



## **Características psicológicas de la percepción de los estudiantes sobre la innovación en el proceso formativo**

### **Psychological characteristics of students' perception of innovation in the training process**

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#### **Resumen**

En la presente investigación se estudiaron las cuestiones psicológicas de la percepción de las innovaciones de estudiantes de diferentes especialidades a través de diversos métodos y cuestionarios. Participaron en la investigación 162 estudiantes de diferentes universidades y con diferentes orientaciones profesionales. El estudio mostró que, si las innovaciones preferidas en educación están relacionadas con la introducción de nuevas tecnologías, este factor para la sociedad está relacionado con la presencia de salarios altos y condiciones de trabajo aceptables. Se concluyó que una serie de rasgos de personalidad —incluida la iniciativa y la practicidad— juegan un papel importante en la percepción de las innovaciones. Sin embargo, en el proceso de aceptación de la innovación, la asunción de riesgos y la preparación psicológica que permita percibir las innovaciones son los principales elementos protagónicos. El estudio mostró que existen diferencias en el proceso de percepción de la innovación entre estudiantes de alto y bajo rendimiento académico, y estas diferencias son significativas al nivel de  $p \leq 0,01$ . Para estudiantes con altas actividades prácticas y habilidades académicas, la aceptación de la innovación se caracteriza por estilos prácticos y empresariales; y para estudiantes con altas habilidades académicas y prácticas, el aspecto de percepción líder se caracteriza por cualidades prácticas y de gestión.

**Palabras clave:** innovación, mecanismos perceptivos, rasgos de personalidad, iniciativa y gestión

#### **Abstract**

In this research, the psychological issues of the perception of innovations of students from different specialties were studied through various methods and questionnaires. 162 students studying at different universities and having different professional directions participated in the research. The study showed that if the preferred innovations in education are related to the introduction of new technologies, this factor for society is related to the presence of high wages and acceptable working

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conditions. It was concluded that a number of personality traits, including initiative and practicality, play an important role in the perception of innovations. However, in the process of accepting innovation, risk-taking and psychological preparation that allows to perceive innovations are the main leading elements. The study showed that there are differences in the process of perception of innovation between students with high and low academic achievement, and these differences are significant at the  $p \leq 0.01$  level. For students with high practical activities and academic abilities, innovation acceptance is characterized by practical and entrepreneurial styles, and for students with high academic and practical abilities, the leading perception aspect is characterized by practical and managerial qualities.

**Keywords:** innovation, perceptual mechanisms, personality traits, initiative and management

### Introduction

In modern times, various ways and means are used to increase the effectiveness of learning activities and the formation of a creative personality (Rakovskaya, 2012). The main task is to ensure the formation of students as individuals, to increase their cognitive activity during the reform and to motivate them to succeed in training (Pasmurtseva, 2008; Molchanova, 2005; Markov, 2005). For the other side, education changes with society, and it is part of society. What happens in society manifests itself primarily in education. Therefore, any changes in education, including the requirements of society, social orders must be taken into account during the reform (Jabbarov et al. 2020).

The fact that teachers create a change in the way of thinking of students, the formation of creative innovative thinking, on the one hand, creates the basis for the understanding of new educational technologies, on the other hand, for self-realization and success (Khabaeva et.al., 2015). In this regard, innovations in the field of education, innovative strategies and technologies attract more attention (Kelchevskaya, 2004). It should be taken into account that the application of innovations contributes to the development of various areas of human life. According to Sovetova (2000), innovation acts as a form of controlled development (Sovetova, 2000). It is the innovative technologies that create the basis for the control of the development in the field of education and the dynamic development of the society. Technological innovation is defined by most authors as "a complex system in which an idea or image becomes an object of commercial activity" (Oglevoy, 2001).

