






Cuestiones psicológicas de la preparación de los docentes para las innovaciones pedagógicas

Psychological issues of teachers' preparation for pedagogical innovations

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Resumen

En el presente estudio se analizó la actitud de los docentes de diferentes especialidades ante las innovaciones en base a diferentes metodologías. Aquí, 48 profesores participaron en la investigación. Durante esta se determinó que la actividad de innovación pedagógica de los docentes se caracteriza por la determinación, la actividad, la conciencia, la motivación, la objetividad, la productividad, el efecto transformador y la preparación psicológica, lo cual se manifiesta en cuatro aspectos: componente motivacional, componente creativo, componente operativo y componente de personalidad. El análisis cuantitativo y cualitativo mostró que el componente motivacional y de contenido de los docentes ($r=0.36^{**}$, $p<0.001$ nivel), componente forma ($r=0.33^*$, $p<0.05$ nivel), componente preparación psicológica ($r=0.42^{**}$, $p<0,001$ nivel), y el componente de practicidad ($r=0,68^{**}$, $p<0,001$ nivel) tienen una relación significativa bilateral. Asimismo, existe una relación entre el componente operativo y el componente de contenido ($r=0,22^*$, al nivel $p<0,05$) y con el componente de practicidad ($r=0,44^{**}$, al nivel $p<0,001$). Al hacer esto, se puede llegar a la conclusión de que los elementos principales de la preparación psicológica para las innovaciones pedagógicas son la motivación, la creatividad y las cualidades de la personalidad. Por ende, la preparación personal comienza con la formación de valores innovadores en la estructura de la personalidad.

Palabras clave: Educación, docencia, pedagogía, psicología, motivación.

Abstract

In the study, the attitude of teachers teaching in different specialties to innovations was studied based on different methodologies. Here, 48 teachers were involved in the research. During the research, it was determined that the pedagogical innovation activity of teachers is characterized by

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purposefulness, activity, awareness, motivation, objectivity, productivity, transformative effect, and psychological preparation manifested in four aspects: motivational component, creativity component, operational component, and personality component. Our quantitative and qualitative analysis showed that teachers' motivational component and content component ($r=0.36^{**}$, $p<0.001$ level), form component ($r=0.33^*$, $p<0.05$ level), psychological preparation component ($r=0.42^{**}$, $p<0.001$ level), practicality component ($r=0.68^{**}$, $p<0.001$ level) has a significant relationship and this relationship is bilateral. There is a relationship between the operational component and the content component ($r=0.22^*$, at the $p<0.05$ level) and with the practicality component ($r=0.44^{**}$, at the $p<0.001$ level). by doing this, we can come to the conclusion that the leading elements of psychological preparation for pedagogical innovations are motivation, creativity and personality qualities. Here, personal preparation begins with the formation of innovative values in the structure of personality.

Keywords: Education, teaching, pedagogy, psychology, motivation.

Introduction

Innovative processes in the educational system are controlled processes related to the creation, perception, evaluation, development and application of pedagogical innovations (Gapanovich-Kaidalova, 2014). It is necessary to take into account that during the introduction of innovations in education, the preparation of teachers and subjects for this process, including psychological preparation, is important (Aliyev & Jabbarov, 2008; Dichkovskaya, 2004; Govindan & Regina, 2018).

Unlike the traditional education system, the declarative and real levels of teachers in today's education are very different. Today's teacher works in a different environment (Havrilova et al., 2021). Schools are more or less adequately equipped with various technological equipment. There is no doubt that the teacher's work tools are not only notebooks, markers, textbooks, chalk, and blackboards. The rate of penetration of educational technology is intensive (Darling-Hammond, 2006). On the other hand, today we have different generations of young people. We are different. We have the most diverse, very often conflicting, and incompatible demands (Tsiulina, 2021). The teacher must know this and act accordingly in the most unexpected situations. If he does not have psychological preparation for changes, he cannot create hope for the future in his students and their demands and create conditions for them to find themselves in life as individuals (Koptyaeva, 2009).

Then, the psychological preparation of teachers for innovations should be considered first of all as a tendency to overcome and eliminate modern difficulties that arise in daily educational activities (Popova, 2009; Rustamova, 2013). This implies a psychological preparation of a teacher

for innovative activity, that should also include the set of qualities that determine his attention to the development of his own pedagogical activity and the activity of the entire school team, as well as the ability to identify actual problems in the education of students, and it should be understood that he should find and implement effective ways to solve emerging problems (Slasten, 1997).

