

## Reflection as a Factor in the Success of Learners' Innovative Activity

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## Рефлексия как фактор успешности инновационной деятельности обучающихся

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**Abstract.** The analysis of the psychological grounds for learners' innovative activity would provide avenues for development of innovation capabilities in the younger generation. In the article, reflection is considered a mechanism that impacts the efficacy of action. In this regard, the purpose of the study was to analyze how reflective practice is manifested in learners who are engaged in the university innovative activity but demonstrate its varying degrees. As a working hypothesis, it was assumed that students with varying degrees of innovative activity differ in the level of general reflection of their own activity and its individual components: information-based activity, motivation, benchmarking, decision-making, and performance. The study showed that students experience the greatest difficulties when analyzing the conditions for organizing activities, assessing their own resources and possible risks. Also, significant differences were found in the degree of intensity of such a component as the information-based activity among students with varying degrees of innovative engagement.

**Keywords:** *reflective practice; innovative activity; innovative action; innovative person*

**Аннотация.** Изучение психологических оснований инновационной деятельности позволит наметить пути развития инновационного потенциала обучающихся. Рефлексия рассматривается как механизм, оказывающий влияние на эффективность инновацион-

ной деятельности. Целью исследования являлось изучение выраженности рефлексии деятельности у студентов, проявляющих разную степень активности в процессе инновационной деятельности в вузе. В качестве гипотезы выступило предположение о том, что студенты с разной степенью инновационной активности отличаются по уровню общей рефлексии собственной деятельности и отдельных ее составляющих: информационной основы деятельности, мотивации и целеполагания, процесса принятия решения и осуществления деятельности. Исследование показало, что наибольшие затруднения студенты испытывают при анализе условий организации деятельности, оценке собственных ресурсов, возможных рисков. Обнаружены значимые различия в степени выраженности такой составляющей рефлексии, как информационная основа деятельности, у студентов, имеющих разный уровень инновационной активности.

*Ключевые слова:* рефлексия деятельности; инновационная деятельность; инновационная активность; инновационная личность

## Introduction

The issue of a person's readiness for innovative activity is now becoming increasingly important.

According to the Strategy for Innovative Development of the Russian Federation, an essential component of the national economic policy today is the development of innovative products, an increase in the number of agencies that implement technological innovations, and the formation of demand for innovative products.

In our opinion, a person can carry out innovative activity only if there is a set of individual characteristics that ensure effective implementation. This is due to the complexity of the phenomenon of innovation, which requires both the compliance with the step-by-step arrangement and a careful study of the personal and intellectual abilities of innovators (Meshcheryakova & Larionova, 2013). The innovative development of the country is possible in the conditions of significant human resources, which are the support and strategic value of the nation. Consequently, there is a need for early identification and development of innovative personality traits and the formation of readiness for innovative activity, starting with school and continuing with university education.

The study of personal determinants that ensure success in innovative activity can now become a relevant area of research. This would enable some adjustments to the system of education and training of the younger generation, which constitutes tomorrow's innovative potential of the nation.

Most of the research on innovation, innovative activity and innovative person concerns economics, organizational psychology, labor psychology and pedagogical innovation. However, the development of an innovative person at the stage of training in educational organizations and the continuity of the development in the school-university chain have been insufficiently studied.

Thus, psychological characteristics of learners, which are predictors of the future success of their innovative actions in an educational organization and after graduation, can be identified as a research problem.

The innovative action considers as an independent, productive, creative, and purposeful activity in which the learner, assisted by new means of achieving the performance objective, develops as a participant of innovation and as an innovative person.

Most of foreign and domestic researchers attribute the following personal characteristics to an innovative person: openness to the environment and innovations, the desire for self-realization and creative activity, attempts to change the existing living conditions and the desire for novelty, as well as curiosity, critical attitude to benchmarks and reflective learning skills (E. I. Fedak and S. V. Tsentserya (2011), V. A. Slastenin and L. S. Podymova (1997), et al.).

Furthermore, it is important to note that the learning environment fosters the cognition of learners and plays an important role in the development of creative thinking (V. V. Rubtsov, I. M. Ulanovskaya). With the appropriate organization of the teaching and learning context, the learning environment increases cognitive motivation, reduces learners' anxiety, and makes self-esteem and the level of aspirations more differentiated (Rubtsov & Ulanovskaya, 2020, p. 71).

