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## SYNECTICS AS ONE WAY OF DEVELOPING SOFT SKILLS OF HIGH SCHOOL STUDENTS

### *Abstract*

This article examines the potential for fostering soft skills in high school students, aimed at preparing them for independent living, enabling quick adaptation to changing circumstances, making decisions in complex situations, working in teams, and communicating effectively with others. Many psychological challenges exist regarding the effective development of these skills in this age group.

The analysis of various sources has identified synectics as an effective method for developing soft skills in high school students, as it addresses the aforementioned challenges. During a psychological experiment that included surveys and observational studies, the level of development of soft competencies within the "4K" framework—creativity, communication, critical thinking, and cooperation—was assessed using synectics techniques such as "Feedback," "Situational Modeling," "Teamwork," "Creative Thinking," "Brainstorming," "Communication," and quiz games. The implementation of synectics positively influenced the development of all soft skills among high school students in the experimental group, particularly enhancing creativity and communication abilities. Consequently, recommendations were made for the general use of synectics to develop soft skills in high school students.

The study holds practical significance, as the findings can be utilized by educators to develop new psychologist methods aimed at enhancing soft skills in high school students.

**Keywords:** *soft skills, synectics, high school students, cooperation, communication, creativity, critical thinking.*

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## СИНЕКТИКА ЖОҒАРЫ СЫНЫП ОҚУШЫЛАРЫНДА ЖҰМСАҚ ДАҒДЫЛАРДЫ ДАМЫТУДЫҢ БІР ЖОЛЫ РЕТІНДЕ

*Аңдатпа*

Бұл мақалада жоғары сынып оқушыларын өз бетінше өмір сүруге дайындауға, өзгермелі жағдайларға тез бейімделуге, қиын жағдайларда шешім қабылдауға, топтарда жұмыс істеуге және басқалармен тиімді қарым-қатынас жасауға бағытталған жұмсақ дағдыларды дамыту әлеуеті қарастырылады. Осы жас тобында осы дағдыларды тиімді дамытуға қатысты көптеген психологиялық қиындықтар бар.

Өртүрлі дереккөздерді талдау синектиканы жоғары сынып оқушыларының жұмсақ дағдыларын дамытудың тиімді әдісі ретінде анықтады, өйткені ол жоғарыда аталған мәселелерді шешеді. Сауалнамалар мен бақылау зерттеулерін қамтитын психологиялық эксперимент барысында "4к" шеңберіндегі жұмсақ құзыреттіліктердің даму деңгейі – шығармашылық, қарым-қатынас, сыни тұрғыдан ойлау және ынтымақтастық - "Кері байланыс", "Ситуациялық Модельдеу", "Топтық Жұмыс", "Шығармашылық Ойлау", "Миға шабуыл", "Қарым-қатынас" және викториналық ойындар. Синектиканы жүзеге асыру эксперименттік топтағы жоғары сынып оқушыларының барлық жұмсақ дағдыларының дамуына, әсіресе шығармашылық және коммуникативтік қабілеттерін арттыруға оң әсер етті. Демек, жоғары сынып оқушыларының жұмсақ дағдыларын дамыту үшін синектиканы жалпы қолдану бойынша ұсыныстар жасалды.

Зерттеудің практикалық маңызы зор, өйткені алынған нәтижелерді психологтар орта мектеп оқушыларының жұмсақ дағдыларын арттыруға бағытталған оқытудың жаңа әдістерін әзірлеу үшін пайдалана алады.

**Түйін сөздер:** soft skills, синектика, жоғары сынып оқушылары, ынтымақтастық, байланыс, шығармашылық, сыни ойлау.

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## СИНЕКТИКА КАК ОДИН ИЗ СПОСОБОВ РАЗВИТИЯ SOFT SKILLS У СТАРШЕКЛАСНИКОВ

### Аннотация

В данной статье объектом исследования являются возможности развития soft skills у старшекласников, которые призваны подготовить их к самостоятельной жизни, уметь быстро адаптироваться к изменяющимся условиям, принимать решения в сложных ситуациях, действовать в команде и эффективно общаться с другими людьми. Поскольку существует множество психологических проблем, касающихся их эффективного развития в данной возрастной категории.

Анализ источников показал, что одним из эффективных способов развития soft skills у старшекласников является синектика, так как она может помочь в решении вышеперечисленных проблем. В ходе психологического эксперимента на основе анкетирования и включенного наблюдения был установлен уровень сформированности мягких компетенций системы «4К»: креативность; коммуникация; критическое мышление и сотрудничество через использование технологий синектики («Обратная связь», «Ситуационное моделирование», «Работа в команде», «Творческое мышление», «Мозговой штурм», «Общение» и игры-викторины). Использование синектики оказало положительное влияние на развитие всех soft skills у старшекласников из экспериментальной группы, в особенности на креативность и коммуникативные навыки. В этих

условиях были даны рекомендации по использованию синектики для старшеклассников в целом и для развития soft skills.