In fact, it should be taken into account that innovative activity does not only involve the application of new educational technologies but also teacher-student relationships, new pedagogical thinking, new personality types, new communication points, etc. should be brought to the center of attention (Aliyev & Jabbarov, 2008). During the psychological preparation, the teacher's adaptation to various innovations should also be taken as a basis for adaptation to the new human relationship, communication process, and teaching process (Marina, 2021; Mendybaeva & Dyusembaeva, 2016).

It should be noted that the main characteristic of psychological preparation for innovation in pedagogical activity is creativity, high responsibility, and creative activity (Gapanovich-Kaidalova, 2014). Based on this approach, it can be considered that the teacher's psychological preparation for innovative activity is determined by his knowledge in the field of pedagogical innovation, necessary professional skills, creativity, self-realization, and self-improvement. In this regard, we will refer more to the components mentioned in the research during the psychological preparation of teachers for innovations.

In this sense, pedagogical innovations, as a crucial component in the structure of psychological training, the teacher's professionalism also plays an important role. They distinguish four levels of the teacher's professionalism: the level of mastery of the profession; level of pedagogical mastery; level of self-actualization and level of creativity in the profession (Aliyev & Jabbarov, 2008). We believe that the teacher's level of professionalism should also be taken into account during psychological preparation for pedagogical innovations. In light of all this antecedents, the main goal in this article is to determine the directions of teachers' psychological preparation for innovations and to reveal the mechanisms of the emergence of new performances in the structure of the teacher's personality.

Methodology

Design

Quantitative approach was used in the research and the type of research important for the quantitative approach was applied by applying relevant methodologies, survey tools, and tests

(Konsitantinov, 2007). At the same time, modified methods were chosen and their inter-test correlation coefficient was $r = 0.75$ (Kulakov, 1999). The research went through several stages: preparation and content of questionnaires; a random selection of respondents using online educational resources; distribution of the questionnaire to the participants identified for response; evaluation of answers, collection of results; the processing of received data; presentation of the results of the research. The main purpose of the research is to conduct a psychological analysis of the components of teachers' psychological preparation for innovations and the predominant components. In the study, necessary questionnaires were prepared to measure psychological preparation.

Participants

The participants of the study were selected teachers who teach in different faculties of Sumgayit State University and with different specializations. The selection was made by random rules. 48 teachers aged 28-60 participated in the study. Among the participants: 24 women 50.0%, and 24 men 50.00%. Each of the teachers of both sexes, who were constantly participating, had an annual teaching load of about 500 hours. Before the study, they were informed and they agreed to participate in the experiment. To ensure the validity of the study, the same number of teachers was taken from each group to ensure the appropriate methodology and representation (Konstantinov, 2006). If we want to reveal the adequacy of the correlation relationship between the signs, then the correlation should be 0.25-0.35 and above, so that we can take more than 35 participants in the selection. Therefore, to determine the correlation relationship, the standardized level of $p < 0.01$ level should be meaningful (Nasledov, 2004). Since the choice in such situations is difficult, it is recommended to use quantitative research approaches in psychological literature.

Instruments

A 10-question questionnaire was prepared in order to study the psychological preparation of teachers for pedagogical innovations. The questionnaire was evaluated by informed experts based on the observation of teachers' lessons according to a 12-point system. It was held in their open classes with the consent of the teachers. The content of the questionnaire is reflected in 4 blocks, each consisting of 3 questions. Here, the main blocks were: attitude to content, attitude to form, psychological preparation, and application of innovations.

At the end of the lesson, the experts evaluated the teacher's pedagogical activity based on these survey questions. Experts are neutral persons and do not know the teachers. Diagnostic card

indicating "Evaluation of the teacher's readiness to participate in innovative activity" (Slastenin, 2018). The diagnostic card assessed the seriousness of teachers' professional and personal qualities on a 5-point scale. Here - 1 point - weak degree of severity; 5 points - the maximum level of quality in professional activity. The test consists of 21 questions and includes 4 block criteria: motivation component (6 questions), creativity component (4 questions), operation component (8 questions), and personality component (3 questions). In the end, the questions of each criterion are checked and evaluated based on it.

Based on the obtained results, conclusions are made about the level of psychological preparation of teachers for innovative activity: high level - from 84 to 71; average level – from 70 to 55; low level - less than 55 points. To test its reliability, a dichotomous scale was used with the categorical option “Yes” and “No” indicating a favorable and unfavorable item, respectively. A favorable item means that the object is objectively structured and can be positively classified into a thematic category. He recommended a minimum acceptable Kappa of 0.60 for interrater agreement. Unfortunately, face validity is arguably the weakest form of validity, and many would suggest that it is not a form of validity in the strictest sense of the word (Breweton & Millard, 2001).