The growing importance of higher education is related to the dominance and strengthening of the innovative vector in the development of the world economy (Baynev, 2007). The education

system creates the intellectual potential that conditions the development of the knowledge economy, which necessitates the application of fundamental innovations (Eroshin, 1996). This creates conditions for obtaining new scientific achievements, as well as their application in practice, increasing productivity (Aliyev & Jabbarov, 2008).

Innovation processes taking place in the economy of the Republic of Azerbaijan depend on the degree of development of innovative activity in the field of education (Demirci, 2012; Eroshin, 1996). Therefore, today there is a great need to train specialists who constantly develop their scientific and innovative activities, commercialize scientific research and developments, as well as strengthen the transfer of innovative technologies to the real sector, increase their competitiveness and efficiency (Demirci, 2012; Eroshin, 1996). The possibility of the strategy implies the productive interaction of the participants of the educational process and the ability to solve large-scale creative tasks (Rakovsakaya, 2012).

### *Literature review*

The existing approaches to “innovative strategy” and its perception made it possible to identify a number of significant shortcomings, manifested by the lack of a systematic approach in this area (Santo, 1990; Yankovski, 2001; Mustyats, 2009; Pasmurtseva, 2008). The definition of this term, as well as the content presented in the scientific circulation, is expressed as innovative strategies or scientific-technical achievement. No serious attention is paid to the psychological mechanisms of how to perceive the novelty, its regularities.

The process of perception and assimilation of innovations is a very complex and contradictory process. Various psychological factors affect the perception of new information and trends. Researches conducted in this direction in the last twenty years have a systematic character. Of course, the wide scope of those studies makes it possible for some of them to be ignored. However, although it is beyond the scope to review the full picture of this wide field of research, it is possible to analyze several basic models related to the psychological components of innovation perception (Meade & Islam, 2006) .

Fred et al. (1989) study showed that the model of perception of new technologies includes a number of psychological elements. These elements help to reveal the psychological reasons for the perception of information by the subject and make it easier to predict its progress. This approach refers to grounded psychological theory to understand perceived behaviors related to new

information technologies through the attitudes and subjective beliefs of information perceivers (Fishbein & Ajzen, 1975).

A more important psychological model related to the perception of innovations is the theory of planned behavior, implemented by applying an additional component of behavioral control (Ajzen, 1991). Additional psychological factors, including social influence (Venkatesh & Davis, 2000), trust and risk (Pavlou, 2003), were also included during the improvement of the model. However, this model cannot be considered a perfect model because it does not fully cover the role of emotional, social and cultural components (Bagozzi, 2007).

For the other hand, perception of innovations is similar to the ability to reflect the new and fit it into the image of the world. In such a case, the joint activity of the participants has an important impact on this process and motivates everyone. Belousova (2002) showed that during the solving of problems, there is a division of roles in the implementation of joint mental activity in groups. Accordingly, joint psychological activity is possible in the form of distribution of role functions between participants: generalization, selection, transfer of meaning, realization. These functions correspond to role positions: generator, critic, coordinator and executor. The positive effect expected from innovative changes is affected by the innovative climate in the application area (Sovetova, 2000). A great innovation cannot succeed unless it is supported both from above and below, because the potential benefits may not always be clear to people.

According to the authors who studied the problem (Sovetova, 2000; Titov, 2001; Tereshenko, 2001), the analysis of personal qualities characteristic of the innovative personality allows us to talk about the presence of behavioral flexibility, which depends on his ability to take risks and the ability to assess the future. These are not situational characteristics and are sufficiently entrenched in the structure of personality. Because those qualities have a serious impact on decision-making. Based on the mentioned strategies, we can hypothesize that students' innovation strategies in the learning process depend on the psychological characteristics of their perception, their personality qualities, and the degree of risk propensity.