Исследование в целом имеет практическую значимость, так как полученные результаты могут быть использованы психологами для разработки новых методик обучения, направленных на развитие soft skills у старшеклассников.

**Ключевые слова:** soft skills, синектика, старшеклассники, сотрудничество, коммуникация, креативность, критическое мышление.

## INTRODUCTION

The contemporary education system aims to cultivate a lasting interest in learning among students, particularly high schoolers, by tailoring the educational process to their age-specific needs. High school students are gearing up for independent living and aspire to graduate ready for adulthood. Soft skills are globally acknowledged as critical indicators of this readiness. It is important to emphasize that soft skills play an increasingly vital role in today's world, facilitating successful social adaptation.

In recent years, developing soft skills in high school students has become a pressing priority for the modern education system, as reflected in updated national education standards. This urgency stems from various challenges faced by the education system in Kazakhstan regarding the cultivation of soft skills among high school students. These challenges include the absence of effective teaching methods and technologies tailored to this age group, a lack of motivation among high school students to learn soft skills (as they are often viewed as secondary to academic knowledge), and the insufficient experience of teachers in teaching soft skills, as many are unsure how to effectively foster these skills in high school students.

According to some authors [1], one effective method for developing soft skills in high school students is synectics, as it addresses the aforementioned challenges. Synectics is introduced in the educational system as a development tool aimed at fostering soft skills in high school students by engaging them in tasks with practical applications. Employing synectics can equip high school students with essential skills for teamwork, articulating their ideas and thoughts, analyzing information more efficiently, and making independent decisions quickly. It is believed that teachers can create more engaging and motivating assignments for their high school students by utilizing synectics, thereby aiding in the development of their soft skills.

Soft skills encompass a broad spectrum of abilities, including the capacity to organize and collaborate within a team, negotiate and communicate effectively with others, exhibit creativity, engage in critical thinking, maintain motivation, set goals, and adapt to changes while learning in similar conditions.

Methods for developing these skills are typically presented as theoretical approaches aimed at enhancing specific abilities essential for an individual. These methods are often utilized in educational settings to foster personal growth and success in academic or professional environments.

Synectics is a technique to ensure that a person achieves inventive creativity skills, or a way of solving their problems that is based on the individual's creative thinking and group work. Synectics as a method of development is based on socio-psychological motivation through the use of collective intellectual activity.

The focus of this article is to investigate the effectiveness of using synectics as a method for developing soft skills in high school students. The objective is to create practical tasks that leverage the synectics method to enhance soft skills among high school students. These tasks are designed to be connected to real-world problem-solving, necessitating creativity and collaborative thinking.

## MATERIALS AND METHODS

Through a literature review, we established historical evidence demonstrating the effectiveness of using the synectics method to develop soft skills in high school students. Synectics is a unique approach to problem-solving in group settings, emphasizing creative thinking.

This method was developed by William Gordon in the mid-twentieth century and is based on key principles for organizing thought processes, including involvement, detachment, reflection, postponement, and autonomy. This innovative approach marked a significant advancement in methods aimed at discovering new solutions during that period [2].

The term "Synectics" has Greek origins and literally means bringing together different, often contradictory components. The synectics method revolves around the concept of assembling individual creative minds into a cohesive team to collaboratively solve problems. It leverages unconscious mechanisms that emerge in human thinking during moments of creativity. This group thinking approach to skill development contrasts with the traditional emphasis on individual genius and its capabilities [3].

It's also valuable to reference more recent studies, such as Johnny Ceserani's book "From Brainstorming to Big Ideas," which discusses synectics as a method for fostering creativity in innovative activities. This approach is beneficial for individuals at all levels of responsibility, as it enables the rapid generation of group solutions while ensuring both novelty and quality.

Concerning high school students, this source highlights the potential of creative and innovative approaches to developing leadership skills in individuals. These methods facilitate the use of unexpected associations and non-traditional analogies when addressing assigned tasks.

The main stages of the development of synectics are reflected by us in Figure 1.

