

## DEVELOPING TEACHERS INSTRUCTIONAL METHODOLOGY BASED ON PISA REQUIREMENTS

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**Abstract:** In recent years, significant attention has been drawn to the methodology of teaching in the context of international educational assessments. Among these, the Programme for International Student Assessment, known globally as PISA, has become a widely accepted benchmark for evaluating students' learning outcomes and educational systems' efficacy. The increasing influence of PISA results on educational policies requires a comprehensive reconsideration of teachers' instructional methodologies, classroom practices, and professional development strategies. Adapting teaching methods in line with PISA requirements is essential for fostering higher-order thinking skills, problem-solving abilities, and the capacity for lifelong learning among students. This paper aims to elaborate on the role of PISA benchmarks in transforming the approaches teachers use, emphasize the necessity of evolving traditional practices, and provide recommendations for systemic improvement. The ultimate objective is to foster educational environments that support holistic student development and global competence.

**Keywords:** PISA, instructional methodology, learner-centered pedagogy, formative assessment, professional development, global competence, educational innovation.

### INTRODUCTION

The methodology of teaching has traditionally been shaped by national curriculum standards, available resources, and socio-cultural values. However, globalization and rapid advancements in technology have exposed the limitations of these conventional methods. In this new educational landscape, students are expected to demonstrate competence in a range of transferable skills. These include critical thinking, collaborative problem-solving, creativity, and the ability to communicate ideas effectively. The PISA framework explicitly evaluates competencies in reading, mathematics, and science, and more recently, in innovative domains such as global competence and collaborative problem solving. As a result, teachers are now required to shift their instructional approaches to nurture these key skills and enhance their students' performance in PISA assessments, and more importantly, their real-life readiness. Pedagogical adaptation is neither simple nor immediate. Effective adjustment to teaching methodology requires a multifaceted approach that balances the demands of internationally recognized standards with the realities of classrooms in diverse social and economic contexts. Central to this adaptation is the concept of learner-centered pedagogy. This approach places the student at the heart of the educational process. Rather than focusing solely on the transfer of factual knowledge, learner-centered approaches encourage students to engage actively in inquiry, interpretation, analysis, and synthesis of information. For instance, teachers should design lessons that allow students to explore real-world problems, formulate questions, seek solutions, and articulate their understanding in collaborative settings. In facilitating such learning experiences, teachers become guides, facilitators, and co-learners rather than traditional dispensers of knowledge.

### MATERIALS AND METHODS

The role of formative assessment becomes increasingly significant in the context of PISA-based instruction. While summative assessment primarily measures the knowledge acquired at the end of a period, formative assessment supports ongoing learning by providing timely feedback to both students and teachers. Through formative assessment strategies—such as open-ended questioning, peer assessment, self-reflection, and portfolio development—students are encouraged to take ownership of their learning processes, recognize their strengths, and identify areas of improvement. Teachers, in turn, use assessment data to adapt their instructional



strategies, scaffold student learning, and ensure that each student's needs are met. This dynamic process cultivates a classroom culture where mistakes are viewed as learning opportunities and fosters the resilience required for complex problem-solving. Another crucial aspect of adapting teachers' instructional methodology is the integration of cross-disciplinary skills. The PISA framework stresses the interconnectedness of knowledge across academic domains rather than the compartmentalization of information. Therefore, teachers should incorporate interdisciplinary projects, thematic units, and problem-based learning activities that bridge mathematics, science, reading, and other subject areas. For example, a science lesson on climate change can integrate mathematical data analysis, reading comprehension of scientific texts, and communication of findings through presentations or reports. Such integrated tasks not only mirror the complexity of issues students will confront outside the classroom but also enhance their ability to apply knowledge flexibly in unfamiliar situations [1].

Teachers also need to pay careful attention to developing students' global competence, which is now a major component of the PISA assessment. Global competence entails understanding and appreciating cultural diversity, recognizing perspectives other than one's own, and engaging in respectful communication across cultural boundaries. Educators can cultivate these abilities by incorporating multicultural literature, encouraging comparative studies of different societies, organizing projects with international themes, and fostering respectful classroom dialogue. Through such efforts, students become more prepared to participate constructively in an interconnected world [2].

