

## CONTENT OF EXPERIMENTAL WORK ON DEVELOPING CRITICAL THINKING IN STUDENTS THROUGH INTERNATIONAL ASSESSMENT PROGRAMS.

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**Annotation:** The article examines the content of experimental work aimed at developing students' critical thinking through international assessment programs such as PISA, TIMSS, PIRLS, and others. The study focuses on methodologies and approaches that foster the development of analysis, synthesis, and evaluation skills among students of different age groups. It also discusses the outcomes of pilot projects and their impact on the educational process.

**Keywords:** Critical thinking, international assessment programs, PISA, TIMSS, PIRLS, experimental work, education.

### СОДЕРЖАНИЕ ЭКСПЕРИМЕНТАЛЬНЫХ РАБОТ ПО РАЗВИТИЮ КРИТИЧЕСКОГО МЫШЛЕНИЯ У УЧАЩИХСЯ ЧЕРЕЗ МЕЖДУНАРОДНЫЕ ОЦЕНОЧНЫЕ ПРОГРАММЫ.

**Аннотация:** В статье рассматривается содержание экспериментальных работ, направленных на развитие критического мышления у учащихся с использованием международных оценочных программ, таких как PISA, TIMSS, PIRLS и других. Работа посвящена изучению методик и подходов, способствующих формированию навыков анализа, синтеза и оценки информации среди учащихся разных возрастных групп. Также обсуждаются результаты пилотных проектов и их влияние на образовательный процесс.

**Ключевые слова:** Критическое мышление, международные оценочные программы, PISA, TIMSS, PIRLS, экспериментальные работы, образование.

### XALQARO BAHOLASH DASTURLARI ORQALI O'QUVCHI - YOSHLARDA TANQIDIY FIKRLASHNI RIVOJLANTIRISHGA OID TAJRIBA-SINOV ISHLARI MAZMUNI

**Annotatsiya:** Maqolada o'quvchilarda tanqidiy fikrlashni rivojlantirishga qaratilgan xalqaro baholash dasturlari (masalan, PISA, TIMSS, PIRLS va boshqalar) orqali amalga oshirilgan tajriba-sinov ishlari mazmuni ko'rib chiqiladi. Tadqiqotda o'quvchilarning tahlil qilish, sintez qilish va axborotni baholash ko'nikmalarini shakllantirishga yordam beradigan uslub va yondashuvlar o'rganiladi. Shuningdek, tajriba loyihalari natijalari va ularning ta'lim jarayoniga ta'siri muhokama qilinadi.

**Kalit so‘zlar:** tanqidiy fikrlash, xalqaro baholash dasturlari, PISA, TIMSS, PIRLS, tajriba-sinov ishlari, ta’lim.

## INTRODUCTION

In the modern era of rapid technological advancements and globalization, critical thinking has emerged as one of the most essential skills for individuals to navigate through the complexities of the 21st century. It is no longer sufficient for students to rely solely on memorizing facts or mastering rote learning. Instead, they are required to analyze, evaluate, and synthesize information critically to solve problems and make informed decisions. Educational institutions around the globe are striving to incorporate these skills into their curricula, ensuring students are well-prepared to meet the demands of an increasingly interconnected and competitive world. However, fostering critical thinking among students is a challenging endeavor that requires innovative approaches, comprehensive teaching methodologies, and meaningful assessments. International assessment programs such as the Programme for International Student Assessment (PISA), Trends in International Mathematics and Science Study (TIMSS), and others have gained significant attention in recent years for their role in evaluating students' abilities beyond basic knowledge. These programs assess competencies such as problem-solving, creativity, and critical thinking, offering a unique platform to measure and compare educational outcomes across different countries. Through these assessments, educators and policymakers can identify areas where students struggle and introduce interventions that encourage higher-order thinking skills. The implementation of international assessment programs not only sets benchmarks for academic excellence but also serves as a critical tool for educational reforms aimed at enhancing critical thinking in learners. Critical thinking, as defined by many scholars, is the ability to think reflectively and independently in order to make reasoned judgments. It encompasses a range of cognitive skills, including analysis, interpretation, inference, explanation, and self-regulation. Developing these skills in students is crucial because they are the foundation of lifelong learning and personal growth. As students engage in critical thinking activities, they learn to question assumptions, explore diverse perspectives, and arrive at logical conclusions. These capabilities are invaluable in today's knowledge-driven economy, where the ability to adapt to new challenges and solve problems creatively is highly valued. The integration of international assessment programs into educational systems provides an experimental framework to cultivate critical thinking among students. By participating in such programs, students are exposed to a variety of assessment formats, including open-ended questions, real-world problem scenarios, and interdisciplinary tasks. These