## **Methodology**

### ***Design***

The quantitative approach was used as a methodological direction in the research and the appropriate type of research was applied (Akalın, 2007). Appropriately tested experimental methods were also used (Gorghiu et al. 2015). The main goal of the research is to study the basics of students' perception of innovations, to analyze the degree of students' perception of possible innovations. At the same time, the methodological direction is mainly to reveal the psychological features of the perception of the innovations of the requirements, to direct different ideas related to the subject in the direction of comparison. Since it is difficult to directly measure the content of perception, the degree of students' understanding of innovations from different perspectives can be considered as a criterion for us, and a questionnaire was prepared accordingly.

### ***Participants***

The participants of the study were 162 students aged 18-24 who studied in the 3rd year of different faculties of different universities in Azerbaijan (Azerbaijan University, Azerbaijan State Pedagogical University). Among the participants: 86 young students, 53.08% were girls, 76 were young boys, 46.92%. 90.30% of regularly attending students of both sexes participated in classes. They were informed and agreed. In addition, the requirements were selected in three categories: economists, psychologists and lawyers. 53 people were selected for economics, 54 people for psychology, and 55 people for jurisprudence. Approaches used in quantitative research are recommended in the methodological literature due to the difficulty of sampling. Because the selection criteria are based on 2 situations and cover more than 4 subgroups, it reduces the validity of the study (Onwuegbuzier et al. 2012).

### ***Instruments***

We used 5 questions to find out the attitude towards innovation. A questionnaire was prepared for this. The main criteria were how the indicators of innovation in education were in view of the requirements, and because of this, open waters were set. For each question, scores characterizing the adoption of innovative technology by students were calculated. Also, a number of tools were

used to determine the dependence of students' perception of innovativeness on personality type, risk propensity and belief in success.

I. The following questions were asked to exclude demographic factors:

1. How do you understand innovation in education?
2. What factors are necessary for the realization of innovations in the professional field?
3. Which classes are innovative enough?
4. How do you see innovation in your future veil field?
5. What is the leading motivation in your professional activity?

Prepared questions are open-ended and the words written by the respondents are not limited by the quota.

II. Diagnostic methodology of risk readiness (Shubert, 2017). Schubert's risk readiness questionnaire indicates your willingness to take risks and how necessary and appropriate your risk is. The Schubert test will also reveal the causes of mistakes in everyday life and allow you to adjust your behavior to achieve greater success with less energy. The test consists of 25 questions, and while answering each question, you were asked to write the corresponding score according to the scheme below:

- 2 points - I completely agree, complete "yes";
- 1 point - more "yes" than "no";
- 0 points - neither "yes" nor "no", something in between;
- -1 point – more "no" than "yes";
- -2 points - completely "disagree" (Schubert, 2017)

III. Methodology for studying motivation to achieve success and avoid failure (Ehlers, 2010). The questionnaire is designed to diagnose the individual's motivational orientation to achieve success. The stimulus material consists of 41 statements, to which the subject must answer either "yes" or "no". The degree of motivation for success is evaluated by the number of points corresponding to the key. The result of the "Motivation to succeed" test should be compared with the results of the "Motivation to avoid failure" test (Khabaeva et al., 2015).

Since it is difficult to find any independent criterion that lies outside the methodology to determine theoretical validation, and therefore unfounded statements about the validity of this methodology were previously taken for granted. Since theoretical validation is aimed at proving that the technique measures exactly the property that it should measure. For theoretical validation, the cardinal problem is the relationship between psychological phenomena and their indicators, by means of which these psychological phenomena are trying to be known. It shows that the author's intention and the results of the technique coincide (Anastasi, 1982).

### ***Data collection***

The research was conducted in September and October 2021 and covered various faculties of Azerbaijan University and Azerbaijan State Pedagogical University. The study was conducted in a traditional manner and 162 people participated. The study began with an empirically derived and validated approach to the problem; permission was then sought from the educational institution to access the information through a documentary submission required by the authority. Once agreed, the instruments were applied so that the data could be entered into SPSS 22 statistical software for differential analysis according to the proposed objectives. After processing, they are clearly presented and summarized in tables with necessary analysis and comments.

