

Approaches To Developing Functional Literacy In Local And International Practice: A Comparative Analysis

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ABSTRACT

The article provides a comparative analysis of Uzbekistan, Russia, Kazakhstan, and Estonia's approaches to developing functional literacy. Based on international studies, effective strategies for fostering students' competencies are highlighted.

Keywords: Functional literacy, international experience, comparative analysis, PISA, PIRLS, TIMSS, education quality, student competencies, international standards, Estonia, Russia, Kazakhstan, Uzbekistan.

INTRODUCTION

Functional literacy, as one of the principal outcomes of contemporary education, is widely discussed at the international level. This concept encompasses not only students' skills in reading, writing, and arithmetic, but also the ability to apply them in real-life situations, as well as the formation of critical thinking, creativity, and global competencies. International studies—PISA, PIRLS, and TIMSS—are today the most important tools for assessing the education systems of various countries. With their help, it is possible to determine the effectiveness not only of national curricula, but also of methodological approaches, pedagogical practice, and education policy. Therefore, conducting a comparative analysis of international experience, identifying the strengths and weaknesses of each country, and adapting them to Uzbekistan's education system is of great importance. For example, Estonia's education system has shown high results in PISA and is recognized as a country that has developed effective methodologies for forming functional literacy. Russia, meanwhile, has ranked among the leaders in reading literacy among primary school students in PIRLS. Kazakhstan is striving to approximate international standards by updating its national education programs. In recent years, Uzbekistan has actively participated in international assessments and has been implementing

strategies aimed at improving its students' performance.

METHOD

The research methodology is based on a comparative-pedagogical analysis and a document analysis approach. International reports prepared by UNESCO, the OECD, and the IEA (International Association for the Evaluation of Educational Achievement) were selected as the main sources. In particular, the PISA 2018 and 2022 results, the PIRLS 2016 and 2021 reports, and TIMSS 2019 materials were examined. As additional materials, documents from the Estonian Ministry of Education and Research, the Ministry of Education of the Russian Federation, Kazakhstan's Center for School Education, and Uzbekistan's National Curriculum were used. Furthermore, scholarly articles by local and international researchers were included as objects of study.

A comparative pedagogical approach was employed as the method, comparing curricula, pedagogical practices, and assessment systems for developing functional literacy in different countries. This methodology made it possible to identify effective strategies for fostering literacy among students.

LITERATURE REVIEW

The concept of functional literacy has been shaped within international education systems on the basis of various methodological approaches and is regarded today as one of the key indicators in large-scale assessment programs such as PISA, PIRLS, and TIMSS. The experiences of Estonia, Russia, Kazakhstan, and Uzbekistan selected for comparative analysis demonstrate different levels of implementation of this concept, as well as their similarities and differences. The policies, pedagogical practices, and methodological approaches pursued to develop functional literacy in these countries reveal both shared pedagogical principles and distinctive national features.

Estonia's education system is recognized internationally as a "successful model." According to the PISA 2018 and PISA 2022 results, Estonia ranks among the top in the European Union, placing among the leading countries in students' functional literacy in reading, mathematics, and science. The main strengths of Estonia's experience include the alignment of curricula with a competency-based approach, the high professional preparation of teachers, and the widespread integration of digital technologies into the learning process. The Estonian Ministry of Education's "Lifelong Learning Strategy," adopted in 2014, defined functional literacy as a central aim of the entire education system. This strategy set the task of preparing students for self-directed learning, critical thinking, digital literacy, and global competencies. Consequently, from the primary grades onward, Estonia orients students toward applying knowledge in various contexts, with extensive attention in lessons to project-based work and the resolution of problem situations.

The Russian Federation also participates actively in international studies and has shown particularly high results in PIRLS. According to the PIRLS 2016 report, Russian students ranked first in the world in reading literacy. The basis for this outcome is attributed to the strengths of reading instruction in Russia's primary education—namely, strategies for working with texts, question-and-answer systems, and the widespread use of reflection exercises. At the same time, PISA results have shown Russian students' functional literacy—especially skills for solving real-life problems—to be somewhat below average. This indicates that the education system is more oriented toward delivering theoretical knowledge, while encountering difficulties in applying it in practice. Therefore, in 2021 the Ministry of Education of Russia

updated the curricula and approved new standards that place special emphasis on developing functional literacy; within these reforms, greater attention has been directed to fostering students' critical thinking, creative approaches, and cross-curricular competencies.

