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Pedagogical Interpretation of Entrepreneurial Thinking in High School Students: Structure and Indicators

Abstract

Introduction. In the context of general secondary education modernization and the growing importance of socially oriented competencies, the issue of pedagogical support for entrepreneurial thinking formation in high school students becomes particularly relevant. Pedagogical science lacks clarity in interpreting this phenomenon as a pedagogical category, complicating its purposeful development and diagnosis. *Methodology and Methods.* The study employs theoretical analysis, comparative analysis, systematization, and generalization of domestic and international scholarly approaches to the conceptualization of entrepreneurial thinking as a pedagogical category. *Results.* The results define entrepreneurial thinking as a complex integrative personal characteristic encompassing motivational value, cognitive, activity-based, and reflective components that ensure student capacity for independent goal setting, proactive participation in educational and project-based activities, strategy selection, and self-evaluation. The results clarify essential characteristics of the phenomenon and identify structural components accompanied by corresponding developmental indicators. *Scientific Novelty.* A pedagogically grounded interpretation of entrepreneurial thinking as a distinct pedagogical category has been substantiated, and a structural model with corresponding diagnostic indicators has been developed and theoretically validated. *Practical Significance.* The identified patterns can be applied in organizing the educational process aimed at developing entrepreneurial thinking in high school students and in designing diagnostic tools for assessing its formation level.

Keywords: entrepreneurial thinking, high school students, pedagogical interpretation, structure, indicators, educational and project-based activity, social activity.

Introduction. The pressures of an increasingly globalized environment require Kazakhstan to move toward an entrepreneurial model of social development, where innovation serves as the main driving force. In this context, Tokayev (2025) has emphasized the importance of cultivating a new generation of entrepreneurs, stating that the discipline «Fundamentals of Entrepreneurship» must be integrated into all stages of education - from general schooling to higher education.

The State Compulsory Standard of General Secondary Education of the Republic of Kazakhstan (2022) allows us to conclude that entrepreneurial components are implicitly embedded in the target guidelines of modern

school education.

According to Clause 18 of this standard, ensuring continuity in the development of students' project-based and research skills is considered one of the key principles in organizing the educational process. By its nature, project-based and research activities involve goal setting, the search for and justification of solutions, planning, and analysis of results, which allows them to be considered a natural pedagogical environment for the development of entrepreneurial thinking.

The relevance of the identified problem is also confirmed by the introduction of the course «Technology and Entrepreneurship» in lower secondary education (grades 5-9)

and the mandatory course «Fundamentals of Entrepreneurship and Business» (FEB) in grades 10-11, which demonstrates the recognition of entrepreneurial competence as a significant outcome of general secondary education. Additional evidence is provided by Tengri News (2024), which is the implementation of the 2024 National project «Talimger», carried out with the participation of the National Chamber of Entrepreneurs (NCE), higher education institutions, schools, colleges, business education experts, and opinion leaders. The initiative focuses on fostering students' entrepreneurial mindset, proactive behavior, and civic engagement, reflecting its direct relevance to the national priorities for modernizing the education system in the Republic of Kazakhstan.

Therefore, the development of entrepreneurial thinking in school students is not an additional or optional task, but logically follows from the normatively established principles of organizing the educational process.

However, it should be noted that in school practice, there is no comprehensive pedagogical model, didactic or diagnostic tools, or pedagogical mechanisms that ensure the purposeful development of students' entrepreneurial thinking, which indicates the insufficient elaboration of this area in both the theory and practice of general secondary education.

Accordingly, the formation of entrepreneurial thinking in senior secondary students should be considered a pedagogical imperative, shaped by the regulatory framework of the State Compulsory Educational Standards of the Republic of Kazakhstan, the emphasis on critical thinking development, the use of project- and research-based learning, and the expansion of entrepreneurship-oriented educational initiatives.

The research problem lies in the fact that the absence of a clear pedagogical concept and the lack of systematization of the components of entrepreneurial thinking hinder its purposeful development and diagnosis within the school educational process. Addressing this problem requires identifying the structure and indicators of entrepreneurial thinking.

Materials and Methods. The pedagogical interpretation of entrepreneurial thinking in

high school students in the present study will be presented based on a critical analysis of domestic and international scientific approaches and will serve as a theoretical foundation for identifying its structure, indicators, and levels of development.