### ***Statistic procedure***

The data from the questionnaire and methodology were coded and analyzed with the “SSPS 22.0” computer program. A questionnaire was used to determine and evaluate the psychological characteristics of innovation acceptance, the Shubert (2017) method to study the psychological readiness for innovation perception and risk propensity, and the Elis (2010) method to evaluate success motivation were used. These methods encourage the qualitative analysis of innovation acceptance and the clarification of its psychological mechanisms.

First, a normality test was performed to determine the distribution of the data. In the first stage, the data were formally analyzed, in the second stage, the skewness and kurtosis values of the data were checked, and in the third and last stage, the Kolmogorov-Smirnov test was applied to the data. As a result of the tests conducted on the data obtained during the study, it was observed that the data collected through the scale showed a normal distribution, therefore, parametric statistical methods were used for further analysis. In this context, Anova test and Pearson Correlation

analyses were used in the research process. In addition, Cronbach Alpha coefficients for the data set were calculated to determine the level of "reliability" of the scales.

***Ethical criteria***

An ethics committee was involved prior to this study; In addition, international ethical aspects of beneficence and non-maleficence of the study were taken into account, so the results are aimed at achieving the goals for the benefit of the participants without any intention to harm under any circumstances. Likewise, his physical or mental condition was not impaired (Fouka & Mantzourou, 2011). Since willingness to participate in research is subject to informed consent and consent (Weinbaum et al. 2019), the principle of autonomy was also taken into account. Finally, the research data was declassified so that the data obtained (demographic data) was sent only for study purposes and not to third parties.

**Results**

In order to distinguish the psychological mechanisms of the perception of innovations in education, we first based on the hypothesis that students who perceive innovations more actively have a higher level of risk readiness and motivation to achieve success.

**Table 1**

*Indicators of attitude of students studying in different specialties to educational innovations*

No.	Expression	Factors	Percent	Frequency
1.	How do you understand innovation in education?	As the introduction of new technologies	62.36	101
2.	What factors are necessary for the realization of innovations in the professional field?	existence of the labor market, business conditions, new knowledge	53.12	86
3.	Which classes are sufficiently innovative?	Giving new knowledge, forming new skills	73.60	119
4.	How do you see innovations in your future profession?	Career background, performance update, self-expression	48.56	78
5.	What is the main motivation in your professional activity?	High wages and normal working conditions	76.10	123



For this purpose, a 5-question questionnaire consisting of the first block was compiled and we analyzed it in order to study the attitude to innovation in education. Quantitative analysis of the study allowed us to clarify a number of points. In Table 1, we can get acquainted with the indicators. As can be seen from Table 1, the attitude of the requirements for studying in different specialties to innovations, including the attitude to educational innovations, is ambiguous. In relation to educational innovations, more preference is given to the application of new learning technologies (62.36; 101). The existence of a labor market, business conditions, and the application of new knowledge are considered essential for the realization of innovations in the professional field (53.12; 86). In the question about the innovativeness of the lessons, the main focus is on imparting new knowledge and forming new skills (73.60:119).

The attitude towards innovations in the field of the future veil is entirely focused on building an individual career, updating performance and self-expression (48.56; 78). Regarding the evaluation of the leading motivation in the professional field, the majority of students consider high salary, the existence of the labor market, business conditions, etc. based on points such as (76.10; 123). Quantitative analysis showed that students' perception of innovations in education is identical to innovations perceived by society and presents itself as an indicator of the direct influence of this society on education.

In the study, it was conducted a qualitative analysis of the results using Schubert's method and Alice's method, recognizing that the psychological readiness and success of risk is the main factor based on the mechanisms of innovation perception. Based on the answers to the requirements, three levels were formed: adoption of innovations at high, medium and low levels. The obtained results are presented in table 2.