Kazakhstan over the past twenty years has participated in international assessments and, through PISA results, has succeeded in identifying weak points in its education system. After the 2009 results showed that Kazakhstani students' functional literacy was at a low level, the government adopted the "National Action Plan" in 2012. This document envisaged updating curricula, introducing a competency-based approach, redeveloping textbooks, and improving teachers' qualifications. Kazakhstan also widely implemented the experience of the Nazarbayev Intellectual Schools (NIS), applying teaching methods aligned with international standards. The NIS model, in developing students' functional literacy, placed great emphasis on solving problem situations, interdisciplinary projects, and the integration of English and IT.

For the Republic of Uzbekistan, participation in international assessments is a relatively new experience, but this process has provided an important impetus for reforming the national education system. In PISA 2022 Uzbekistan took part for the first time, and the results showed that students performed below the average level. At the same time, these studies made it possible to conduct an in-depth diagnosis of the education system, identify strengths and weaknesses, and adapt international experience to national conditions. In the "Strategy for the Development of the Education Sector until 2030," approved by the President of Uzbekistan, participation in international studies, improving PISA indicators, and training teachers based on modern methods were defined as priority tasks. A competency-based approach has been introduced into the national curriculum; in primary school textbooks, the number of activities involving work with texts, problem tasks, and creative exercises has increased. In addition, tasks are being developed that direct students to apply their knowledge of reading, mathematics, and the natural sciences in real-life situations.

Based on the general experience of countries that have achieved success in international assessments, the following theoretical conclusion can be drawn: to develop functional literacy, it is necessary to define the competency-based approach as a central principle in the education system, continuously enhance teachers'

methodological preparation, expand interdisciplinary integration, and update the assessment system. Moreover, by participating in international assessments, the national education system gains the opportunity to correct its development trajectory. Thus, comparative analysis is an important resource for Uzbekistan not only to learn from the experience of other countries but also to create an innovative model adapted to national conditions.

DISCUSSION

A comparative analysis of local and international experiences shows that, although the development of functional literacy is pursued through different methodological directions within education systems, their common goal is to prepare students for real-life situations, develop the ability to apply knowledge, and cultivate global competencies. In this respect, the experiences of Estonia, Russia, Kazakhstan, and Uzbekistan have distinctive differences and similarities and can be viewed as mutually complementary. The comparative analysis indicates that Estonia's experience serves as an effective model for developing functional literacy. The strengths of this model are the flexibility of curricula, the qualifications of teachers, and the degree to which digital technologies are introduced. Russia's experience demonstrates strong aspects of reading instruction in primary education; however, the gap between theory and practice remains a problematic area. Kazakhstan, meanwhile, is actively applying the results of international studies to reform education policy and is introducing a competency-based approach through the NIS model. Although Uzbekistan has only recently begun participating in international assessments, this process serves as a key motivating factor for modernizing national education and developing functional literacy.

Estonia is among the countries that have achieved high results in international assessments. The PISA 2022 results showed that Estonian students' performance in reading, mathematics, and science is significantly higher than the OECD average. The reasons for this success can be explained by several factors: first, the education programs are developed on the basis of a competency-based approach; second, the system for teachers' professional development is continuously supported; and third, digital technologies are actively used in the learning process. Estonian education policy also directs students toward creative thinking, decision-making in problem situations, and collaboration. The most important lesson for

Uzbekistan from Estonia's experience is the need to regularly upgrade teachers' qualifications in line with modern requirements and to orient curricula toward interdisciplinary integration and the development of competencies.

