety of methods of teaching and education, but do not feel the need for innovation precisely because of the lack of creative potential in the personality structure. Therefore, a necessary condition for effective innovation is special training of teachers, understanding of the experience of such activities, inner readiness to seek and master the new (Bartkiv, 2010), compliance with the demands and expectations of today (Popovych et al., 2021a; 2021b).

*Hypothesis.* We assume that the research of the interdependence of variables and the factor structure of the readiness of pedagogical workers for innovations in teaching will provide significant empirical results. So, it will contribute to the quality of change management in education; the application of the acquired knowledge will be of great importance during the educational and professional training of specialists in pedagogical.

*Purpose* of our study is to build a factor structure of readiness of pedagogical workers for innovations in teaching and to establish the interdependence of variables.

## Material and methods

The following studies formed the methodological basis for empirical research on the interdependence of parameters and factor structure of pedagogical workers' readiness for innovations in pedagogical activity: age psychological patterns (Popovych et al., 2021c; 2021d), semantic parameters of the adaptation process (Blynova et al., 2020), self-regulatory capacity (Khmiliar et al., 2020; Plokhikh, 2021; Plokhikh et al., 2021), and the modern realities of educational and professional training (Hudimova, 2021; Hudimova et al., 2021a; 2021b; Ivanchuk et al., 2020; Kharytonov et al., 2021; Machynska & Dzikovska, 2020). The proposed empirical research is an algorithm of sequential measures using a number of psychodiagnostic methods. All outlined experimental and empirical researches are relevant in the context of studying the readiness

of teachers for innovations in pedagogical activity.

*Participants.* The study involved pedagogical workers of primary and secondary schools of Ukraine: Lyceum № 21 of Lviv City Council (n = 12); Lyceum № 28 of Lviv City Council (n = 14); Lyceum “Sykhiv” of Lviv City Council (n = 11); Secondary school № 42 (Lviv, Ukraine) (n = 23); Primary school “Pervotsvit” of Lviv City Council (n = 14); “Dyvosvit” Primary School of Lviv City Council (n = 9); Secondary school № 67 (Lviv, Ukraine) (n = 14); Secondary school I-III degrees №50 (Lviv, Ukraine) (n = 13); Secondary school № 60 (Lviv, Ukraine) (n = 8). The study involved 118 teachers aged 25 to 63 years, including 66.95% (n=79) female male and 33.05% (n=39) male. The mean age of the sample was 42.1 years (SD = 12.09).

*Procedures and instruments.* For the organization of empirical research, during the first half of the 2020-2021 academic year, questionnaires and psychodiagnostics techniques were used. The survey allowed to collect the necessary biographical information about respondents. The studied psychological parameters of pedagogical workers for innovative pedagogical activity were determined by the following psychodiagnostics tests: questionnaire “Readiness for Innovation” (“RFI”) (Tsiuniak, 2019); method “Motivation of professional activity” (“MPA”) (Zamfir, modification of Rean, 2008); “Purpose in Life Test” (“PIL”) (Crambo and Maholik; adapted by Leontyev, 2006); the questionnaire “The level of subjective control” (“LSC”) (Bazhin et al., 1984).

The “RFI” questionnaire (Tsiuniak, 2019) consisted of two parts. The first part contained ten test questions of the first level of difficulty. The second part also contained ten questions to which it was necessary to give a detailed answer. Each respondent received a questionnaire on which they voluntarily answered test questions. Next, the coefficient of knowledge about innovative pedagogical activity on test questions (Ctq) was determined as the ratio of the number of correct answers to the total number according to the formula. Ctq parameters have a range of values from .00 to 1.00.

The processing of the second part was more complex procedure that combined peer review of determining the correctness of answers and content analysis. Based on the analysis of the research context, the data were interpreted and verified. Determining the coefficient of

knowledge about innovative pedagogical activities by expert assessment and content analysis (Cac) is the interpretation of the obtained data. This coefficient is the ratio of the number of features that characterize innovative pedagogical activities to the total number of such features. Our Cac parameters range from .00 to 1.00. It has been empirically determined and substantiated those values from .00 to .29 indicate a low coefficient of knowledge; from .30 to .71 are average values and from .72 to 1.00 indicate high values of the coefficient of knowledge.

