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PEDAGOGICAL PREVENTION METHODS FOR COGNITIVE-PSYCHOLOGICAL BARRIERS ARISING IN INNOVATIVE ACTIVITIES

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ANNOTATION: This article analyzes the content of cognitive-psychological barriers arising in teachers in the process of innovative activity, the factors of their occurrence, and the mechanisms of pedagogical prevention for their elimination. In the study, factors limiting creative thinking, such as perceptual, emotional, and cultural blocks, are highlighted based on scientific sources. The influence of these obstacles on the educational process and the personal development of the teacher is revealed. The article also substantiates strategies for preventing obstacles through effective pedagogical methods and technologies, such as reducing stress in an innovative environment, forming psychological preparedness, group trainings, interactive and game technologies, metacognitive approaches, prototyping techniques, problem-based learning, and scaffolding of complex tasks. The obtained results show that the elimination of cognitive-psychological barriers is important for the quality of education, the effectiveness of innovative activity, and the realization of creative potential.
Keywords: cognitive-psychological barriers; innovative activity; pedagogical prevention; group trainings; game technologies; metacognitive strategies; prototyping; problem-based learning; psychological training.

Introduction

Cognitive-psychological barriers represent significant obstacles to innovation and creative thinking that emerge from both internal psychological states and external environmental factors. These barriers are fundamentally learning-based phenomena that typically originate from one's family, peers, community, educational environment, or broader cultural and organizational contexts (Ronizi et al., 2013). From a pedagogical perspective, psychological barriers are defined as anything that hinders, restrains, and reduces the effectiveness of studying and personal development, representing both a particular state of the psyche characterized by an inability to assess and control emotions and mental processes, and a pedagogical phenomenon that arises while solving educational tasks (Burakova et al., 2021).

Research has identified three primary categories of barriers to creative thinking and innovation. Perceptual blocks involve limitations in problem recognition and observation, such as failing to see what is wrong, isolating problems effectively, using all senses to observe issues, or distinguishing between cause and effect (Larraz-Rabanos, 2021)(Barroso-Tanoira, 2017). Emotional blocks stem from individual insecurities and include fear of being wrong or looking foolish, clinging to first ideas, rigidity of thought, excessive desire for security, and lack of energy or will to implement new solutions (Larraz-Rabanos, 2021)(Barroso-Tanoira, 2017). Cultural blocks derive from learned societal norms and expectations, such as the desire to conform to accepted rules, avoid conflicts, focus excessively on competition, or dismiss fantasy and exploration as worthless (Larraz-Rabanos, 2021)(Barroso-Tanoira, 2017).

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Understanding these barriers is crucial because knowledge, identification, and awareness of barriers to creative thinking can prevent their emergence and unlock the creative potential of individuals (Larraz-Rabanos, 2021). The recognition that overcoming these barriers can serve as a means of developing student personality highlights the importance of addressing them through targeted pedagogical interventions (Burakova et al., 2021).

Prevention strategies for cognitive-psychological barriers in innovative activities operate through multiple interconnected approaches that address both individual and systemic factors. At the institutional level, effective prevention requires comprehensive organizational measures including focusing teams on innovation as an important value, popularizing productive innovative technologies, involving teachers in developing new projects and programs, and stimulating innovative self-education and creative growth (Maksymenko et al., 2021). These institutional approaches are complemented by systematic support mechanisms such as quality education and competent counseling of educational process participants, timely step-by-step informing about pedagogical innovations with participation of informal leaders, and individual material stimulation of innovative activity participants (Maksymenko et al., 2021).

A particularly important prevention approach involves developing integrative models that address stress prevention and correction in innovative education contexts. This includes preventing and correcting pediogenies (harm from destructive teacher-student attitudes), mathetogenies (harm from destructive student-teacher attitudes), and eductogenies (harm from deformed organizational conditions) through systematic psychological assistance in the form of consultations, trainings, coaching, and ongoing support (Arpentieva et al., 2021)(Tashcheva et al., 2021). These prevention efforts must address multiple developmental contexts including educational, professional, personal, and interactive development dimensions.