According to the model of entrepreneurial thinking developed by Davis and Dean (2016), entrepreneurial thinking is formed as a set of 14 interconnected parameters, which collectively reflect the personal and activity-related characteristics of the individual. The phenomenon of «entrepreneurial thinking» is defined as «a combination of motives, skills, and cognitive processes that contribute to achieving entrepreneurial success».

In the Entrepreneurial Mindset Profile (EMP) model, all parameters are grouped into two broad categories: entrepreneurial traits and entrepreneurial skills. These parameters were identified based on a synthesis of research findings (Cattell et al., 1970; Myers et al., 1985; Costa et al., 2000) and the development of psychometric tools designed to measure characteristics relevant to entrepreneurial activity.

The relevance of this model for secondary school students is confirmed by empirical findings (Chilenga et al., 2022), which identify entrepreneurial thinking as a key determinant of adolescents' readiness to engage in independent business activity. In that research, the authors measured the level of entrepreneurial thinking among high school learners and examined how it affects their intentions toward self-employment. In academic literature, entrepreneurial thinking is conceptualized as a distinct mode of cognition and action (Neneh, 2012).

Therefore, findings from international research indicate that entrepreneurial thinking operates as a cognitive and behavioral resource that allows individuals to navigate uncertainty and make well-grounded decisions.

A number of Russian studies highlight the necessity and pedagogical significance of developing entrepreneurial thinking in students. The theoretical conceptualization of this category was proposed by Kopytova and Martynenko (2024), who analyzed entrepreneurial thinking

as a pedagogical category and identified its key components in the context of school education. The researchers point out that « a student's entrepreneurial thinking» constitutes a holistic personal construct that integrates individual traits, competencies, and motivation for entrepreneurial engagement, and they stress that its formation should start at the school stage, with general secondary education incorporating components of entrepreneurship education.

Aksenova and Sokolskaya (2021) emphasize that the development of entrepreneurial competencies among schoolchildren involves fostering initiative, critical thinking, and the ability to make independent decisions. Grigorieva (2022) highlights the need to use practice-oriented projects to develop adolescents. Grigorieva (2022) highlights the necessity of using practice-oriented projects for entrepreneurial activity among adolescents. Troshina (2018) notes that the development of entrepreneurial thinking in high school students can be hindered in the absence of modern pedagogical approaches. At the same time, Guryanova (2023) considers the entrepreneurial class as a model that integrates theoretical knowledge, practical skills, and tangible outcomes, enabling the systematic and consistent development of entrepreneurial competencies in students. Ermakova (2024) emphasizes the role of modern technologies, including artificial intelligence, in educational programs for school students as a means of fostering entrepreneurial thinking. Gorodovich (2008) analyzes pedagogical experiments on the development of an entrepreneurial mindset in school students, confirming the effectiveness of specially designed educational programs. In the context of Kazakhstan's education system, the development of students' entrepreneurial thinking is characterized by recognizing the importance of entrepreneurship and shaping a proactive entrepreneurial outlook. The introduction of the course «Fundamentals of Entrepreneurship and Business» in schools throughout the country demonstrates that more than 4000 schools have already adopted the subject, accompanied by a steady rise in learners' interest in entrepreneurial knowledge and practical skills. This indirectly indicates the

gradual development of entrepreneurial thinking in school students through the academic curriculum.

A significant methodological contribution to understanding the personal prerequisites of entrepreneurial thinking is provided by the concept of students' social activity, as presented in the research of Zhienbayeva (2008). The author defines social activity as a contemporary school student's ability to participate in age-appropriate activities aimed at addressing socially significant tasks, demonstrating initiative, responsibility, and diligence, which together ensure the achievement of socially meaningful outcomes. These qualities can be considered as the value personal foundation for the development of entrepreneurial thinking, as they reflect a student's readiness for independent choice, proactive action, and assuming responsibility for results.

Abdygapparova (2003) considers entrepreneurship in the context of innovation management, which allows for the identification of its value-motivational foundations. In the research by Ibraeva (2007), the focus is on the development of an individual's professional potential, including initiative, decision-making ability, and readiness for professional self-development, which methodologically aligns with the objectives of forming entrepreneurial competencies. The historical and institutional prerequisites for the implementation of entrepreneurship in higher education are explored in the works of Kudysheva and Pshembaeva (2019), where the importance of comprehensive programs for developing students' entrepreneurial potential is emphasized.