The method “Motivation of professional activity” (“MPA”) (Zamfir, modification of Rean, 2008) is recommended for the diagnosis of motivation of professional and pedagogical activities. The key parameters are internal and external motivation. The internal type of motivation can be traced when the content of activity is important for a person. If the motivation of professional activity is based on the desire to meet other external needs in relation to the content of the activity, in particular the motives of social prestige, salary, etc., then we state the external motivation. At the same time, external motives are differentiated into external positive and external negative. External positive motives are more effective and much more desirable from all points of view than external negative motives.

The “PIL” test (J. Crambo and L. Maholik; adapted by Leontyev, 2006) combined two groups of parameters. The first included the actually meaning-life orientations: goals in life, saturation of life and satisfaction with self-realization. It is worth noting that these three categories related to the purpose – the future, the process – the present and the result – the past. Respondents can learn the meaning of their lives in one, or in another, or in the third, or in all three components of life at the same time. These parameters are important in understanding the operational content of readiness for innovative pedagogical activities. The last two parameters characterize the internal locus of control. The meaningfulness of a teacher’s life is closely connected with the general worldview belief that control is possible, and the second parameter reflects the belief in one’s own ability to exercise such control – self-image. “Purpose in Life Test” (“PIL”) (Leontyev, 2006): Life Goals (LG), Process (P), Result (R), Locus of Control – Life (LCL), Locus of Control – Self (LCS), General Awareness of Life (GAL).

The LSC questionnaire (Bazhin et al., 1984) allowed us to assess the degree of the activity of respondents in achieving goals, developing a sense of personal responsibility for everything that happens to them. The questionnaire “Level of subjective control” (“LSC”) (Rotter, 1966): Internality in the Area of Achievements (IAA), Internality in Relationships (IR), Internality in the Area of Labor Relations (IALR), Internality in the Area of Failures (IAF), Internality Concerning Health and Illness (ICHI), General Internality (GI). The indexes of reliability of the methods used and the tests of Cronbach’s alpha were within sufficient (.7) and high levels (.9).

*Organization of research.* The empirical research was conducted from September 2021 to December 2021. Respondents who voluntarily agreed to participate in the empirical study were randomly selected. Permission and consultations were obtained from the administrations of secondary education institutions. Each respondent voluntarily filled in all questionnaire forms and a questionnaire with socio-demographic characteristics. Participation in the study was confidential; data of participants for

ethical reasons, were coded by the organizers of the research. Voluntary participation of respondents allowed avoiding casual answers.

*Statistical analysis.* Statistical processing of the obtained results and graphic presentation was carried out using the programs “Statistical Package for the Social Sciences” v. 23.0 and “Microsoft Office Excel 2007”. Spearman’s correlation coefficients ( $r_s$ ) were used to find and determine the correlation between the indexes obtained. ANOVA (Analysis of Variance) factor analysis with Varimax rotation has been used. Arithmetic mean value of parameters (M) and square deviation (SD) were calculated. The differences between the values of the variables at the level  $p \leq .05$  are considered statistically significant.

## Results

The results of the research of descriptive characteristics of respondents’ readiness for innovations in pedagogical activity according to psychodiagnostics methods: “RFI”, “MPA”, “PIL”, “LSC” are presented in Table. 1.