As can be seen in Table 2, there are certain similarities in the tendency to perceive innovations of requirements for different specialties. Those who accept innovations and consider them as a key factor in the development of the profession are characterized by high psychological preparation (28.25), high risk propensity (13.18) and high success indicators (29.10) for biology teaching. A high level of adoption of innovations is acceptable for all three specialties: biology teachers, psychologists and lawyers. At the average level, most (52%; 52%; 50%) groups have a cautious or neutral perception of innovation, an average level of risk propensity (5.34; 5.36; 5.56) and indicators of success (29.30; 27.60; 30.90) in all three specialties. In the third group of students who do not accept innovations, we observe a low level of risk propensity (-2.25; -4.30; -2.36) and

a high level of success (30.83). If we compare the requirements of the three majors, we see that students who adopt innovation show a lower propensity to take risks than students who do not adopt innovation or who do not adopt it poorly. It can be suggested that there is a dependence between the psychological readiness of the demands of the adopters of the innovation, the tendency to risk and the motivation to achieve success, and this dependence is two-way. Although the indicators of psychological preparation and success are adequate in the requirements that do not accept innovations, their tendency to risk is at a low level. Therefore, not only cognitive abilities, but also personality qualities play an important role in the perception of innovations.

**Table 2**

*Indicators of risk propensity, success indicators and psychological readiness of students who accept innovations at different levels (n=162)*

Qualifications	Levels	Expressed as a percentage	Psychological preparation to perceive novelty	Indicators of risk appetite	of	Levels of success indicators	
Economics	Higher	12.00	28,25*	13,18*	11,13*	29,10*	127,33*
	Average	50.00	14,26*	5,56*		30,90*	
	Lower	38.00	11,76*	-2,36*		28,46*	
Psychology	Higher	11.00	25,51*	12,18*	11,13*	26,17*	127,33*
	Average	52.00	18,20*	5,36*		27,60*	
	Lower	37.00	11,27*	-4,30*		28,44*	
Jurisprudence	Higher	15.00	28,24*	10,17*	11,13*	28,12*	127,33*
	Average	52.00	18,52*	5,34*		29,30*	
	Lower	33.00	12,37*	-2,25*		30,83*	

\* Differences are significant at  $p \leq 0.05$  and  $p \leq 0.01$  level of statistical significance.

It is known that the abilities of perception are determined by the qualities of thinking. It has also been determined that thinking qualities, especially critical thinking levels, create barriers to understanding innovations in many cases. In this regard, we considered it appropriate to analyze the obtained data from this aspect as well. Also, motivational orientations allow us to perceive innovations in education and determine orientation. The results are reflected in table 3.

**Table 3***Motivational characteristics of students' perception of innovations in different specialties (n=162)*

Qualifications	Personality traits	Achievement motives	Failure avoidance motives	Orientation of motives			
				Self-focus	Relation focus	Task focus	
Economics		15.20	14,60	29,70	31,22	34,90*	
	Enterprising						
	Practical	14,80	15,38*	15,38*	33,63*	31,06*	24,4325
	Critic	13,12*	13,5	30,90	28,37	29,34*	
Psychology	Enterprising	16.80	14,23	31,90	29,93	34,75*	
	Practical	15,75	13,38*	15,38*	33,63*	31,06*	24,2325
	Critic	13,38*	15,31	30,15	28,53	29,79*	
Jurisprudence	Enterprising	15.38	13,42	31,70	31,21	32,74*	
	Practical	12,84	14,92*	15,38*	33,63*	31,06*	26,8225
	Critic	16,73*	15,28	28,66	28,65	29,59*	

Note: \*Differences are significant at  $p \leq 0.05$  and  $p \leq 0.01$ .

As can be seen from Table 3, attention to the task (34.90; 34.75; 32.72) and motivation to achieve success over avoiding failure (14.60; 14.23; 13.42) are typical for students with practical personality traits. For students with a practical personality trait, problem solving is motivated by success motivation, which makes them see elements of success in innovation. In the platform of motivational qualities, requirements from all three specialties with proactive characteristics are more focused on task performance. Their personality traits motivate them to solve the task more than self-concept, which increases the frequency of their perception of innovation.