Data collection

The study began with an empirically derived and validated approach to the problem; permission was then sought from the educational institution and teachers to access the information through a documentary submission required by the authority. Once agreed upon, the instruments were applied so that the data could be entered into SPSS 22 statistical software for differential analysis according to the proposed objectives. Tables were used to provide a clear focus when the results were processed.

Analysis of data

The data obtained from the questionnaire and methodology were collected and analyzed by the SSPS 22 computer program. In order to study the psychological preparation of teachers for pedagogical innovations, a 10-question questionnaire was prepared, and the purpose here was to study the practical doubts of teachers' attitudes to education. A diagnostic card was also used to assess the teacher's readiness to participate in innovative activities and to understand psychological preparation (Slastenin, 2018). These tools allow pedagogical innovations to qualitatively study and

analyze the psychological preparation of teachers and identify the main components of psychological preparation.

Ethical criteria

In this study, the ethical principles given to psychological research were taken into consideration, and the requirements were tried to be fulfilled. At the same time, the international ethical aspects of research to benefit others and do no harm to anyone were taken into account, so the results are aimed at achieving the goals for the benefit of the participants under no circumstances. Also, there was no change in the psychological and physical condition of the participants, and the factors that caused it was neutralized (Kharlamov, 2014). The consent of each of the participants in the study was obtained and the instruction to do them no harm was brought to their attention. Finally, the results from the study were guaranteed confidentiality and non-disclosure and were sent for study purposes only.

Results

Initially, to determine the levels of the use of pedagogical innovations, a 12-question and 4-block instrument containing various components of education was used. Here, the main criteria - attitude to the content, attitude to the form, psychological preparation, and application of innovations - were selected and each of them was covered by 3 questions. At the end of the lesson, independent experts evaluated the teacher's pedagogical activity based on these survey questions. The results are reflected in Table 1.

Table 1*Indicators of expert assessment of levels of use of pedagogical innovations (N=48)*

Main components	Levels of relation	Evaluation indicator (1-10 point scale)	Number of teachers	Percentage
Content component	Traditional	1-6	14	29.17
	Innovative	1-9	34	70.83
Form Component	Traditional	1-7	26	54.16
	Innovative	1-10	22	45.84
Psychological preparation	higher	1-9	28	58.34
	lower	1-6	20	41.66
Practicality Componenti	Traditional	1-7	23	47.92
	Innovative	1-9	25	52.08

As can be seen from Table 1, expert evaluations on the main components differ in teachers' attitudes towards innovations and the educational behaviors they demonstrate during practical lessons. In terms of traditionality and innovativeness, innovativeness prevails in evaluations of pedagogical innovations on the content component (70.83). Most teachers, i.e. 34 people, preferred innovative content.

In other words, they gave priority to action and interaction in the presentation of the lesson and brought to the center of attention the important points for the organization of the modern lesson in terms of content. But when we analyzed the other component, the form component, we encountered a certain paradox. The percentage indicators of those who use the traditional form (54.16) are higher than those who use the innovative form (45.84). This fact suggests that innovative teachers use the traditional method or an integration of both. This is methodologically wrong.

As can be seen from Table 1, when analyzing the psychological preparation component, it was determined that the majority of teachers (58.34) are psychologically ready for innovations and are inclined to perceive innovations. The analysis of the practical component showed that the difference between the demonstration of practical behavior and the practical use of pedagogical innovations is not so great (47.92; 52.08). However, there is a great need to create a favorable

educational environment for using active learning methods, applying new technologies, creating feedback, and reducing the impact of emotional triggers.

In particular, the organization of teamwork in the development of tasks is not acceptable for both traditional teachers and innovators. This fact tells us that the change of content and form and the introduction of innovation must create a single context for both components. The introduction of new methods necessitates the creation of a new creative environment.

A diagnostic card (Slastenin, 2018) indicating "Evaluation of the teacher's readiness to participate in innovative activities" was used to further clarify the obtained data. The diagnostic card evaluates the severity of the professional and personal qualities of teachers on a 5-point scale. The subjects were asked to fill out the diagnostic card "Evaluation of teacher's readiness to participate in innovative activity". The respondents had to evaluate the preparation criteria on 21 parameters on a 5-point scale: individual motivation and creative orientation, teacher's creativity, teacher's professional skills to implement innovative activities, and teacher's personal characteristics. The obtained results are reflected in Table 2.

As can be seen from Table 2, the motivational component prevails during the psychological diagnosis of preparation for pedagogical innovations (41.66). the maximum score was collected for this component, which indicates that the motivation component is of leading importance. The second dominant component is the creativity component (25.00).