The analysis of Kazakhstani research indicates that, despite the lack of a direct focus on entrepreneurial thinking in high school students, a substantial theoretical and methodological potential has been accumulated for its pedagogical interpretation. This allows entrepreneurial thinking in high school students to be regarded as an integrative personal-activity formation, based on initiative, social activity, responsibility, and readiness for practical transformation of reality.

There are a number of values that form the foundation of entrepreneurial thinking: the value of creativity, goal-setting, determination, and communicative interaction. Teaching the fundamentals of entrepreneurial activity involves deliberately organized pedagogical guidance that takes into account the patterns of mental development, age-specific characteristics, and needs of high school students. During

this process, students' thinking and social activity are developed, and the prerequisites for engaging in entrepreneurial activity are established. The conducted comparative analysis shows that there is no unified approach to the interpretation of entrepreneurial thinking in domestic and international literature, and the structural components vary across different studies.

Table 1

Outlines the principal approaches, core elements, and fundamental principles applicable to the pedagogical understanding of entrepreneurial thinking in senior high school students

Author(s)	Approach / Definition	Structural Components	Key Provisions
1. International Studies			
Davis & Dean (2016)	Entrepreneurial Thinking Model as a Set of 14 Interconnected Parameters	Personal, Cognitive, and Activity-Related Qualities	The set of parameters forms entrepreneurial thinking as a resource for decision-making in uncertain situations
Cattell et al., (1970) Myers et al., (1985) Costa & McCrae (2000)	Theoretical Basis for Assessing Personal and Cognitive Characteristics	Motivation, Cognitive Abilities, Flexibility, and Adaptability	Conceptual foundation of the entrepreneurial thinking development process
Chilenga et al., (2022)	High School Students' Entrepreneurial Thinking Development Model	Activity, Aspirations, Initiative, Readiness for Entrepreneurship	Entrepreneurial thinking as a determining factor of high school students' readiness for entrepreneurship
Neneh (2012).	Entrepreneurial Thinking as a Cognitive-Activity Phenomenon	Motivation, Decision-Making, Innovation Capacity, Confidence in Decision-Making	Implementation of realistic solutions under conditions of uncertainty
2. Russian Studies			
Kopytova & Martynenko (2024)	Entrepreneurial Thinking as a Pedagogical Category	Motivational-Personal, Cognitive, Activity Components; Risk-Taking Propensity	School age is a sensitive period for the development of entrepreneurial thinking; the initial level in high school students is low, which necessitates the implementation of targeted programs
Aksenova & Sokolskaya (2021)	Entrepreneurial Thinking through the Lens of Competencies	Initiative, Thinking, Ability to Make Independent Decisions	Entrepreneurial competencies are developed through project-based and research tasks; systematic pedagogical support is essential
Troshina, (2018)	Development of Creative and Entrepreneurial Thinking	Creativity, Innovativeness, Entrepreneurial Activity	The lack of developed innovative pedagogical approaches hinders the formation of entrepreneurial thinking
Guryanova, (2023)	Entrepreneurial Class as an Educational Model for Developing Entrepreneurial Thinking	Theoretical Knowledge, Practical Skills, Outcomes	Systematic integration of knowledge and practice ensures the development of entrepreneurial thinking

3. Kazakhstani Studies				
Zhienbayeva (2008)	Students' Activity	Social	Social activity as a student's ability to engage in socially significant activities	Social activity serves as the value–personal foundation of entrepreneurial thinking
Abdygapparova (2003)	Entrepreneurship in the Context of Innovation Management		Entrepreneurship as a Motivational Basis of Activity	Entrepreneurial thinking as a value-motivational disposition oriented toward initiative
Ibraeva (2007)	Professional Potential of the Individual		Initiative, Decision-Making Ability, Readiness for Self-Development	Components of professional potential reflect the cognitive and personal traits of entrepreneurial thinking
	Entrepreneurship in the Higher Education System		Importance of Comprehensive Programs for Developing Entrepreneurial Potential	A systematic approach to developing entrepreneurial thinking within the educational process

Drawing on the comparative analysis of the approaches shown in Table 1, it can be concluded that entrepreneurial thinking in senior high school students should be understood as a multi-layered cognitive–activity construct, integrating personal, motivational, and activity-oriented components. Based on these findings, the main directions for pedagogical interpretation can be identified:

1. Development of entrepreneurial competencies through project-based and research activities, as well as practice-oriented tasks;
2. Creation of an educational environment that stimulates the development of initiative, social activity, and entrepreneurial thinking;
3. Utilization of international models and theoretical approaches to assess the personal, cognitive, and activity-related components of entrepreneurial thinking.