Avoidance of failure (14.60; 14.23; 13.42), achievement motives (15.20; -16.80; -15.35) and self-direction (29.70; 31.90; 31.70) prevail among the motivational qualities of the requirements from all three majors with critical features. Often, requests with such characteristics manipulate events before they perceive them and pass them on to the thought filter. They often stand in a neutral position because they do not consider every innovation valuable in terms of motivation. It can be shown that the requirements that are more accepting of innovation act as initiators when they direct it to the object of cognition, the goal of self-realization, and the solution

of the set task, and there is a significant relationship between these qualities and the content of perception of innovation (at the  $P \leq 0.05$  level). The element of motivation that determines the activity of students with innovative features is the type of motivation directed to the event and situation. These students are dominated by content-processual motives.

During the research, the achievements of the requirements were taken as a criterion to determine the characteristics of the perception of innovations in fact-finding. At this time, a low or high level of academic success was taken as achievement. Here, as a main point, requirements with certain business abilities engaged in practical activities were also studied. The academic achievements of those students were taken as a basis. These abilities include the ability to successfully and quickly solve tasks in any activity environment, use new knowledge and skills, and use new methods when using new knowledge and skills in their activities.

These aspects were not related to the personality profile of students with low academic achievements and practical work. Table 4 shows that initiative (44.38; 45.38; 42.33) and practical orientation (45.27; 42.20; 45.11) dominate the personality qualities of students with high academic achievements and practical activities, as well as management qualities (34.52; 36.38; 37.44). and the critical style (37.20;34.90;33.24) is characterized by not being clearly expressed. In the system of personality qualities, the characteristics of management (44.00; 43.86; 42.12), practical thinking style (42.30; 43.50; 43.48), initiative (35.15; 32.14; 36.15) and critical approach prevail (38.17; 33.56) for those with low academic abilities and practical activities. ; 34.26).

**Table 4**

*Characteristics of newness perception of requirements with high and low academic and practical achievements in specialties*

Qualifications	Levels	Personality qualities			
		Enterprising	Critic	Manager	Practical
Economics	Higher	44,48*	45,38*	42,33*	37,20
	Lower	35,15*	32,14*	36,15*	38,17
Psychology	Higher	33,24	33,56	34,52*	36,38*
	Lower	34,90	34,26	44,00*	43,86*
Jurisprudence	Higher	37,44*	45,27	42,20	45,11
	Lower	42,12*	42,30	43,50	43,48

Note: differences are significant at the level of statistical significance  $p \leq 0.05$  and  $p \leq 0.01$ .

It can be concluded that there are differences in the process of perception of innovations between students with high and low academic achievements, and these differences are significant at the  $p \leq 0.01$  level. For students with high practical activities and academic abilities, the leading cognitive style is characterized by practical and entrepreneurial styles, and for students with low academic and practical abilities, the leading cognitive aspect is characterized by practical and managerial qualities. The study showed that the differences between the perception of innovation in all three groups are general trends, but there are important personality and thinking styles that are the main mechanisms of the perception of innovation.

Also, the study showed that the maximum difference in values in all three groups was in initiative (in students with high academic abilities - 44.38; 45.38; 42.33, in demands with excess - 35.15; 32.14; 36.15) and management (high - 34.25; 36.38; 37.44, in low - 44.00; 43.86; 42.12) was reflected in special provisions. Summarizing the obtained results, it can be argued that the entrepreneurial mindset and personality quality are the main factors in starting the innovation process and perceiving innovative values, and students of this type perceive innovations faster and are more open to the development trends of society.

## Discussion

Thus, on the basis of the obtained data, it was found that students' perception of innovations stems from their various psychological qualities, including personality traits, thinking style and psychological readiness to perceive innovation. Innovations related to education are not welcomed by students. If the preferred innovations in education are related to the introduction of new technologies, this factor for society is caused by the availability of high wages and acceptable working conditions. This study coincides with many studies (Kovalenko, 2011; Pasmurcheva, 2008; Kelechevckaya, 2004).