The study of innovative activity was based on the beliefs expressed by the proponents of the activity approach. *The activity approach* is a research methodology, the basis of which is the category of object-oriented activity (M. Ya. Basov). The approach presupposes the singling out of such units of analysis that would prevent the researcher from losing the specific nature of the activity (L. S. Vygotsky).

According to Vygotsky, activity has a decisive role to play in the mental development of a person. Also, the role of an adult is important as a navigator affecting the acquisition of knowledge and methods of action. Vygotsky recognizes the «role» of the adult in the formation of the activity and its forms in the child, meaning the formation of the personality of the child by adults based on their shared life and activities (Vygotsky, 2000). Innovation is understood as the joint activities of the learner and the teacher, who acts as a mentor and guide (carrier of experience and innovation skills).

A joint innovation results in the creation of a new educational product and new knowledge in the subject matter. Innovative activity is always accompanied by a particular goal recognized by the learner and actions aimed at achieving it. At the same time, the activity can be both individual and collective (Bykova, 2018).

Considering the complex structure of innovative activity, we single out a set of its system-forming components, namely: motivational, cognitive, behavioral, and monitoring and evaluative.

*The motivational component* provides the formation of personal meaning and motivation for action. Being a subject of activity, a person is capable to want and desire anything, which is satisfied in activity and through activity. Thus, the learner can independently set the goal of the activity. Also, the resources of the inner world are involved

under the influence of motivation and the goal. Motivation impacts the acceptance of innovative activity, the definition of its personal meaning, and the selection of methods of achieving the result.

*The cognitive component* creates the basis for the formation of a conscious attitude towards an innovative product and helps foresee the course of events and predict the result. Under the principle of the unity of consciousness and activity, activity is analyzed as a conscious reality. Besides, activity awareness is closely related to motivation, goal setting and reflection.

*The behavioral component* ensures the implementation of the objective and its step-by-step achievement, and it is interpreted as innovative behavior. Regarding the learners, the innovative behavior considers as “[...] a particular type of personality activity, manifested in the ability to flexibly respond to situations of uncertainty and overcome obstacles, showing willingness to take part in new activities that require independence and persistence in achieving goals, and creativity” (Bykova, 2018, p. 20). The formation of the prerequisites for innovative behavior is initiated as early as the learning period in educational institutions.

*The monitoring and evaluative component* provides the capacity to track and correct the innovative actions and evaluate their final and intermediate results. The component is implemented through reflection. Advanced reflection conditions the flexibility and dynamism of the person, and the ability to change modes of behavior depending on the circumstances and situations that are currently important, allowing the person to overcome the stereotypes that have developed through the activities.

The key provisions of the system-genetic concept which implies that the effective performance is manifested in the developed reflection in relation to separate constructs (Shadrikov, Kurginyan, & Kuznetsova, 2015). Acting as a mechanism of activity, reflection affects the scope of motivation and needs and leads to goal-setting and the implementation of innovative activity, as well as its mapping.

The necessary stage of the formation of personal readiness for innovative activity is defined as the development of reflexive evaluation of one's own condition and activities, through the verbalization of internal mental constructs when coping with difficulties and solving problems in the learning environment (Galazhinsky & Klochko, 2009).

Since the assessment of one's effective actions is possible only with the developed reflection, it seems important to study this feature in the framework of learners' activities to determine the degree of its intensity. Thus, in the future, ways were determined to optimize the process of improving the reflective component with its subsequent inclusion in the innovative actions. The specified problem allowed us to determine the purpose of our research — to study the intensity of reflective practices in learners, as well as to compare the characteristics of reflection manifested by learners with varying degrees of involvement in the innovative activity of an educational organization. As a hypothesis, the assumption was made that the quality of reflective practice is less among students with low innovative activity than among students who actively participate in innovations offered at the university.

## Design

The study involved 412 full-time undergraduates of the Pedagogical University, aged 18 to 22 (of which 198 boys and 214 girls). They are second, third and fourth-year students.

Based on the preliminary questionnaire that assesses the degree of learners' involvement in the innovations, all the participants were divided into 3 groups.