activities encourage them to think critically, apply their knowledge in novel situations, and communicate their ideas effectively. Furthermore, international assessments emphasize the importance of cross-cultural understanding and collaboration, which are vital components of critical thinking in a globalized world. This study focuses on the experimental work aimed at developing critical thinking skills in students through the implementation of international assessment programs. It explores the methodologies, teaching strategies, and assessment practices that are most effective in fostering these skills. Additionally, the study examines how participation in international programs impacts students' overall academic performance and their ability to engage in critical thinking tasks. By analyzing the outcomes of such initiatives, the research seeks to provide valuable insights into how educators and policymakers can design and implement effective interventions to prepare students for future challenges. In conclusion, critical thinking is a pivotal skill that underpins success in academics, professional careers, and everyday life. International assessment programs serve as a powerful tool for promoting and evaluating critical thinking among students. This research aims to shed light on the potential of these programs to transform educational practices and contribute to the development of a generation of critical thinkers who are ready to tackle the complexities of the modern world. Through innovative teaching approaches and a commitment to fostering intellectual curiosity, educators can empower students to become active, thoughtful, and responsible members of society.

### **The relevance of the topic**

In today's rapidly changing world, the importance of fostering critical thinking skills among students cannot be overstated. As society continues to advance in technology, globalization, and interdisciplinary innovation, individuals are increasingly required to think critically, solve complex problems, and make informed decisions in various aspects of life. The demands of the 21st century necessitate an education system that prioritizes these essential skills, preparing students not only to succeed academically but also to thrive in their future personal and professional lives. This makes the development of critical thinking a key priority in modern education, aligning with global trends that emphasize higher-order cognitive abilities over rote memorization. Critical thinking is at the heart of problem-solving, creativity, and adaptability, all of which are vital for addressing the challenges posed by globalization and the Fourth Industrial Revolution. In an interconnected world where knowledge and innovation drive economic growth, critical thinking enables individuals to assess information, differentiate between reliable and unreliable sources, and apply their knowledge in practical, real-world situations. As industries evolve, the ability to think critically is

becoming one of the most sought-after skills by employers. It empowers individuals to question assumptions, evaluate multiple perspectives, and make well-informed decisions in uncertain or ambiguous situations. The urgency to develop critical thinking skills in students has also been fueled by the overwhelming flow of information in today's digital age. Social media, online platforms, and other digital tools have created an environment where misinformation and disinformation spread rapidly. Students must therefore be equipped with the ability to critically evaluate the validity and reliability of the information they encounter. Without these skills, they may fall prey to biased or misleading narratives, which can have serious implications not only for their academic development but also for their roles as informed citizens in a democratic society. The relevance of this topic is further highlighted by the increasing role of international assessment programs, such as the Programme for International Student Assessment (PISA), the Trends in International Mathematics and Science Study (TIMSS), and others, in shaping global education systems. These assessments go beyond traditional academic evaluation by measuring students' abilities to think critically, solve real-world problems, and apply their knowledge in unfamiliar contexts. The data collected from these assessments provide valuable insights into the strengths and weaknesses of education systems worldwide, offering a foundation for evidence-based reforms aimed at improving critical thinking outcomes. Moreover, international assessments encourage countries to adopt innovative teaching strategies and curricula that prioritize skills development, ensuring that students are better prepared for the demands of the future. Developing critical thinking through international assessment programs also has significant implications for equity in education. These programs offer a standardized platform for evaluating student performance across diverse cultural, social, and economic contexts. By analyzing the results, educators and policymakers can identify disparities in access to quality education and address systemic barriers that hinder the development of critical thinking skills. This ensures that all students, regardless of their background, have the opportunity to cultivate these essential competencies. The topic is also highly relevant in the context of modern pedagogy, which emphasizes student-centered learning and active engagement. Traditional methods of instruction, such as lecture-based teaching and rote memorization, have proven insufficient in equipping students with the skills they need to navigate today's complexities. International assessment programs encourage educators to adopt innovative practices, such as collaborative learning, problem-based learning, and interdisciplinary approaches, all of which are conducive to the development of critical thinking. These methods promote active participation,