Domestic studies emphasize the development of social activity, the ability to make independent and responsible decisions, and the practical application of knowledge through project-based and research activities. International studies highlight the importance of cognitive and personal characteristics, as well as the ability to make decisions under conditions of uncertainty. Thus, the pedagogical interpretation of entrepreneurial thinking in high school students can be presented as a systemic organization of the educational process aimed at developing: motivation for entrepreneurial activity and initiative; skills in goal-setting,

problem-solving, and justification of decisions; and the ability to integrate knowledge and personal qualities into practical activities. The pedagogical interpretation of entrepreneurial thinking in high school students allows for the integration of domestic and international experience, ensuring the holistic development of entrepreneurial thinking in students and providing a foundation for the design of pedagogical models and diagnostic tools.

In accordance with the aim of this article, the following research objective was set: the systematization and critical analysis of existing approaches to the pedagogical interpretation of entrepreneurial thinking in high school students.

The study employed several research methods, including content analysis of scientific articles, dissertations, and regulatory documents concerning the development of entrepreneurial thinking in school students; comparative analysis of theoretical frameworks regarding the structure and indicators of entrepreneurial thinking; and critical evaluation of the methodological and conceptual bases for fostering entrepreneurial thinking in educational practice.

Research Materials: Scientific articles and monographs by domestic and international authors on the topic of entrepreneurial thinking; regulatory documents and educational standards (SCSES of the Republic of Kazakhstan); and the results of empirical and theoretical studies in the field of entrepreneurial education, as reflected in peer-reviewed literature.

Results. Based on the pedagogical interpretation of entrepreneurial thinking in high school students, we have identified five interrelated components that form its structure and correspond to the students' age and educational characteristics:

1. Motivational-Value Component. Content: Reflects the orientation of a high school student toward active, initiative-driven, and results-oriented activity, as well as the readiness to assume responsibility for one's own choices.

Indicators: Sustained interest in project-based activities; focus on achieving results; striving for personal success; acceptance of the values of initiative, responsibility, and independence;

2. Cognitive Component. Content: Characterizes the level of development of knowledge, concepts, and skills necessary for analyzing situations and identifying opportunities.

Indicators: Understanding of basic social processes; ability to analyze problem situations; capacity to identify alternative courses of action; ability to anticipate possible consequences of decisions;

3. Activity-Practical Component. Content: Reflects high school students' ability to actively apply knowledge in academic and project-based activities.

Indicators: Ability to set goals and plan activities; capacity to make decisions; readiness to take calculated risks; ability to organize teamwork; capability to achieve results.

4. Creative-Innovative Component. Content: Characterizes the ability to generate ideas and unconventional approaches to solving academic and social tasks.

Indicators: Demonstration of originality in thinking; ability to propose non-standard solutions; cognitive flexibility and variability; proactive idea generation; readiness to experiment.

5. Reflective-Evaluative Component. Content: Ensures that high school students reflect on and make sense of their own experiences.

Indicators: Ability for self-assessment and self-monitoring; capacity to analyze successes and failures; awareness of the causes of difficulties and setbacks; readiness to take responsibility for results.

Thus, entrepreneurial thinking in high school students represents a multi-level system comprising the motivational-value, cognitive, activity-practical, creative-innovative, and reflective-evaluative components, each of which has clearly identifiable pedagogical indicators that allow for the purposeful development and assessment of its level within the educational process (Table 2).