Table 2

Psychological diagnosis of preparation for pedagogical innovations (N=48)

Criteria	Evaluation	Number of teachers	Percent
Motivation component	>55<84 (max 30)	20	41.66
Creativity component	>55<84 (max 20)	12	25.00
Operational Component	>55<84 (max 40)	5	10.42
Personality Component	>55<84 (max 15)	11	22.92

An increase in motivation and the manifestation of the creativity factor is a condition for the perception of innovations. Also, we can highlight this fact as the main component of teachers' preparation for pedagogical innovations. In order to determine the levels of readiness for pedagogical innovations, we considered it appropriate to rank the obtained materials on three levels. In Table 3 we can see that.

As can be seen from Table 3, points that coincide with previous analyzes are evident. The motivation component, which is the main component, exceeds the others: high level (67.32), medium level (23.00), and low level (9.68). This fact confirms that the psychological preparation of teachers for pedagogical innovations is high in terms of motivation. In addition, the personality component is also the leading element. Personality qualities are essential for psychological preparation. For example, responsibility, purposefulness, self-confidence, etc. Indicators of personality components: high (59.63), medium (31.38), and low (8.99).

Table 3

Levels of psychological preparation for pedagogical innovations (N=48)

Levels	Motivation component	Creativity component	Operational component	Personality component
Higher	67.32	54.46	46.69	59.63
Average	23.00	26.32	30.35	31.38
Lower	9.68	19.22	22.96	8.99

In order to determine the reliability of the data obtained as a result of our quantitative analysis, qualitative analysis was also used to reduce the relationship between the levels of psychological preparation for pedagogical innovations and educational components.

Table 4*Relationship between psychological preparation for pedagogical innovations and training components*

Training components	Components of psychological preparation for pedagogical innovations (N=48)			
	Motivation component	Creativity component	Operational component	Personality component
Content component	0,36**	0,28 **	0,22*	0,38**
Form component	0,33*	0,34**		
Psychological preparation	0,42 **			-0,32**
Practicality component	0,68**	0,24*	0,44**	0,46*

Note : ** Relationship is significant at 0.01 level, * at 0.05 level.

The results are reflected in table 4. As can be seen from Table 4, teachers' motivation component and content component ($r=0.36^{**}$, $p<0.001$ level), form component ($r=0.33^*$, $p<0.05$ level), psychological preparation component ($r=0.42^{**}$, $p<0.001$ level), there is a significant relationship between practicality component ($r=0.68^{**}$, $p<0.001$ level) and this relationship is bilateral.

In addition, there is a significant relationship between the creativity component and the content component ($r=0.28^{**}$, $p<0.001$ level), and the psychological preparation component (the practicality component ($r=0.24^*$, $p<0.05$ level), and this relationship is bidirectional. There is a relationship between the operational component and the content component ($r=0.22^*$, at the $p<0.05$ level) and with the practicality component ($r=0.44^{**}$, at the $p<0.001$ level).

Between personality component and content component ($r=0.38^{**}$, $p<0.001$ level), form component ($r=-0.42^{**}$, $p<0.001$ level) and practicality component ($r=0.46^*$, p) at the <0.05 level. It can be concluded that the psychological preparation of teachers for pedagogical innovations has more than two components. One of them is the motivational component and the other is the personality component. These two factors should be taken as a basis to ensure psychological preparation.

The analysis of the results showed that the majority of survey participants (85%) assessed the level of readiness for participation in innovation activities as high, and the remaining 15% as

average. Comparison of average values with readiness indicators made it possible to rank them. In the psychological preparation of teachers for pedagogical innovations, several aspects can be taken as the basis, which can be listed in the following order:

- the desire to develop oneself; the ability to cooperate; responsibility.
- interest in creative activity; research skills.
- motivation to succeed.
- reflexivity; efficiency in creative activity.
- the ability to make valuable judgments; willing to analyze their own activities.

At the same time, the ability to abandon stereotypes in pedagogical activity, the ability to overcome thought inertia, the ability to create a creative lesson, etc. can be taken as a basis. The teacher's professional levels are the leading motivations in the main methodological direction, personal values, orientation to the future, etc.

Discussion

In our study, the determination of the main directions of psychological preparation for pedagogical innovations showed that psychological preparation for pedagogical innovations is determined by various factors. According to the researchers, the application of transmedia technology in the psychological preparation of teachers for pedagogical innovations contributes to the qualitative development of their professional competence, the expansion of their worldview, and the improvement of their professional skills (Havrilova, 2021). At the same time, many researchers believe that one of the most important aspects leading to innovation is the use of information and communication technologies by teachers in the classroom (Ibieta, 2017).