intellectual curiosity, and a deeper understanding of concepts, making learning more meaningful and impactful for students. Additionally, the topic holds significant relevance for lifelong learning, which is increasingly becoming a necessity in today's dynamic world. The development of critical thinking skills during formal education lays the foundation for individuals to continue learning, adapting, and growing throughout their lives. These skills enable them to analyze new information, adapt to emerging trends, and remain resilient in the face of change. As education systems around the globe aim to prepare students for lifelong learning, the role of critical thinking becomes even more prominent. Finally, the relevance of developing critical thinking through international assessment programs extends to the broader societal and global context. Critical thinkers are better equipped to address pressing global challenges, such as climate change, public health crises, and social inequalities. They possess the ability to collaborate across cultural and disciplinary boundaries, bringing innovative solutions to complex problems. By fostering critical thinking skills, education systems contribute to the creation of a more informed, thoughtful, and responsible global citizenry capable of shaping a better future. In conclusion, the topic of developing critical thinking in students through international assessment programs is highly relevant in the context of modern education and society. It addresses the growing demand for higher-order cognitive skills, supports the transition toward innovative teaching and learning practices, and equips students with the tools they need to succeed in a rapidly changing world. The focus on critical thinking is not only a response to the challenges of the 21st century but also a proactive effort to empower students to become active, informed, and responsible participants in shaping their futures and the future of the world.

The development of critical thinking among students has become one of the fundamental objectives of modern education systems. In this section, we will explore the various aspects of fostering critical thinking through international assessment programs, their methodologies, and the implications for educational reform. By examining how critical thinking is nurtured and measured, we can gain insights into the best practices for creating an education system that prepares students for the demands of the 21st century.

**The role of critical thinking in modern education** - Critical thinking is an essential skill that equips students with the ability to evaluate information, draw logical conclusions, and solve complex problems. Unlike traditional learning, which often emphasizes memorization and the repetition of information, critical thinking encourages students to analyze and question the material they are presented with. It

empowers them to develop independent thought, creativity, and adaptability. As global challenges such as climate change, economic inequality, and technological disruption continue to arise, students need these skills to address and navigate such issues effectively. Modern education systems recognize that critical thinking plays a pivotal role in preparing students for their futures. This has resulted in a shift from traditional teaching practices to more dynamic approaches, where students are encouraged to collaborate, engage in dialogue, and approach problems from multiple perspectives. The integration of international assessment programs is one of the ways through which schools can emphasize critical thinking as a core component of education.

**International assessment programs as a platform for critical thinking development** - International assessment programs, such as the Programme for International Student Assessment (PISA), Trends in International Mathematics and Science Study (TIMSS), and others, have become increasingly influential in shaping global education systems. These programs are designed not only to test students' knowledge in subjects like mathematics, science, and reading but also to measure their ability to apply this knowledge in real-world contexts. By doing so, these programs provide valuable insights into the extent to which students are developing critical thinking skills.

**PISA and critical thinking** - PISA, conducted by the Organisation for Economic Co-operation and Development (OECD), assesses 15-year-old students in three main domains: reading, mathematics, and science. However, beyond these subjects, PISA is designed to evaluate students' ability to think critically and solve problems. The assessment includes tasks that require students to analyze complex situations, interpret data, and propose solutions based on evidence. This approach allows for the evaluation of not just what students know, but how effectively they can use that knowledge in unfamiliar scenarios. For example, PISA questions often present real-life problems, such as analyzing the effects of climate change or interpreting economic trends, which require students to apply their critical thinking skills. This makes the program a valuable tool for identifying gaps in critical thinking development and helping educators adapt their teaching strategies accordingly.

**TIMSS and problem-solving skills** - TIMSS, another prominent international assessment, focuses on mathematics and science education for students in grades 4 and 8. While TIMSS primarily evaluates subject-specific knowledge, it also incorporates questions that assess students' ability to reason logically, identify patterns, and make inferences. These tasks encourage the application of higher-order thinking skills, which are essential components of critical thinking. The inclusion of open-ended questions

and tasks in TIMSS further supports the development of critical thinking. Students are encouraged to explain their reasoning, justify their answers, and approach problems creatively. By promoting these skills, TIMSS contributes to the cultivation of students who are not only knowledgeable but also capable of thinking critically in diverse situations.