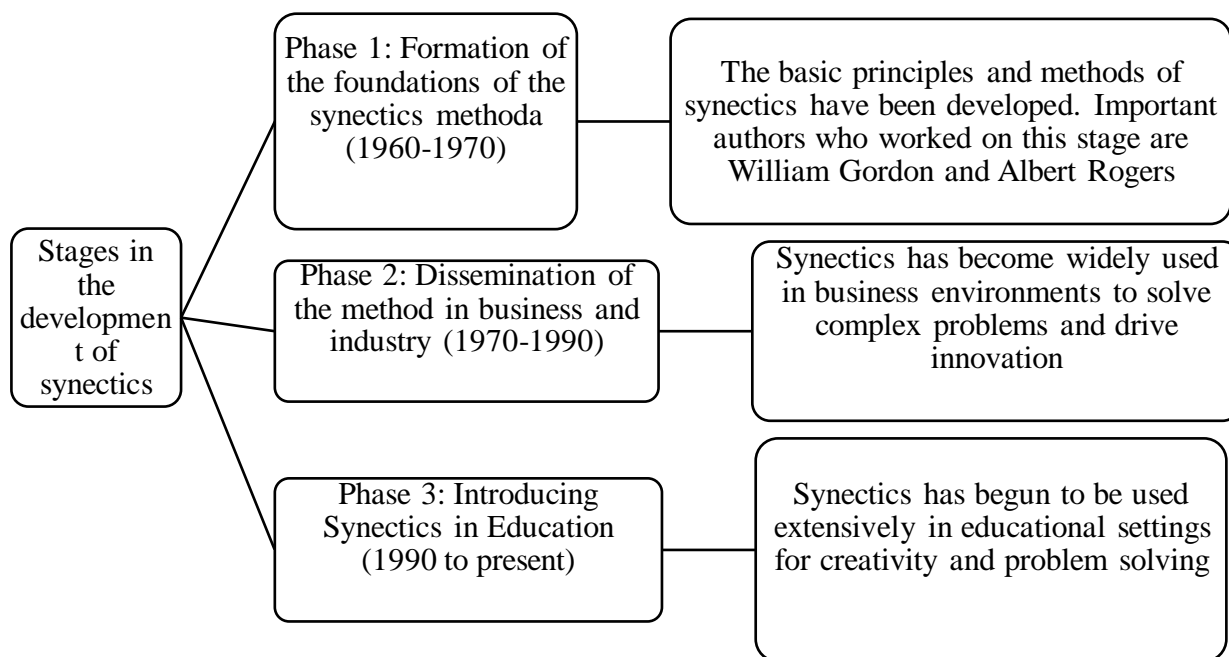


Figure 1 - Stages of synectics development

It is important to note that the concept of synectics was initially developed as a distinct method for use in industry and management. Its primary purpose was to stimulate creative work and find innovative solutions for addressing management and production challenges. Subsequently, experiments in the United States introduced an "educational" version of synectics into the educational system, applying it at the elementary, secondary, and higher education levels.

The initial stage in the development of the synectics method is documented in the works of various authors, including [4] and A.R. Rogers in "Synectics: The Development of Creative Behavior," among others.

About the time of spreading the synectics method for solving complex problems in business environment and for stimulating innovation in industry is written in his work VanGundy A.B.

The third stage is characterized by the introduction of synectics in the education system (began in the 1990s of the last century and continues to the present day). At this stage, as noted by Woods D.R., Woods B.D. [5] and Kapur M., Rummel N., Hancock C., Parris A., Pryor J. [6] synectics is increasingly being used in educational institutions to solve problems, including the development of soft skills and the development of creative abilities.

The article on organizing the educational process using synectics technology presents the results of an experiment implementing synectics in education. The findings indicate that the use of synectics enhanced students' understanding of the material and helped develop soft skills such as critical thinking and teamwork.

It is also important to acknowledge the contributions of several authors who conducted experiments on implementing the educational version of synectics in the educational system.

The article "The Use of Synectics in Teaching Younger Schoolchildren" outlines the methodology for conducting classes using synectics. It demonstrates, through experimental results, that employing synectics fosters the development of soft skills such as creativity and communication in children [7].

The study titled "Synectics as a Method of Teaching" was carried out within the realm of higher education. This research enabled the authors to demonstrate that synectics can be effectively used in teaching to address complex scientific and practical problems that demand creativity and collaborative thinking [8].

In his article, Cesarani D. discusses utilizing synectics to boost creativity in education. He shares his experience of incorporating synectics into the educational process through a series of experiments, which confirmed that using synectics in learning can enhance creativity (or creative thinking) and improve the ability to solve complex and challenging problems [9].

A group of authors in their study on students' understanding of the concept of variance by the method of synectics, with the help of an experiment, according to which one group tried to solve a complex problem and then received an explanation, and the other group immediately received an explanation then solved [10].