For the other hand, the psychological preparation of teachers and students to implement educational innovations is presented as an integrative formation that combines the manifestation of individual, personal, and subjective characteristics in their entirety, the presence of functional and personal preparation of personality to implement educational innovations (Kravchuk, 2020). Of course, these studies do not deny our results. We determined that the leading elements of psychological preparation for pedagogical innovations are motivation, creativity, and personality qualities. Here, personal preparation begins with the formation of innovative values in the structure of personality. Of course, in order to achieve the expected result, it is necessary to have a certain psychological attitude, dominant motives, and orientation (Gapanovich-Kaidalova, 2014).

Many believe that it is appropriate to define the following components in the structure of the psychological preparation of teachers and students to implement educational innovations: emotional motivation, cognitive goal, orientation, action-operation, moral, communicative, voluntary, mobilization, evaluation-result (Honcar et al., 2021). These approaches are identical to the results of our research. During the study, the existence of the main components of psychological preparation for pedagogical innovation was fully confirmed, as we assumed, and it was also proven in other studies. However, in addition to this, there are a number of studies that contradict our study, in which different ideas about the perception of pedagogical innovations are found.

Innovative processes in education are considered in three main aspects: socio-economic, psychological, and pedagogical, and organizational and managerial. The general climate and conditions in which innovation processes take place to depend on these aspects. The existing conditions can facilitate or hinder the innovation process. The innovation process can be both spontaneous and consciously controlled. The introduction of innovations is, first of all, a function of managing artificial and natural processes of change.(Yurchenko et.al, 2021).

Studies of innovative processes in education have revealed a number of theoretical and methodological problems: the ratio of traditions and innovations, the content and stages of the innovation cycle, the attitude to innovations of different subjects of education, innovation management, personnel training, the basis for criteria for assessing the new in education, etc. These problems need comprehension of a different level - methodological. The substantiation of the methodological foundations of pedagogical innovation is no less relevant than the creation of innovation itself (Biddiscombe, 1999). But along with all this by psychological readiness, many researchers understand the stable mental state of an individual or a team, which is formed as a result of understanding the content and significance of new standards and is expressed in a pively active attitude towards innovation (Alfred et.al., 2004).

Readiness is not based only on the installation, it is based on the awareness of the content of the innovation, its personal and collective significance, and the goals and ways of participation of the individual or the team in the innovation (Chekunova, 2010). Based on the foregoing, we can conclude that at the present stage the problem of developing the psychological readiness of the teacher for innovation is relevant. However, it is often formed through external factors not related to changes in the subject itself. The internal, subjective components of the development of readiness for any kind of activity, hence the temporary nature of the result and the impossibility of achieving the desired goal. Among specialists in education, there is still no clear and clear

understanding of what internal psychological components and in what ways need to be influenced in order to develop psychological readiness (Gornostaev, 2005).

The interest of practitioners in science is obvious in relation to the study of this phenomenon, its psychological and socio-psychological mechanisms, and ways to prevent unpreparedness (Frantseva, 2001). Even so, it can be said that the leading elements of psychological preparation for pedagogical innovations are motivation, creativity, and personality qualities. Here, personal preparation begins with the formation of innovative values in the structure of personality.

Limitations and further research

There are a number of limitations in the study of the psychological preparation of teachers for pedagogical innovations. Thus, this study covered a small number and small range of respondents, and despite the consideration of the laws of the selection process, including smaller groups and people with different positions. However, this study may suggest a new methodological approach for future research and lay the groundwork for the adoption of more variables in the research process. This study can provide suggestions for future research and identify new indicators of psychological readiness for pedagogical innovation. In addition to all this, during our research, the pedagogical innovation activity of teachers was characterized by purposefulness, activity, awareness, motivation, objectivity, productivity, transformation effect, and the determination of the necessary components of psychological training (motivation, creativity, operation, personality components) can create.

Conclusion

Thus, based on the results of the research, a number of conclusions can be drawn: teachers rate the level of preparation for pedagogical innovations quite high; The highest level of motivation among the subjects is the individual's orientation towards creativity. These criteria are mentioned as the main indicators of psychological readiness for innovative activity. As a result, despite teachers' willingness to participate in innovative activities, they do not have sufficient knowledge and skills to successfully implement this activity, or they are unable to create a conducive learning environment. It is necessary to create problematic situations in the learning process necessary for modern education, as well as to ensure participation in activities of personal importance for teachers.

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