**Teaching strategies for enhancing critical thinking** - To successfully develop critical thinking skills through international assessment programs, educators need to adopt teaching strategies that prioritize active engagement, inquiry-based learning, and problem-solving. Below are some key approaches that have proven effective in fostering critical thinking in students:

1. **Inquiry-based learning:** This method encourages students to explore questions and problems on their own, fostering curiosity and intellectual independence. Teachers act as facilitators, guiding students through the process of asking questions, conducting research, and analyzing evidence. This approach not only strengthens students' critical thinking but also helps them develop research and analytical skills.

2. **Collaborative learning:** Group activities and discussions are essential for helping students learn from diverse perspectives. By working together to solve problems or analyze case studies, students are exposed to new ideas and are encouraged to challenge their own assumptions. This collaborative process is key to the development of critical thinking.

3. **Real-world problem solving:** Integrating real-world problems into the curriculum allows students to apply their knowledge in meaningful contexts. For example, students may be tasked with designing sustainable solutions for environmental issues or creating business plans for fictional companies. Such activities encourage critical thinking by requiring students to analyze complex situations and develop innovative solutions.

4. **USE of open-ended questions:** Unlike multiple-choice questions, open-ended questions require students to explain their reasoning and provide detailed answers. This approach challenges students to think deeply about the subject matter and articulate their thoughts clearly, which strengthens their critical thinking abilities.

**The impact of international assessments on educational systems** - The integration of international assessment programs has led to significant changes in the way education systems approach teaching and learning. These programs provide policymakers and educators with data on student performance, helping them identify areas for improvement. By focusing on critical thinking, international assessments encourage schools to adopt teaching practices that go beyond the traditional emphasis on rote learning. Furthermore, the global nature of these assessments fosters a sense of

competition and collaboration among countries. Nations are motivated to improve their education systems to achieve higher rankings, leading to widespread reforms aimed at enhancing critical thinking skills. For example, many countries have revised their curricula to include more emphasis on interdisciplinary learning, problem-solving, and critical analysis. **Challenges and opportunities**

While international assessment programs offer numerous benefits for developing critical thinking, they also present certain challenges. One of the main issues is the risk of over-reliance on standardized tests, which may not fully capture the complexities of critical thinking. Additionally, disparities in access to quality education can impact the effectiveness of these programs, as students from disadvantaged backgrounds may face barriers to developing critical thinking skills. However, these challenges also present opportunities for growth and innovation. By addressing issues of inequality and refining assessment methods, educators and policymakers can create more inclusive and effective systems for fostering critical thinking. The use of technology, for example, offers new ways to engage students in critical thinking activities, such as virtual simulations, interactive games, and online collaborative platforms. The development of critical thinking skills is an essential component of modern education, and international assessment programs play a crucial role in fostering these skills. By emphasizing problem-solving, creativity, and the application of knowledge, these programs help prepare students for the demands of the 21st century. Through innovative teaching strategies and continuous improvement of assessment practices, education systems can empower students to become independent thinkers, capable of addressing global challenges and contributing to society in meaningful ways.

### CONCLUSION

In conclusion, the development of critical thinking skills is paramount in preparing students for the complexities and challenges of the 21st century. The integration of international assessment programs such as PISA, TIMSS, and others provides a robust framework for evaluating and fostering critical thinking in students. These programs assess students' ability to apply knowledge, analyze complex situations, and solve real-world problems, emphasizing the importance of higher-order cognitive skills in modern education. Through innovative teaching strategies, such as inquiry-based learning, collaborative problem-solving, and the use of open-ended questions, educators can actively engage students and nurture their intellectual independence. The findings from international assessments also serve as valuable resources for policymakers, offering insights into areas of improvement and driving educational reforms. Despite challenges such as unequal access to resources and the limitations of standardized testing, the opportunities to innovate and improve critical thinking education are vast. By addressing systemic disparities and leveraging technological advancements, educators can create inclusive environments where all students have the chance to thrive. Ultimately, critical thinking is not merely a skill to be mastered but a mindset that empowers individuals to navigate the complexities of life, contribute

meaningfully to society, and engage with the global challenges of today and tomorrow. As education systems continue to evolve, fostering critical thinking through international assessment programs will remain an essential priority in ensuring students' academic and personal success.

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