**Table 1.**  
*Mean values and standard deviations of the scales of the researched parameters (n=118)*

Scale	M	SD
<b>“RFI”</b>		
Coefficient of knowledge about innovative pedagogical activity on test questions (Ctq)	.55	.19
Coefficient of knowledge about innovative pedagogical activity according to detailed answers (Cac)	.53	.219
<b>“MPA”</b>		
Internal motivation (IM)	3.99	1.27
External positive motivation (EPM)	4.31	1.11
External negative motivation (ENM)	4.01	1.04
<b>“PIL”</b>		
Life Goals (LG)	31.44	7.18
Process (P)	31.54	5.91
Result (R)	25.43	5.11
Locus of Control – Life (LCL)	19.51	4.20
Locus of Control – Self (LCS),	30.31	4.27
General Awareness of Life (GAL)	102.45	13.12
<b>“LSC”</b>		
General Internality (GI)	192.76	19.98
Internality in the Area of Achievements (IAA)	51.67	7.71
Internality in Relationships (IR)	48.22	7.51
Internality in the Area of Failures (IAF)	38.56	6.63
Internality in the Area of Labor Relations (IALR)	34.56	5.17
Internality Concerning Health and Illness (ICHI)	17.88	4.22

Source: Personal elaboration, 2021.

Note: M – arithmetic mean; SD – mean-square deviation.

Comparing the obtained average values with the norms proposed by the authors of the methods “RFI”, “MPA”, “PIL” and “LSC”, it should be noted that the obtained empirical data are within the norms.

It was necessary to establish relationships between the parameters of the “RFI” (Tsiuniak, 2019) with the key parameters of all other

criteria. Correlation analysis was applied and the Spearman correlation coefficient ( $r_s$ ) was determined. The purpose of correlation analysis was to establish the relationship between the indicators of the two coefficients of knowledge about innovative pedagogical activities (Ctq, Cac) with the parameters of other methods (Tabl. 2).

**Table 2.**  
*Correlation matrix of relationships of the researched parameters.*

Scale	Coefficient of knowledge about innovative pedagogical activity on test questions (Ctq)	Coefficient of knowledge about innovative pedagogical activity according to detailed answers (Cac)
Internal motivation (IM)	.131**	.123*
External positive motivation (EPM)	.089*	.057
External negative motivation (ENM)	.060	.054
Life Goals (LG)	.059	.107*
Process (P)	.108*	.109*
Result (R)	.021	.041
Locus of Control – Life (LCL)	.059	.061
Locus of Control – Self (LCS),	-.029	-.051
General Awareness of Life (GAL)	.058	.062
General Internality (GI)	.161**	.139**
Internality in the Area of Achievements (IAA)	-.021	-.049
Internality in Relationships (IR)	-.021	-.011
Internality in the Area of Failures (IAF)	-.039	-.031
Internality in the Area of Labor Relations (IALR)	.109*	.131**
Internality Concerning Health and Illness (ICHI)	.034	.079

Source: Personal elaboration, 2021.

Note: \*\* – statistical significance of  $p \leq .01$ ; \* – statistical significance of  $p \leq .05$ .

Based on the obtained statistically significant correlation coefficients, it has been found that the knowledge coefficient (Ctq) has a positive significant relationship with internal motivation ( $r_s=.131$ ;  $p < .01$ ), external positive motivation ( $r_s=.089$ ;  $p < .05$ ).

Based on the obtained statistically significant correlation coefficients, it has been found that the knowledge coefficient (Ctq) has a positive significant relationship with the parameter “process” on the test “PIL”: Process (P) ( $r_s=.108$ ;  $p < .05$ ) and parameters on the method “LSC”: “General internality” ( $r_s=.161$ ;  $p < .01$ ) and “internality in the area of labor relations” ( $r_s=.109$ ;  $p < .05$ ). It has been found that the coefficient of knowledge (Cac) has a positive significant relationship with the parameters of the test “PIL”: “life goals” ( $r_s=.107$ ;  $p < .05$ ) and “process” ( $r_s=.109$ ;  $p < .05$ ) and parameters

according to the “LSC” method: “general internality” ( $r_s=.139$ ;  $p < .01$ ) and “internality in the area of labor relations” ( $r_s=.131$ ;  $p < .01$ ). The obtained results indicate that pedagogical workers consider that most of the important events that take place in their lives, in particular in the educational process are the result of their own actions. In accordance, they feel a personal responsibility for everything that happens to them, but not in all spheres of life, which is not a positive phenomenon. The indicator “internality in the area of labor relations” is a positive significant ( $p < .05$ ;  $p < .01$ ) reflection of the level of subjective control of respondents in the performed production activities.