Table 2

Structure, Indicators, and Diagnostic Methods of Entrepreneurial Thinking in High School Students

Components	Indicators	Diagnostic Methods and Techniques
Motivational-Value Component	<ul style="list-style-type: none"> - Interest in initiative-driven and project-based activities - Focus on achieving results - Strong aspiration for self-actualization - Acceptance of responsibility for one's choices - Positive attitude toward novelty 	<ul style="list-style-type: none"> - Questionnaire on academic and social motivation (adapted school surveys) - Achievement Motivation Assessment (A. Mehrabian, adapted) - Pedagogical observation using an activity map - Expert evaluation (teachers, psychologists)
Cognitive	<ul style="list-style-type: none"> - Ability to analyze complex problem situations - Identification and evaluation of alternative solutions - Capacity to anticipate potential consequences - Level of critical and reflective thinking 	<ul style="list-style-type: none"> - School-adapted critical thinking tests - Problem-based and situational tasks (case method) - Diagnostic written assignments - Evaluation of logical reasoning

Activity-Practical	<ul style="list-style-type: none"> - Goal-setting and planning - Independence in decision-making - Ability to work in a team - Achievement of intended outcomes 	<ul style="list-style-type: none"> - Analysis of activity products (academic and social projects) - Pedagogical observation of project-based activities - Role-playing games with evaluation checklists - Pedagogical experiment
Creative-Innovative	<ul style="list-style-type: none"> - Originality of ideas - Cognitive flexibility - Initiative - Readiness to experiment 	<ul style="list-style-type: none"> - Creative Thinking Test (E. Torrance, adapted) - Brainstorming method with expert evaluation - Analysis of creative assignments - Student achievement portfolio
Reflective-Evaluative	<ul style="list-style-type: none"> - Ability for self-assessment - Reflection on successes and failures - Awareness of underlying causes of difficulties - Adjustment and improvement of one's own activities 	<ul style="list-style-type: none"> - Self-assessment and reflection tools for academic activities - Reflective questionnaires and surveys - Semi-structured interviews - Analysis of reflective reports and journals

Considering the identified components of entrepreneurial thinking in high school students and the analysis of domestic and international studies, it is possible to construct a scale of entrepreneurial thinking development levels. This scale allows for the conditional differentiation of each component's level of development from minimal to high and can be

used as a reference for pedagogical analysis and the design of educational activities.

Table 3 illustrates the suggested framework for the developmental levels of entrepreneurial thinking in senior high school students, highlighting the correspondence of each component with its typical manifestations across various stages of development.

Table 3

Proposed Structure of Developmental Levels of Entrepreneurial Thinking in High School Students

Levels	Characteristics
1. Motivational-Value Component	
Low	Academic and project-based activity is situational; motivation is primarily external (grades, supervision); initiative is weakly expressed; avoids responsibility and new types of activities.
Medium	Shows a consistent interest in certain types of independent activities; combines external and internal motivation; assumes responsibility with teacher support; has a positive attitude toward novelty.
High	Characterized by stable internal motivation; demonstrates initiative; consciously assumes responsibility for choices and outcomes; oriented toward self-actualization and goal achievement.
2. Cognitive Component	
Low	Experiences difficulties in analyzing problem situations; relies on ready-made algorithms; has limited ability to identify alternatives and anticipate the consequences of decisions.
Medium	Able to analyze situations using a model; identifies some possible solutions; forecasting of consequences is partial.
High	Independently analyzes problem situations; identifies alternative solutions; anticipates possible consequences; demonstrates well-developed critical thinking.

3. Activity-Practical Component

Low	Unable to independently set goals and plan activities; requires constant teacher assistance; rarely completes tasks.
Medium	Sets goals and plans activities with partial assistance; makes decisions in standard situations; able to complete tasks with support.
High	Independently sets goals and plans activities; makes decisions under conditions of uncertainty; works effectively individually and in a team; brings activities to completion.

4. Creative-Innovative Component

Low	Prefers conventional solutions; avoids non-standard tasks; initiative and creativity are weakly expressed.
Medium	Demonstrates creativity in familiar situations; proposes some original ideas; cognitive flexibility appears occasionally.
High	Generates original ideas; demonstrates cognitive flexibility; actively proposes non-standard solutions; willing to experiment.

5. Reflective-Evaluative Component

Low	Not inclined to self-analysis; has difficulty assessing own actions and outcomes; perceives mistakes negatively.
Medium	Capable of partial self-assessment; analyzes mistakes with teacher support; adjusts activities in standard situations.
High	Consciously analyzes own activities; adequately evaluates outcomes; views mistakes as a resource for development; independently adjusts action strategies.