Group 1 included students who actively participate in any new activity offered to them (competitions for grants, research projects, and research work), resulting to a research product or creative project, etc.

Group 2 included students who are highly motivated (they claim to have a desire to participate in innovative projects), however, they show little activity and anticipate help and invitation from lecturers. Given the multicomponent structure of innovative activity, which includes motivational, cognitive, behavioral, and emotional components, it is the behavioral component that requires special attention and formation.

Group 3 included participants who are inactive and disinterested in projects, research work and competitions offered in an educational organization. Students are not aware of themselves as actors of activity, capable of independently setting a goal and finding ways to achieve it.

## Methods

To analyze the phenomenon of reflection, the concept of V. D. Shadrikov was considered. According to the researcher, the learner's effective performance is manifested in the developed reflexivity in relation to the individual activity constructs. Reflecting on a specific activity, the individual "... shows the ability to consciously reproduce the experience gained, to master and turn it into a generalized method of action in a specific problem situation ..." (Shadrikov et al., 2015, p. 10).

In addition, it is worth considering the idea of a differential model of reflexivity (D. A. Leontiev, E. N. Osin), with systemic reflection being singled out as one of the constructs. Systemic reflection is based on the perception of oneself from the outside perspective and allows for successful solution of any problem, since it makes it possible to consider interaction in all its aspects (Leontiev & Osin, 2014).

The reflective practice test was used as a diagnostic tool (V. D. Shadrikov, S. S. Kurginyan, and M. D. Kuznetsova) aimed at the analysis of the general reflection and its individual components (Shadrikov et al., 2015).

As a working hypothesis, it was assumed that students with varying degrees of innovative activity differ in the level of general reflection of their own activity and its individual components: information-based activity, motivation, benchmarking, decision-making, and performance.

## Discussion

Analysis of the data shows that for the most part, students on all 4 scales demonstrate a pronounced reflection within the normative values characterizing the respondent as capable of effectively performing their own activities. This demonstrates a clear understanding of the expected outcomes of someone's actions, associated with motivation and goal setting, and the ability to analyze the objective and subjective conditions, which allows organizing the activities in accordance with a given goal and a planned result (Figure).

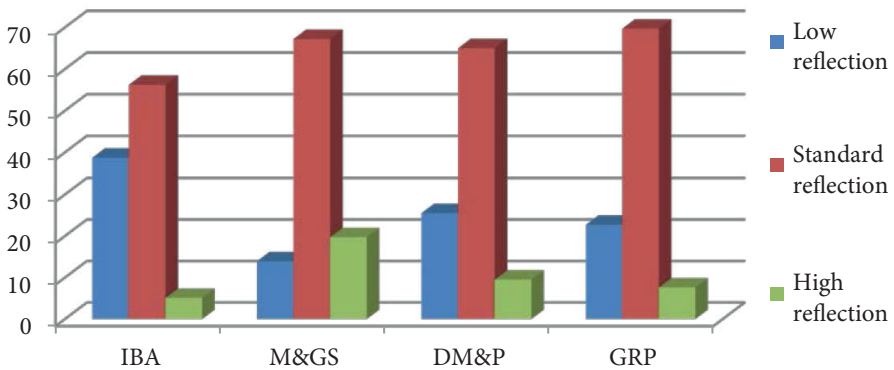


Figure. The reflective practice manifested by students at colleges and universities, %.

Note. IBA — information-based activity, M&GS — motivation and goal setting, DM&P — decision-making and performance, GRP — general reflective practice

However, a detailed analysis of the data allows us to conclude that a fairly large number of students demonstrated a low reflection on the scale *Information-based activity*. This may indicate the insufficient assessment of the conditions of activity and its regulatory methods (resources, opportunities, restrictions in the context of activity, and the requirements imposed by it). Presumably, when faced with the need to perform innovative activities, such difficulties can become an obstacle to a clear understanding of the possibilities of achieving the objective, assessing strengths and resources, and adequately assessing the situation. This can further influence the formation of motivation for activity and a clear image of the desired (subjectively significant result). In general, these indicators can have a negative impact on the implementation of actions, their outcomes and efficiency. Given the complexity of achieving the result and the high level of ambiguity of innovative activity, it is likely that the risks of abandoning it at the initial stage and during the formation of subjective significance will increase.