ANOVA factor analysis with Varimax rotation has been used for reducing the proportionality of the researched factors. The complex of seventeen factors is methodologically substantiated and

such that relevantly reflects the subject of the research of the readiness of pedagogical workers for innovation in teaching. The names of the factors reflect the essence of the studied parameters. The matrix of factor loadings of

seventeen variables is determined by the method of the main component. Five factors have eigenvalues greater than one and explain 75.77% of dispersion variables (Table 3).

**Table 3.** Matrix of factor loads of factors of respondents' readiness for pedagogical innovative activity (n=118)

Factors	F1	F2	F3	F4	F5
Coefficient of knowledge about innovative pedagogical activity on test questions (Ctq)		.951			
Coefficient of knowledge about innovative pedagogical activity according to detailed answers (Cac)		.951			
Internal motivation (IM)				-.654	
External positive motivation (EPM)	.954				
External negative motivation (ENM)	.867				-.519
Life Goals (LG)			.621		
Process (P)	-.551			.648	
Result (R)	-.939				.508
Locus of Control – Life (LCL)	-.872				
Locus of Control – Self (LCS),	-.667				
General Awareness of Life (GAL)			.772		
General Internality (GI)	.742				
Internality in the Area of Achievements (IAA)	.938				
Internality in Relationships (IR)	.811				
Internality in the Area of Failures (IAF)	-.824				
Internality in the Area of Labor Relations (IALR)	.951				
Internality Concerning Health and Illness (ICHI)	-.507				
Dispersion, %	52.45	9.38	6.72	4.08	3.12
∑ dispersion, %	52.45	61.85	68.57	72.65	75.77
Value	14.85	2.53	1.91	1.51	1.09

Source: Personal elaboration, 2021.

Note: The loadings of the significant variables are given in bold type.

F1 “Motivational and operational readiness” of respondents reflects the dependence of innovative pedagogical activity on positively loaded values of parameters: EPM (.954), ENM (.867), IALR (.951), IAA (.938) and negatively loaded parameters: LCS (-.667), LCL (-.872), ICHI (-.507), IAF (-.824). F1 indicates the importance of the motivational component, the positive dependence on the general meaning of life and the general level of subjective control of their activities. This factor has the largest dispersion (52.45%) and is key in the factor structure of readiness for innovative pedagogical activity and is characterized by motivational and operational self-regulation of innovative pedagogical activity.

F2 “Informational readiness” of pedagogical workers reflects the dependence of innovative pedagogical activity only on significant positively loaded values of parameters: Ctq (.951), Cac (.951). All these parameters have a pronounced cognitive component, hence its name “informational readiness”. F1 shows the

importance of knowledge, awareness in the readiness of the subjects for innovation. This factor has a dispersion (9.38%) and is important in the factor structure of readiness for innovative pedagogical activity and has a high cognitive self-regulation of innovative pedagogical activity.