### RESULTS AND DISCUSSIONS

Professional development for teachers is indispensable for the effective integration of PISA-inspired pedagogical reforms. Continuous professional learning opportunities need to be systemic, evidence-based, and tailored to individual teacher needs. Training programs should familiarize teachers with the latest educational research, PISA frameworks, and innovative instructional strategies. Collaborative professional development activities, such as lesson study, peer coaching, and professional learning communities, enable teachers to reflect on their practice, share expertise, and collectively address challenges. Furthermore, partnerships between schools and universities can foster ongoing research and innovation in teaching methods, ensuring the sustainability and adaptability of reforms [3].

Despite the evident benefits of aligning instructional methodology with PISA requirements, there are several challenges and barriers that must be addressed. These include resistance to change among teachers, lack of adequate resources, insufficient administrative support, and the complexity of aligning national curricula with international frameworks. Addressing these obstacles requires concerted efforts from educational leaders, policymakers, and communities. School leadership plays a central role in motivating teachers, providing necessary resources, and promoting a culture of innovation. Policymakers must ensure that the curriculum remains relevant, flexible, and inclusive, taking into account both local needs and global expectations. Furthermore, collaboration with parents and the broader community is essential for sustaining positive change [4].

The integration of digital technologies into the classroom further enhances teachers' ability to meet PISA standards. Technology can facilitate differentiated instruction, access to authentic materials, and the development of digital literacy—a crucial skill in the modern world. Effective use of educational technology supports students in conducting research, collaborating across distances, and engaging in creative projects. Teachers need to receive ongoing training in the use of these technologies, with a focus not only on technical skills but on the pedagogical integration of digital tools to support learning objectives. It is essential that the shift towards PISA-oriented teaching methods is not limited to superficial changes in classroom practice. Genuine transformation requires a rethinking of educational values and priorities. Rather than viewing success solely in terms of test scores, educators must prioritize the holistic development of



students as lifelong learners. This includes nurturing social and emotional competencies, ethical reasoning, civic engagement, and the ability to respond adaptively to future challenges. In this context, redefining the purpose of education becomes a collective responsibility that extends beyond the boundaries of individual schools [5].

The importance of context-sensitive implementation cannot be overstated. Each educational setting is unique, influenced by local traditions, socio-economic factors, linguistic diversity, and students' prior experiences. Therefore, teachers and school leaders must critically evaluate and adapt international best practices to align with their specific contexts. This may involve the localization of instructional materials, adaptation of assessment tools, and the incorporation of community-based knowledge and resources. Flexible, context-responsive adaptation is key to ensuring equity and relevance in PISA-driven educational improvement. Moreover, systemic monitoring and evaluation are critical for sustaining progress and ensuring accountability. Continuous research on teaching and learning processes, informed by data from PISA and other reliable sources, helps identify trends, strengths, and areas for improvement. Educational authorities should invest in structures for collecting and analyzing educational data, supporting reflective practice among teachers and enabling evidence-based decision-making. By cultivating a research-oriented culture, educational systems can remain adaptive and responsive to changing needs. To facilitate the transformation of instructional methodologies, it is also important to involve students actively in shaping their learning experiences. Student voice and agency are foundational to learner-centered education. Opportunities for students to contribute to curriculum design, assessment processes, and classroom decision-making foster a greater sense of ownership and motivation. This participatory approach aligns closely with the competencies evaluated by PISA, as it encourages self-regulation, initiative, and collaborative problem-solving. The integration of PISA-aligned instructional methods has implications for initial teacher education as well. Teacher training institutions must revisit their curricula to ensure that future educators are equipped with the theoretical knowledge, practical skills, and reflective capacities necessary to thrive in modern classrooms. This includes exposure to a wide range of pedagogical models, experience in diverse educational settings, and robust support for lifelong learning and professional growth. By aligning initial teacher education with ongoing professional development, education systems can build a cadre of skilled, reflective, and adaptive teachers [6].