At the same time, in the research, risk propensity and psychological preparation were also considered as the main factors of the perception and acceptance of the innovation. It was determined that risk-prone and psychologically prepared students, regardless of their fields of study and institutions, are more likely to accept innovations and determine their future prospects. These results are partially identical with other studies (Maksiyanova, 2010; Baynev, 2007; Westera, 2000), but the results obtained in those studies differ from the results obtained in our study. At the same time, it was determined in the study that for students with practical personality traits, focus on the task, the motivation to achieve success is more important than avoiding failure. For students with a practical personality, problem solving is determined by the motivation to succeed, which creates the basis for them to see elements of success in innovations. These data agree with many studies (Belausova, 2002; Guguyeva, 1999; Molchanova, 2005; Sazonov, 1980). In these studies, the role of thinking style in the perception of innovations was investigated and it was determined that different thinking styles are involved in the perception of innovation.

By the other hand, this study found that personality traits and mindsets and practicality are important qualities necessary for the adoption of innovations. In the platform of motivational qualities of requirements from all three specialties with entrepreneurial characteristics, the focus is more on task completion. Their personality qualities motivate them to solve the task more than self-concept, which increases the frequency of their perception of innovations. This is proven by a number of studies (Furler et al., 2013; Grevenstein & Bluemke, 2015; Suldo, Minch & Hearon, 2014). In these studies, it was determined that personality characteristics have a significant impact on the positive manifestation of feelings of satisfaction with life and well-being, and on the perception of novelty. Perceptions of novelty satisfaction are positively related to personality traits. It is clear that the specific nature of the research does not allow us to draw conclusions about the

nature and direction of the relationships we have discovered, as well as about the specific psychological mechanisms underlying them. However, we believe that the established laws will be able to determine the main directions and methodology of research conducted in the field of the psychology of perception of innovation processes in the future.

There are a number of limitations in our research. First of all, this is a pilot study. Covered two universities in Azerbaijan. The data is based on respondents' answers to determine the level of perception of innovation within the university. At the same time, the lack of a clear methodology and the specificity of research in this field made the process somewhat difficult. The data was collected within a limited period of time and accompanied by a limited number of participants. However, this study can strengthen the findings, results and introduce different perspectives into the scientific circulation with a larger sample size from a quantitative analysis point of view for future studies. It can also provide a basis for making suggestions for future research and putting forward a multi-factorial approach to understanding innovations.

### **Conclusion**

This study is devoted to the study of the psychological features of the concept of innovation of demands in education, and it was determined that when applying new technologies in education, it is necessary to take into account the personality characteristics of demands, the way of thinking and motivational possibilities. Analysis of the results of the conducted studies, in our opinion, raised a number of questions that require further development. These questions, first of all, created the basis for underestimating the psychological factors that dominate the perception of innovations. It can be assumed that at every stage of the application of innovative technologies, priority should be given to participants with the appropriate way of thinking. At the stage of generating ideas - to participants with an entrepreneurial mindset; in the stage of application development - with critical thinking; at the practical stage - it is necessary to pay attention to the requirements that have a management mindset (Kovalenko, 2011; Belousova, 2002).

Accordingly, the study thoroughly investigated the level of perception of the innovation, its main characteristics. The results of the study showed that the concept of innovation has a variable level depending on the individual. Students usually mean the application of new technologies in education when they say innovation. A significant percentage of participants also have a pessimistic approach to innovation and show a conservative way of thinking (Baynev, 2007). In

this regard, the development of innovation efforts may appear as one of the most urgent problems in the near future. Thanks to the research analysis, it is important in terms of findings and pilot studies, and it facilitates the presentation of new projects to students in terms of the characteristics of prospective innovation and innovative efforts.

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