The presented scale of levels allows for qualitative and quantitative diagnostics; determination of the initial and final levels of entrepreneurial thinking development; and its use in the baseline, formative, and control stages of an experiment.

Discussion. The results of the empirical study indicate the effectiveness of the pedagogical interpretation of entrepreneurial thinking among high school students. This is supported by the conclusions of Yousaf et al., (2021), who argue that this approach can serve as a basis for the development of entrepreneurial competencies, particularly self-efficacy and proactiveness, mediated by the rapid growth of innovation-oriented thinking in the business domain. The results obtained in this study are consistent with the findings of Rajagopal et al., (2022), which confirm the effectiveness of the interpretive approach in developing entrepreneurial thinking, as it emphasizes the value-based and ethical foundations of professional self-determination. In this regard, it is methodologically justified to identify levels of entrepreneurial thinking that allow for differentiating the degree of development of each of its components from minimal to high,

and that serve as a tool for pedagogical analysis and the design of educational interventions.

These conclusions pave the way for ensuring high-quality learning by strengthening the beliefs of high school students in achieving high performance in the future. Al-Kwafi et al., (2023) emphasize that the development of entrepreneurial thinking is significantly supported by the implementation of co-working spaces and the facilitation of interpersonal communication.

Innovative processes occurring in all sectors of production in our country, along with the dynamics of the labor market, impose new requirements on the quality of education received by school graduates. In this context, the development of entrepreneurial thinking among high school students requires organizing the educational process based on practice-oriented forms of learning aimed at cultivating students' abilities to analyze socio-economic situations, design and implement educational projects, make informed decisions, and take responsibility for them. The effectiveness of this process is ensured through the inclusion of specialized programs and pedagogical technologies in the curriculum that stimulate

cognitive activity, independence, and social initiative among students.

Conclusion. The pedagogical interpretation of entrepreneurial thinking in high school students allows it to be considered as an integrative characteristic of personality, encompassing motivational value, cognitive, activity-based, personal, and social components. Analysis of domestic and international studies has shown that entrepreneurial thinking is developed as a cognitive activity resource, enabling the ability to make reasoned decisions under conditions of uncertainty, and is realized through academic, project-based, and practice-oriented activities.

It has been found that school practice lacks systematic pedagogical mechanisms and diagnostic tools to ensure the purposeful

development of entrepreneurial thinking, which confirms the need for the development of methodological support and educational programs. At the same time, the age characteristics of high school students and existing pedagogical approaches make it possible to conditionally distinguish levels of entrepreneurial thinking development, which can be used as a reference for the analysis and design of educational activities. Thus, the development of entrepreneurial thinking in high school students represents an objective pedagogical necessity, requiring the integration of motivational, cognitive, and personal components into the educational process, as well as the implementation of modern pedagogical approaches and specialized programs aimed at fostering social activity and the ability to make independent decisions.