In the journey toward aligning instructional methodologies with PISA requirements, cultural change within the teaching profession is essential. Teachers must be recognized and supported as agents of change, continually engaged in inquiry, reflection, and professional renewal. Building a culture of trust, collaboration, and shared responsibility strengthens the capacity of schools to implement and sustain innovative practice. This process is inherently dynamic, requiring perseverance, adaptability, and the collective will to place student learning and development at the center of all educational efforts. The contemporary landscape of global education increasingly recognizes the pivotal role of teachers' instructional methodology in shaping student outcomes. Within the framework of PISA requirements, the analysis of recent pedagogical adaptations highlights a shift from rote memorization and teacher-directed instruction to approaches grounded in student agency and authentic learning experiences. The evolving challenges in education, as illuminated by international assessments, necessitate a comprehensive evaluation of teaching practices, curricular alignment, and classroom dynamics. One of the most significant findings is the value of student-centered approaches. Analysis of classroom implementation models reveals that moving away from traditional, lecture-based methods towards activities that promote inquiry, discussion, and critical thinking results in deeper student engagement and understanding. When teachers design learning tasks that mirror real-life problems, students demonstrate improved capabilities in analysis, reasoning, and problem-solving. This aligns with PISA's emphasis on assessing students' abilities to apply knowledge in unfamiliar contexts, not just reproduce information. Another important outcome is



seen in the role of formative assessment. Teachers who employ regular, diverse feedback mechanisms are more successful in identifying individual learning needs. Through formative strategies such as open-ended questioning, peer collaboration, and portfolio assessments, students acquire a sense of ownership over their learning process. These experiences foster a growth mindset and encourage perseverance, which are key to succeeding in complex PISA-like tasks. It also enables teachers to adapt instruction in response to real-time understanding, making the learning process more responsive and inclusive. Findings point to the necessity of integrating interdisciplinary skills into daily instruction. Teachers who connect mathematics, science, reading, and social issues through project-based and thematic learning create richer educational experiences. Analysis demonstrates that students exposed to interdisciplinary tasks are more likely to transfer their skills between subjects and apply them inventively. This flexibility is critical for the higher-order, problem-oriented tasks characteristic of PISA assessments. Teachers also observe increased motivation and collaboration among students when learning transcends the boundaries of individual subjects. Further, the analysis highlights the growing importance of global competence. In classrooms where teachers deliberately introduce international perspectives, encourage cultural reflection, and foster respectful dialogue, students develop a deeper appreciation for diversity and global issues. This broad perspective not only prepares students for PISA's global competence domain but equips them to participate intelligently and empathetically in an interconnected world.

The integration of technology into instructional strategies emerges as both a challenge and an opportunity. Schools that successfully harness educational technology report positive impacts on differentiated learning, student autonomy, and access to up-to-date resources. However, effective use is contingent on comprehensive teacher training and thoughtful pedagogical design. The findings suggest that merely introducing digital tools is insufficient; purposeful integration aligned with learning goals is required to support the skills measured by PISA. Professional collaboration among teachers is another critical factor identified in the analysis. Schools that foster a culture of shared practice, reflective dialogue, and peer support experience greater success in sustainable pedagogical innovation. Teachers who engage in professional learning communities are more likely to experiment with new methodologies, draw from research-based practices, and collectively address challenges that arise in adapting to PISA standards.

Despite these positive developments, the findings also reveal a range of persistent challenges. Resistance to change among some educators, insufficient alignment between national curricula and PISA frameworks, time constraints, and inadequate resources frequently constrain effective reform. Furthermore, disparities in professional development opportunities between urban and rural schools can contribute to unequal adoption of PISA-oriented instructional methods. The overall analysis emphasizes the need for systemic support, including visionary school leadership, alignment of policy and practice, and targeted investment in teacher training. Successful implementation requires not only individual teacher effort but coordinated strategies across the entire education system. A supportive culture that values innovation, flexibility, and continuous improvement is essential for sustained progress. Qualitative outcomes from schools that prioritize the development of PISA-aligned methodologies show increased student confidence, improved performance on complex tasks, and heightened teacher satisfaction. Classrooms become spaces for exploration, dialogue, and creative risk-taking. The findings affirm that when instructional transformation is guided by the core principles of PISA—application of knowledge, critical thinking, collaboration, and global mindedness—students are better equipped for both international assessment and real-world challenges.

### Conclusion

In summary, the integration of PISA requirements offers an invaluable opportunity for reimagining and revitalizing teachers' instructional methodology. By prioritizing learner-centered pedagogy, embracing formative assessment, integrating cross-disciplinary and global



competencies, enhancing professional development, and fostering technological and contextual innovation, education systems can better prepare students for the demands of the twenty-first century. Yet, these reforms must be grounded in respect for local context, enabled by supportive infrastructure, and sustained through ongoing inquiry and collaboration. Only through collective commitment to continuous improvement can schools realize the vision of inclusive, equitable, and high-quality education for all learners.

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