Group-based interventions represent another crucial prevention strategy, utilizing specialized trainings aimed at overcoming fears and internal barriers that hinder creativity development (Zdanevych et al., 2021). These trainings operate through principles of simulating novelty and uncertainty, maintaining positive feedback environments, and balancing intuition with critical thinking. Research demonstrates that structured group psychological training programs focusing on self-reflection, barrier removal, and creative self-realization lead to significant improvements in creative thinking, innovative potential, and problem-solving abilities (Liashch et al., 2024). The group dynamic itself serves as a catalyst for change by providing safe spaces for experimentation and mutual learning.

Prevention strategies also include specialized approaches for specific contexts, such as practice-oriented educational systems designed to prevent psychological barriers in inclusive education settings (Koryakina et al., 2024). Teachers can implement sense-making techniques of support, game techniques, and creativity-focused methods using systematic navigator workbooks that help detect learning gaps while overcoming psychological barriers (Zorina et al., 2019). These prevention methods emphasize the importance of analyzing root causes of innovation barriers rather than simply addressing surface symptoms (2018).

Game-based learning technologies

Game technologies help break down psychological barriers that hinder creativity activation by creating relaxed atmospheres or competitive environments that promote personal quality development and practical skill improvement (Shkabarina et al., 2020). Communicative training and gaming technologies are particularly effective methods for overcoming psychological

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difficulties, reducing anxiety, improving motivation and confidence while creating positive attitudes toward learning (Sorokoumova et al., 2022).

Problem-based learning approaches

Problem-based learning technology serves as an effective tool for developing creativity by helping learners apply intellectual resources, acquire knowledge independently, abandon stereotypes and pattern thinking, and enhance motivational components (Shkabarina et al., 2020). The technology of solving inventive tasks contributes to forming systemic and dialogical thinking while developing cognitive abilities such as establishing cause-and-effect relationships, drawing conclusions, analyzing situations, and applying new problem-solving methods (Shkabarina et al., 2020).

Metacognitive storytelling interventions

Metacognitive interventions that integrate psychoeducation, cognitive training, homework, and performance feedback can be delivered through engaging narrative formats such as comic stories featuring characters who model overcoming difficulties (Souza et al., 2024). These interventions provide cognitive strategy tools including self-monitoring ("Observation Lens"), inhibitory control ("Stop Card"), working memory support ("Mind Agenda"), goal setting ("Objective Card"), decision-making aids ("Decision Balance"), and sub-goal planning ("Steps to the Goal") (Souza et al., 2024).

Prototype-based creative methods

Educators can use parallel prototyping techniques that encourage learners to construct multiple ideas simultaneously into tangible products, and iterative prototype testing that moves from rough sketches to refined models over time (Broekhoven et al., 2022). The "Dark horse" strategy explicitly instructs learners to explore at least one daring, wild solution to ensure highly original ideas are not lost during implementation phases (Broekhoven et al., 2022).

Interactive student-centered techniques

Interactive and student-centered approaches including anonymous question submission tools and small group discussions help mitigate psychological barriers while promoting active engagement and higher-order thinking skills (Le, 2024). Creating psychologically safe classroom environments where learners feel secure in experimenting with ideas, taking sensible risks, and making mistakes is essential for supporting intuitive judgments and resisting peer pressure to conform (Broekhoven et al., 2022).

Individualized creative development methods

Teachers should apply both proven and innovative psychological and pedagogical methods that account for individual characteristics while developing motivation for creative activity, focusing on emotional release and maximizing disclosure in creative work (Korsakova et al., 2020).