References

- Abdygapparova, S. B. (2003). *Innovative Management: Textbook*. Almaty. 196.
- Aksenova, L. N., & Sokolskaya, L. V. (2021). Formation of Entrepreneurial Competencies in Schoolchildren. In *Formation of Entrepreneurial Competencies: Challenges, Tools, and Results: Collective Monograph* (pp. 90–104). Orehovo-Zuyevo: GGTU.
- Al-Kwafi, O. S., Petrovska, I., Parast, M., & Safari, A. (2023). Individual entrepreneurial orientation, self-efficacy, and managerial skills for project performance: an integrated structural approach and analysis. *Journal of Entrepreneurship in Emerging Economies*, 15(6), 1634–1657. <https://www.emerald.com/jee/article/15/6/1634/199637>
- Cattell, R. B., Eber, H. W., & Tatsuoka, M. M. (1970). *Handbook for the Sixteen Personality Factor Questionnaire (16PF)*. Champaign, IL: Institute for Personality and Ability Testing.
- Chilenga, N., Dhlwayo, S., & Chebo, A. K. (2022). The entrepreneurial mindset and self-employment intention of high school learners: The moderating role of family business ownership. In *Frontiers in Education*, 7, 946389. <https://www.frontiersin.org/journals/education/articles/10.3389/feduc.2022.946389/full>
- Costa Jr, P. T., & McCrae, R. R. (2000). *NEO Personality Inventory*. American Psychological Association. <https://psycnet.apa.org/record/2004-12703-172>
- Davis, J. P., & Dean, L. L. (2016). *Entrepreneurial mindset profile: Measuring entrepreneurial thought and action*. Greensboro, NC: Entrepreneurial Learning Academy.
- Ermakova, Yu. A. (2024). Development of Entrepreneurial Thinking and the Integration of Artificial Intelligence into Educational Programs for Children. In *Advances in Science and Technology: Collection of Articles of the LXIV International Scientific-Practical Conference*. (pp. 155–158). Moscow.
- Gorodovich, A. M. (2008). Model for the formation of entrepreneurs' style thinking among students of secondary schools providing general education while using means that develop a social and pedagogical environment, *Science & Technique*, (3), 65–72.
- Grigoryeva, O. A. (2022). Entrepreneurial Activity of Teenagers. In S. V. Radygina (Ed.), *Development of Entrepreneurial Competencies in Schoolchildren and Students: Integration into the Educational Process* (pp. 53–55). Izhevsk: Udmurt University.
- Guryanova, S. Y. (2023). *Entrepreneurial Class: From Knowledge to Practice, From Practice to Results*, *Socio-Sphere*, (1), 52–55.
- Ibraeva, E. M. (2007). *Formation of the Professional Potential of a Future Engineer*
- Kopytova, A. I., & Martynenko, D. A. (2024). Formation of Entrepreneurial Thinking in Schoolchildren: Overview of Practices, Justification of Relevance, Development and Testing of Measurement Materials, *Samara Scientific Bulletin*, 13(4), 140–146.

Kudysheva, A. A., & Pshembayev, M. A. (2019). Historical Preconditions for the Implementation of Entrepreneurship in the Higher Education System. In *Entrepreneurial University – Science, Innovation, Education and Business: Collection of Scientific Papers* (pp. 130–134). Pavlodar.

Myers, I. B., McCaulley, M. H., & Most, R. (1985). *Manual: A guide to the development and use of the Myers-Briggs Type Indicator*. <https://cir.nii.ac.jp/crid/1971430859764641821/holdings>

Neneh, N. B. (2012). Entrepreneurial mindset and business success: The moderating role of self-efficacy, *Journal of Small Business and Enterprise Development*, 19(3), 395–410.

Rajagopal, N. K., Qureshi, N. I., Durga, S., Ramirez Asis, E. H., Huerta Soto, R. M., Gupta, S. K., & Deepak, S. (2022). Future of business culture: An artificial intelligence-driven digital framework for organization's decision-making process. *Complexity*, 2022(1), 7796507. <https://onlinelibrary.wiley.com/doi/abs/10.1155/2022/7796507>

State Compulsory Standard of General Secondary Education of the Republic of Kazakhstan. (2022). On the Approval of State Compulsory Education Standards for All Levels of Education: Order of the Minister of Education of the Republic of Kazakhstan, August 3, 2022, No. 348.

Tengri News. (2024). Ten thousand schoolchildren were trained in the basics of entrepreneurship under the “Təlimger” project of the “Khalyk” foundation. https://tengrinews.kz/kazakhstan_news/10-tyisyach-shkolnikov-obuchenyi-osnovam-predprinimatelstva-542981/

Tokayev, K.-Zh. (2025). A Just Kazakhstan: Law and Order, Economic Growth, Social Optimism: Address to the People of Kazakhstan. Retrieved from <https://www.akorda.kz/ru/poslanie>

Troshina, E. P. (2018). Development of Creative and Entrepreneurial Thinking Using Modern Approaches to Learning. In *Education, Innovation, Research as a Resource for Community Development*. (128–132).

Yousaf, U., Ali, S. A., Ahmed, M., Usman, B., & Sameer, I. (2021). From entrepreneurial education to entrepreneurial intention: a sequential mediation of self-efficacy and entrepreneurial attitude. *International Journal of Innovation Science*, 13(3), 364-380. <https://www.emerald.com/ijis/article/13/3/364/135186>

Zhienbayeva, N. B. (2008). *Development of Personality Activity of the Modern Younger Schoolchild in the Process of Communication Formation*. Almaty. 250 p.

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