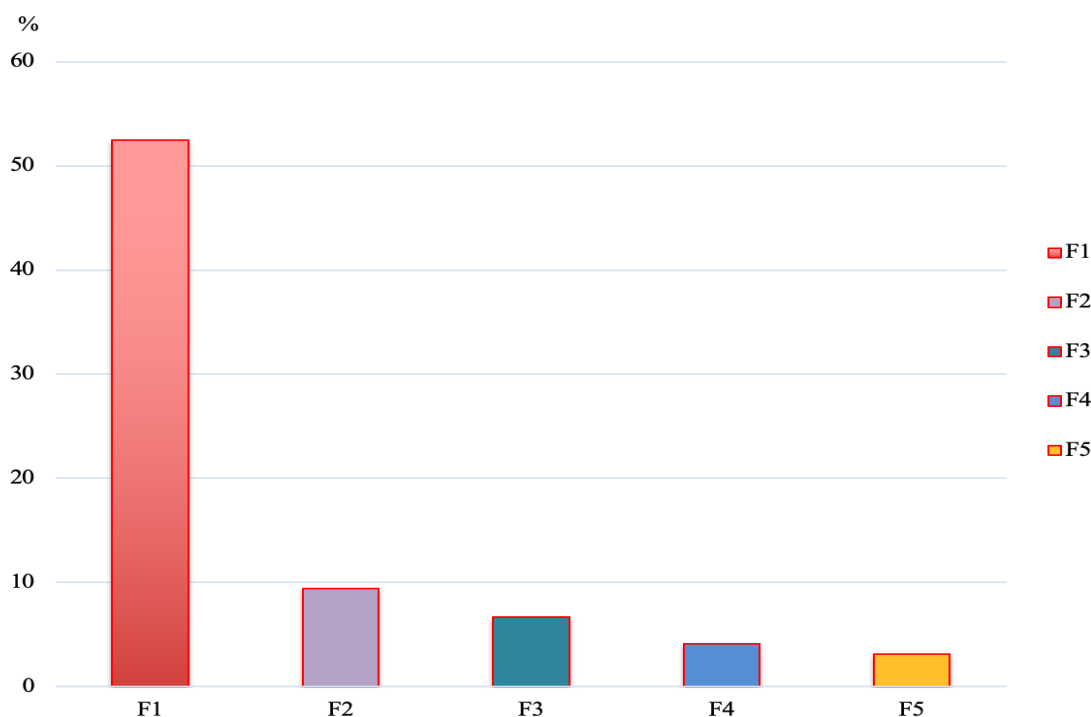
F3 “Sense readiness” of respondents reflects the dependence of innovative pedagogical activities as well as the previous one, only on significant positively loaded values of parameters: LG (.621), GAL (.772). These two parameters belong to the semantic-life orientation of the personality, obviously respondents see the meaning of their life in the chosen activity, hence the name “sense-life readiness”. F3 shows the importance of semantic and vital parameters in the readiness of pedagogical workers for innovations. This factor has a dispersion (6.72%) and is important in the factor structure of readiness for innovative pedagogical activity and has a high semantic and vital self-regulation of innovative pedagogical activity.

F4 “Procedural readiness” of respondents reflects the dependence of innovative pedagogical activity on the positively loaded parameter P (.648) and the negatively loaded parameter IM (-.645). These two parameters outline the respondents’ focus on training activity, which has procedural nature and is accompanied by a predominance of internal motivation. Hence, the name is “procedural readiness”. F4 shows the advantage of the procedural component in the readiness of pedagogical workers for innovations. This factor has dispersion (4.08%) and is also important in the factor structure of the readiness of pedagogical workers of rural secondary schools for innovative pedagogical activities. F4 has high procedural self-regulation of innovative activities.

F5 “Distat-resulting preparedness” of respondents was the dependence of innovative pedagogical activity on the negatively loaded parameter ENM (-.519) and the positively loaded parameter R (.508). The respondent’s readiness to innovate was determined by a combination of

these parameters. As though distancing themselves and responding pragmatically and moderately, such a respondent was goal-oriented and avoided working together. This factor had the least variance (3.12%) and was also significant in the factor structure of pedagogical workers’ readiness for the innovative educational activity. Respondents who had a mental state of readiness F5 might have extremely high performance. Similarly, if the assignments entailed or necessitated teamwork, such pedagogical workers tended to separate themselves and became inactive.

Also, note that other factors have a load that was outside the total variance of the dispersion (less than .988). Thus, according to the results of mathematical processing, four main factors (75.77%) have been presented, which determined the factor structure of readiness of pedagogical workers of rural secondary schools for innovations in pedagogical activity (Fig. 1).



**Figure 1.** Factor structure of readiness of pedagogical workers for innovations in pedagogical activity.

Source: Personal elaboration, 2021.

Note: F1 – “motivational and operational readiness”; F2 – “informational readiness”; F3 – “sense readiness”; F4 – “procedural readiness”; F5 – “distat-resulting preparedness”.