Creating effective environments for preventing cognitive-psychological barriers requires careful attention to both physical and psychological safety conditions. Safe spaces where learners can experiment with new ideas without fear of judgment are essential, as these environments provide the confidence needed to take creative risks (Sole et al., 2020). The teacher's role as a guide and mentor throughout the creative process helps minimize uncertainty, fear of error, and risk assumption while promoting self-esteem and self-confidence (Sole et al., 2020). This includes developing tolerance for error as an appropriate educational principle, recognizing that classroom climate significantly impacts learning processes (Sole et al., 2020).

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A critical implementation factor involves developing psychological readiness among educators and learners for reasonable risk-taking in innovative activities. This readiness includes the ability to take responsibility for innovation results, understanding innovation processes and mechanisms, developing skills to overcome psychological barriers, and building capabilities for forecasting and decision-making under uncertain conditions (Mikheeva et al., 2020). Educational institutions must address multiple components of psychological readiness including emotional-motivational, cognitive-motivational, orientational, activity-operational, moral, communicative, volitional, mobilizing, and evaluative-resulting dimensions (Honchar et al., 2021).

Scaffolding strategies play a crucial role in implementation by reducing cognitive demands while maintaining productive challenge levels. When cognitive blockages impede student engagement in complex problem-solving, scaffolding questions with various problem-solving heuristics can help students sustain their efforts and persevere through difficulties (Park, 2022). Effective scaffolding assists students in connecting prior knowledge to tasks by offering procedures to follow and reducing cognitive demand levels while encouraging teachers to use problem-solving heuristics for restating problems, using models or diagrams, and making suppositions (Park, 2022).

Implementation must also account for students' unfamiliarity with learning approaches that challenge traditional educational expectations. Many students experience cognitive dissonance when asked to teach material they haven't mastered first, stemming from classroom climates that convey performance-goal structures and prompt fears of failure (Debbane et al., 2023). Incorporating Productive Failure approaches can help students overcome the fear of being wrong by starting with problem-solving phases where learners explore complex problems based on material they haven't learned yet, followed by expert instruction that builds on their solutions (Debbane et al., 2023)(Kapur, 2006).

Environmental factors must address both subjective and objective blockages that can impede creative development. Subjective blockages relate to emotional experiences such as fear, impatience, and anxiety, as well as rational rigidity characterized by excessive trust in algorithmic procedures over heuristic approaches (Bibire et al., 2024). Learning technologies should focus on the creative process rather than its products, with teachers using methods and procedures that move learners from latent to manifested creativity (Bibire et al., 2024).

Successful implementation requires institutional commitment to systematic introduction of innovative educational technologies and making educational processes inherently innovative and creative (Myrhalykov et al., 2015). Organizations can learn from industry examples where creativity is encouraged through policies such as allowing employees to allocate time to creative projects and adopting attitudes that "reward failure" as a learning opportunity (Kandi et al., 2013). Educational environments should help students become more comfortable with ambiguity rather than rushing to solve unclear situations, encouraging multiple perspectives and deeper questioning (Kandi et al., 2013).

Finally, implementation must balance the benefits and limitations of pedagogical guidance. While explicit direction can lead to efficient learning, it can also result in restricted exploration and learning, creating a "double-edged sword" effect (Carr et al., 2016). Educators must discover ways to reduce effects such as functional fixedness and neophobia (fear of novelty) that can restrict exploration intensity and limit innovation capacity (Carr et al., 2016).

Conclusion

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The research results showed that cognitive-psychological barriers encountered in the process of innovative activity limit creative thinking, weaken the initiative and innovative potential of students and teachers. For the effective elimination of these barriers, systematic pedagogical prevention, psychological support, group trainings, the use of modern game and problem-based learning technologies, as well as the creation of a psychologically safe learning environment are of great importance. Metacognitive approaches, prototyping techniques, and scafolding strategies develop students' independent thinking, creative decision-making, and the ability to innovate. Strengthening the readiness of teachers and students to accept innovative risks, not fearing mistakes, and approaching problems from different angles are the main conditions of innovative education. In general, the developed strategies for the in-depth study and prevention of cognitive-psychological barriers make the educational process more effective, innovative, and creatively oriented.

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