A group of other authors also investigated the impact of synectics on learning. In a survey of teachers of different disciplines, it was found that teachers who used synectics in their teaching achieved higher achievement rates from their students [11].

We also discovered that there is a significant lack of research on the implementation of synectics as a teaching method for high school students, with only two works by foreign authors noted. One group study aimed to determine the emotional engagement in the learning process and its relationship with perseverance in a game environment. This study, which used synectics for teaching high school students, demonstrated an increase in engagement levels and enhanced problem-solving skills during the experiment [12].

In the study examining personal involvement, effectiveness, and emotional reactions in computer-based learning among high school students, the influence of the synectics method was established. The experimental results indicated that the group utilizing synectics technology exhibited increased levels of involvement, and their learning outcomes improved across the board.

The need for researching the effectiveness of using synectics to develop soft skills among high school students in Kazakhstan arises from the current lack of sufficient scientific studies on this topic. Most existing research focuses on the application of synectics in business or adult education. Given the rapid pace of change in the modern world, it is crucial to begin developing soft skills during schooling in Kazakhstan, with particular emphasis on high school students.

The relevance of studying the effectiveness of using synectics to develop soft skills among high school students in Kazakhstan is driven by the need to create new teaching methods focused on cultivating these skills. The modern era demands that young Kazakhstani individuals possess not only subject-specific knowledge but also the ability to quickly adapt to changing conditions, make decisions in complex situations, work in teams, and communicate effectively. It is widely recognized that synectics is a promising approach for achieving the development of soft skills in high school students.

Thus, the research task we have set can be considered necessary and relevant to create an effective approach using synectics technologies in teaching high school students, as this approach, in our opinion, will help students more successfully adapt to the conditions of ever-changing life and become competitive specialists in the future.

## RESULTS

The primary research methods included a pedagogical experiment based on surveys and participant observation. Additionally, methods of mathematical statistics were employed to analyze the results. This integrated approach enables a comprehensive, objective, and dynamic analysis of the level of soft competencies in high school students.

A questionnaire was developed for the survey to assess the development of soft skills in high school students using various synectics technologies. The objective was to determine the level of development of soft competencies within the "4К" framework: creativity, communication, critical thinking, and cooperation.

The questionnaire included the following questions:

- Is it easy for you to participate in discussions when working in a team?
- Do you quickly identify which part of the work you could take on when working in a group?
- Do you become irritated if you cannot persuade your interlocutor?
- Do you listen patiently to your opponent until the end if their opinion is opposite to yours?
- Are you interested in solving tasks that require wit and ingenuity?
- Do you enjoy searching for interesting information on the lesson topic to compare it?

The response criteria were four options: Yes (often or always); Rather yes than no (often, but not always); Rather no than yes (sometimes, but not often); No (never or almost never)".

The study was conducted in three stages: control; formative and confirmatory. The study involved 50 people, two groups of high school students of 10th grade, control and experimental.

At the formative stage in the experimental group the following exercises within the framework of synectics technology were used:

"Feedback": work in pairs, in which one student is offered a breakthrough situation, then they change their roles.

"Situational modeling": work in groups of three or four. Each group is given the task of independently modeling some situation (a conflict in the classroom between individual classmates). The group has to come up with several options to solve the conflict and choose the most correct one;

"Teamwork" involves working in groups of four or five people. Each team is assigned a specific task, such as creating a presentation on "How to Improve the Quality of Education at School" or "How to Enhance the Classroom Environment." All team members are assigned roles within the team, and they collaborate to complete the given task.

"Creative Thinking". The group is given the task of solving a problem using the "Brainstorming" method using the creative approach of "finding the unusual in the ordinary". "Communication". Working in pairs, each pair receives a task on the topic "what profession they would like to get after graduation" and others. Partners listen to each other's opinions, ask questions and learn to easily show their feelings and thoughts.

Quiz-game technologies "Genius next to each other", "IntellectUm", "World of professions of the future" and some others. Teams and groups received rules and instructions on teamwork and group work, as well as rules and instructions for conducting games.

The methods, organization and obtained research determine the novelty of the study in the following indicators:

- used synectics technology as a new way of learning, which is not yet widespread in educational practice. This makes it particularly interesting for research and study;
- research on the effectiveness of using synectics to develop soft skills is still a new area of research;

- special target audience, as research on the effectiveness of using synectics to develop soft skills in high school students represents a new perspective, as high school students as a target audience has rarely been used;
- experimental design, which allows comparing learning outcomes with and without the use of synectics. This makes it possible to evaluate the real effectiveness of this way of learning.