Also, over 20 % of learners demonstrated low reflection on the scale *Decision-making and performance*, which determines the degree of awareness of decisions made (awareness of the prerequisites, causes and consequences of decisions, making a choice from alternatives). This indicates the inability of these learners to make deliberate and balanced decisions with a view to achieving the planned result, to consider all possible

consequences, to demonstrate independence, and to carefully design action sequences. When learners act in innovative ways, these factors can become an obstacle to the rational achievement of the goal and the refusal to take active actions in the face of obstacles and risks, that are an integral part of innovations.

Low indicators on the scale *General reflective practice* are indicative of difficulties that may arise. This can be attributed to the learners' low awareness and the impossibility of assessing the need to modify activities, based on the analyzed intermediate results. If the final objective is not achieved, learners with low reflection will be unable to analyze the reasons for their own failure and to correct erroneous actions.

To compare the level of reflection manifested by representatives of three groups of learners with different degrees of educational innovative activity, the findings were assessed. It was assumed that students with a high innovative activity are distinguished by a more developed reflection, which is a condition for the success of innovations. The Kruskal-Wallis H-test (for 3 or more independent samples) was used to statistically compare the indicators of the reflection manifested by representatives of these groups (*Table*).

*Table*

**Comparative analysis of reflection manifested by groups of students with different innovation levels**

	<i>Scales of the methodology of reflexivity</i>			
	<i>IBA</i>	<i>M&amp;GS</i>	<i>DM&amp;P</i>	<i>GRA</i>
Group 1	15.7	20.2	29.8	65.1
Group 2	15.1	21.1	29.1	65.3
Group 3	13.2	20.5	28.8	61.9
	$H_{emp} = \mathbf{9.021}$ $p = \mathbf{.01}$	$H_{emp} = 1.934$ $p = .38$	$H_{emp} = 0.589$ $p = .74$	$H_{emp} = 3.946$ $p = .13$

*Notes.* Statistically significant differences are in bold. IBA — information-based activity, M&GS — motivation and goal setting, DM&P — decision-making and performance, GRP — general reflective practice

Significant differences between the groups, identified on the IBA scale ( $p \leq .01$ ), indicate that the students of Group 3 (not participating in innovative activities) assess the conditions of their activity lower. It is difficult for them to assess the situation in detail at the time of preparation for activity. The inability to adequately assess the risks, own resources and limitations can lead to doubts about the possible success of the upcoming activities and in planning individual actions on the way to achieving the objectives at the orientation stage. Resulting from the impossibility of adequately targeting and selecting methods for solving problem situations, the motivation for the forthcoming activity drops sharply and the general activity decreases. This is probably an important

factor when deciding on participation in the types of educational innovative activities and it leads to the rejection of any initiative.

No significant differences were found on the remaining scales, and we can infer that the differentiation by activity levels occurs as early as the stage of orientation in activity, which, due to low reflection in a student group with low activity, can complicate the transition to subsequent stages.

In our opinion, the study shows that preparing students for innovative activities requires efforts to develop the ability to reflect on their own practices. However, at the same time, it is important to pay attention to each reflexive component: from reflection on the information-based activity to the development of reflection on motivation and goal setting with the subsequent transition to activities and comparison of the outcomes with the objectives. Also, it would be appropriate to start that kind of training much earlier than at the stage of university education. Since reflection, according to research in developmental psychology, becomes available to children as early as at primary school age, the early development of the qualities of reflective thinking and assessment of their own activity will allow learners to achieve greater success in their practices, especially at the stage of assessing the conditions of future activities.

## Conclusions

The research has shown that students experience the greatest difficulties when analyzing the conditions for organizing future activities, assessing their own resources and possible risks. In general, this can reduce the motivation for activity and impede the prediction of the outcome. Regarding innovative activity, characterized by a high degree of uncertainty of the outcome and involving some risk, a complicated analysis of the information-based activity can lead to a complete refusal to carry it out.