Let’s analyze the interdependence of factors that determine the factor structure of the readiness of pedagogical workers for innovations in

pedagogical activity. Emphasis is placed on the strongest relationships between selected factors (Tabl. 4).



**Table 4.**

*Correlation matrix of factor loads of readiness of pedagogical workers for pedagogical innovative activity (n=118)*

Factors	F1	F2	F3	F4	F5
F1	1.000	.132**	-.119**	-.085*	.056
F2	.132**	1.000	.201**	.137**	.086*
F3	-.119**	.201**	1.000	.038	-.049
F4	-.085*	.137**	.038	1.000	.065
F5	.056	.086*	-.049	.065	1.000

Source: Personal elaboration, 2021.

Note: \*\* – statistical significance of  $p \leq .01$ ; \* – statistical significance of  $p \leq .05$ .

The most significant ( $p \leq .01$ ) are the ratios of F2 and F3 (.201), F1 and F2 (.132). F1 and F2 have the most significant connections with F1, F3, and F4, F5. All connections to F2 are positive. Thus, informational self-regulation is the most important in factor structure of the readiness of pedagogical workers for innovations in pedagogical activity. The most dependent factors in the factor structure are F2 and F1.

### Discussion

The results of the research are confirmed by the facts established by other researchers. The implementation of innovative teaching technologies in primary and secondary schools allows for a deep transformation in the educational process and reform of the primary and secondary education systems, which is in line with previous research (Machynska et al., 2021; Tsiuniak et al., 2020). We agree that the efficacy of the adoption of innovative educational technologies will have a significant impact on the level of higher education in modern society. Innovation in education is necessary to solve those pedagogical problems that have been solved differently so far: as “the result of a creative search for original, non-standard solutions to various pedagogical problems”; as systemic neoplasms arising from various initiatives; as products of innovative educational activities, which are characterized by the processes of creation, dissemination, and use of new methods in the field of pedagogy and research (Machynska, 2018). The study that indicated that physical education teachers with 1 to 5 years of teaching experience are more likely to employ a cognitive teaching approach is empirically fascinating (Fernández-Rivas & Espada-Mateos, 2019). The obtained empirical results also resonate with the study of psychological semantic parameters of innovative states of masters of pedagogy (Tsiuniak et al., 2020). We have reason to say that the results obtained should be applied to pedagogical workers in order to develop a readiness to

innovate in teaching. This will help to improve the quality of change management in the primary and secondary school educational process. The implementation of acquired knowledge will be fundamental during future pedagogical workers' educational and professional training.

### Conclusions

1. The results of research of interdependence of variables and factor structure of readiness of pedagogical workers to innovations in pedagogical activities operationalize the solution of problems in the field of providing educational services.
2. The proposed psychodiagnostic methods relevantly reflect the researched parameters of the subject's criteria: information-conceptual, personal-motivational, evaluation-reflexive, and operational-active.
3. The factor analysis determined the structure of readiness of pedagogical workers for innovations in pedagogical activity, which consists of five main factors (75.77%). It has been found that the main factor is F2 “informational readiness” (9.38%), which is positively interrelated with F1 “motivational and operational readiness” ( $r_s = .132$ ;  $p \leq .01$ ), F3 “sense readiness” ( $r_s = .201$ ;  $p \leq .01$ ), F4 “procedural readiness” ( $r_s = .137$ ;  $p \leq .01$ ) and F5 “distat-resulting preparedness” ( $r_s = .086$ ;  $p \leq .01$ ).
4. It has been substantiated that the structure, variables, and interdependence of factors' structure of readiness of teachers of pedagogical workers for innovations in pedagogical activity are important components of the effective organization of the qualitative and modern educational process. Also, the application of the acquired knowledge is essential during the educational and professional training of future specialists.
5. Further research will focus on a formative experiment of the research of readiness of pedagogical workers for innovations in

pedagogical activity. The research of a specific type of readiness for innovation with the development of an implementation algorithm requires further attention.

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