## DISCUSSION

The obtained results of the comparative analysis were grouped into 4K: Cooperation, Communication, Creativity and Critical Thinking are shown in Table 1.

| Soft skills       | Groups                 | High level | The average level | Low level |
|-------------------|------------------------|------------|-------------------|-----------|
| Cooperation       | The experimental group | 16,6       | 66,8              | 16,6      |
|                   | The control group      | 3,8        | 69,6              | 26,6      |
| Communication     | The experimental group | 20,2       | 66,8              | 13,0      |
|                   | The control group      | 6,6        | 53,8              | 39,6      |
| Creativity        | The experimental group | 29,6       | 53,8              | 16,6      |
|                   | The control group      | 6,3        | 73,8              | 20,2      |
| Critical thinking | The experimental group | 6,6        | 76,8              | 16,6      |
|                   | The control group      | 0          | 81,0              | 19,0      |

In the initial stage, over half of the respondents in both groups exhibited the same level of soft skills..

After the use of synectics technologies, the participants of the experimental group showed a higher level of mastery of all four groups of soft skills. In the control group, the percentage of students with a high level of soft skills is lower compared to the experimental group. This can be illustrated with examples of specific types of soft skills.

Cooperation: The experimental group exhibits a high level of development at 16.6%, whereas the control group shows only 3.8%. Conversely, a low level of development is more prevalent in the control group at 26.6% compared to 16.6% in the experimental group. This suggests that the use of synectics tools had a significant positive impact on the development of this skill in the experimental group.

Communication: The experimental group also has a higher proportion of students with a high level of development at 20.2%, compared to just 6.6% in the control group. Additionally, the number of students with a low level of development in the experimental group is half that of the control group. This indicates that the use of synectics tools significantly improved the communication skills of participants in the experimental group.

Creativity: The experimental group has a high level of 29.6% of students, while the CG has only 6.3 (a difference of more than 4 times), the low level of development also has a lower number of students in EG (16.6), in CG (20.2). This suggests that the use of synectics tools contributed to the enhancement of creative thinking among the participants in the experimental group.

Critical Thinking: The experimental group showed a higher level of critical thinking (6.6%) and low level of critical thinking (16.6%), while the control group showed a lower level, as high level was not defined in anyone and low level was defined in more (19%). This indicates that the use of synectics tools significantly influenced the development of this skill in the participants of the experimental group.

It has been observed that the use of synectics positively impacts the development of soft skills among high school students in the experimental group. Synectics significantly enhances creativity and communication skills, followed by cooperation and creative thinking. This variation is partly due to the short duration of the experiment. The experimental group shows a larger disparity between high and low levels of soft skill development, indicating greater differentiation in the results. Overall, the findings

suggest that synectics helps improve the average level of soft skill development among high school students.

## CONCLUSION

Through theoretical analysis, we have established that synectics can effectively develop soft skills in high school students by utilizing special teaching methods such as situational modeling, feedback, and game technologies. These methods help students enhance their communication, teamwork, creativity, and critical thinking skills. The experiment demonstrated that incorporating synectics into the learning process can elevate the development of soft skills in high school students. However, it is crucial to acknowledge that the effectiveness of each synectics method depends on the individual characteristics of each student.

The practical significance of this study lies in its potential to inform the creation of new teaching methods aimed at developing soft skills in high school students. These methods could assist educators in designing more effective training programs tailored to the demands of the modern world and the evolving educational landscape.

Recommendations for using synectics with high school students include:

- Dedicate 10-15 minutes of each lesson to solving non-standard and interesting real-life problems.
- Hold monthly synectics sessions to address a list of problems, summarize results at the end of the day, and award the winning group.
- Integrate synectics into project work to help students generate new ideas and solutions.
- Organize "synectics weeks" once a year, allowing students to participate in competitions and games to solve various problems, with winners receiving recognition and rewards.

Recommendations for using synectics as a way to develop soft skills of high school students:

- be sure to create a comfortable atmosphere for students to work in, so that students feel free to express their thoughts without fear of being judged;
- set students a task that requires creative thinking and the search for non-standard solutions. This could be project work, brainstorming or a game;
- divide students into groups and give each group a different task. Let each group work independently of each other.
- help students develop communication, creativity, critical thinking and collaboration skills by organizing various discussions and debates within groups.
- keep students active by asking them questions and encouraging them to actively participate in the discussion.
- evaluate each group's performance and reward the best participants.
- conduct a reflection after each session so that students can analyze their experience and understand what they can improve next time.

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