A decrease in the efficiency of the activity, entailing a drop in motivation, and, ultimately, a refusal to carry it out, may be caused by an inadequate reflexive analysis of the preliminary conditions of activity (low indicators on the IBA scale). A particular difficulty can be caused by an insufficiently developed ability to organize one's activities in accordance with the objective and the expected outcome.

The study has found significant differences in the intensity of reflection on information-based activity among students with varying levels of innovative activity. This confirms our hypothesis that the developed reflection on practice is a factor in the effectiveness of innovative activity. In our study, the differences in the indicators on the IBA scale indicate that the students of Group 1 (with high innovative activity) developed skills and abilities necessary for assessing information indicators that characterize the subject and subjective conditions of their activity. Thus, it makes it possible to organize the activity in accordance with the objective and the expected result. This ensures success in achieving the outcomes of the activity.



Considering reflection as an important condition for the formation of all components of the psychological aspect of activity, it can be assumed that students with varying degrees of reflection will, to varying extents, reflect different components of innovative activity. Reflection provides an opportunity to analyze one's own innovative activity at different stages, evaluate the outcomes and compare them with the preliminary objective, as well as make timely adjustments during the implementation of the plan. Thus, reflection can be directed both at a holistic activity and at its individual structural components and has an individual expression in relation to these components. The significance of reflection for innovative activity is due to its specificity, a certain nature of novelty, non-standard conditions for implementation, the inability to foresee the outcomes and often the lack of previous experience in performing activities of this kind.

The results of the study can be of some practical significance since knowledge of the psychological framework for the innovative activity of students can contribute to the development of innovative potential and innovative activities. According to the cultural-historical approach of the Russian psychological school, outlined in the works of L. S. Vygotsky, the development of the psyche occurs due to external influence, and the environmental factor can be decisive for the internal resources of the individual. Hence, to develop reflexive abilities, maintain motivation for innovative activity and develop innovative activity among learners, it is necessary to create special conditions that enable the formation of characteristics of an innovative person. This will ensure a high level of efficiency and effectiveness of learners' activities at different educational levels.

The following conditions can be identified: a special learning environment aimed not only at maintaining the learners' innovative activity, but also at developing the skills and abilities of reflection on practice through a system of specially developed learning technologies; high motivation of the child himself, a conscious attitude to the goal and results of the activity (his formation as a subject of activity); the special nature of the relationship in the teacher (mentor) — child system; continuity in the school-university system in preparing learners for participation in innovative activities in an educational organization.

The study does not claim to be complete and requires further consideration of the factors that determine the innovative activity of students, particularly their personal characteristics, gender and age determinants.

## References

- Bykova, E. A. (2018). *Psychological foundations of students' innovative activity* [Monograph]. Shadrinsk: Shadrinsk House of Press. [In Russian]
- Fedak, E. I., & Tsentserya, S. V. (2011). An innovative personality. Psychological and pedagogical grounds. *World of education — Education in the world*, 1(41), 150–156. [In Russian]
- Galazhinsky, E. V., & Klochko, E. V. (2009). *Psychology of innovative behavior*. Tomsk: Tomsk Unuversity. [In Russian]

- Leontiev, D. A., & Osin, E. N. (2014). Reflection “good” and “bad”: From an explanatory model to differential diagnostics. *Psychology: Journal of Higher School of Economics*, 11(4), 110–135. [In Russian]
- Meshcheryakova, E. I., & Larionova, A. V. (2013). The features of personal capacity development in subjects of innovative activities. *Psychological Science and Education*, 2, 69–75. [In Russian]
- Rubtsov, V. V., & Ulanovskaya, I. M. (2020). The developing environment of the school and indicators of child development. *Lurian Journal*, 1(2), 71–84. Available from <https://lurian.urfu.ru/ojs/index.php/lurian/article/view/22>
- Shadrikov, V. D., Kurginyan, S. S., & Kuznetsova, M. D. (2015). *Activity reflection test*. Moscow: University Book. [In Russian]
- Slastenin, V. A., & Podymova, L. S. (1997). *Pedagogy: Innovative activity*. Moscow: Magister. [In Russian]
- Vygotsky, L. S. (2000). Genesis of higher mental functions. In L. S. Vygotsky (Auth.), *Psychology* (pp. 608–632). Moscow: EKSMO-Press. [In Russian]

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