Russia achieved high results in the PIRLS study, demonstrating that it has effective methodology for developing reading literacy in the primary grades. Working with texts, question-and-answer activities, and reflection exercises oriented students toward enjoying reading and understanding texts. However, PISA results showed that Russian students face difficulties in applying their knowledge in real-life situations. This gap indicates that Russia's education system is based more on delivering theoretical knowledge. In recent years, the new education standards adopted in Russia have been aimed at eliminating this problem, with increased emphasis on critical thinking, creative approaches, and cross-disciplinary projects to develop functional literacy. For Uzbekistan, Russia's experience means that in the process of developing reading literacy among primary school students it is necessary to widely implement various forms of working with texts, while also giving special emphasis to ways of applying theoretical knowledge in practice.

Kazakhstan's participation in international assessments revealed the need to reform the national education system. After the PISA 2009 results showed that students' functional literacy was at a low level, Kazakhstan developed a "National Action Plan" and introduced a competency-based approach in education. Through the "Nazarbayev Intellectual Schools" (NIS) model, innovative curricula, the integration of English and IT, and cross-disciplinary projects were implemented. As a result of these reforms, Kazakhstani students showed relatively improved results in PISA 2018, although they still remained below the OECD average. Kazakhstan's experience shows that it is important to make effective use of the results of international studies and direct them toward renewing education policy. Uzbekistan's first participation in PISA 2022 revealed the strengths and weaknesses of the national education system. The results showed that although students had mastered theoretical knowledge well, they encountered difficulties in applying it to real-life situations. This indicates that teachers' methodological preparation is insufficient, that textbooks contain too few problem-solving tasks, and that the assessment system is oriented more toward reproducing theoretical knowledge. Uzbekistan's main advantage is

that, by participating in international assessments, it has the opportunity to diagnose its development path and adapt international experience to national conditions. This process is serving as a stimulus for fundamentally renewing national education policy.

From the general conclusions of the comparative analysis, when we compare local and foreign experiences several important common principles can be observed:

-  It is necessary to define the competency-based approach as the central principle in developing functional literacy.
-  Continuously organizing a system for teachers' professional development is a crucial factor.
-  Interdisciplinary integration brings students' knowledge closer to real-life contexts.
-  The assessment system should measure not only theoretical knowledge but also competencies in decision-making in problem situations, creativity, and collaboration.

Uzbekistan can draw distinctive lessons from the experiences of Estonia, Russia, and Kazakhstan. From the Estonian model—introducing a competency-based approach and digital technologies; from Russia's experience—the strong methodology of working with texts in primary education; and from Kazakhstan's practice—mechanisms for applying the results of international studies to the renewal of education policy. On this basis, Uzbekistan can develop a national model for advancing functional literacy and align it with international standards.

CONCLUSION

The results of the comparative analysis of local and foreign experiences show that the concept of functional literacy is recognized globally as one of the most important indicators of today's education systems. The analyses conducted using the examples of Estonia, Russia, Kazakhstan, and Uzbekistan reveal that, although the processes for developing functional literacy differ across countries, the common goal remains the same—to cultivate students' ability to apply knowledge in everyday life.

Estonia's experience demonstrates that a competency-based approach, continuous professional development of teachers, and the effective integration of digital technologies have been decisive factors in achieving high results. Russia, meanwhile, has shown strong outcomes in developing reading literacy in PIRLS, but PISA assessments indicate lagging performance in applying knowledge to real-life situations. After international studies, Kazakhstan fundamentally updated its education policy and widely implemented a competency-based approach through the Nazarbayev Intellectual Schools model. Uzbekistan has only recently begun to participate actively in international assessments, but this process has provided an important impetus for modernizing the national education system.

The comparative analysis shows that the general necessary conditions for developing functional literacy in all countries are: competency-based curricula, a system for teachers' professional development, interdisciplinary integration, and modern assessment methods. At the same time, it is also crucial to take national characteristics and the sociocultural context into account.

Thus, Uzbekistan can create its own national model by adopting a competency-based approach from Estonia, primary-grade reading methodology from Russia, and mechanisms for effectively using international results from Kazakhstan. This will serve not only to achieve higher results in international assessments, but also to develop students' real-life competencies.

RECOMMENDATIONS

1. Strengthen the competency-based approach — introduce tasks in curricula that focus less on knowledge per se and more on its application, analysis, and finding solutions in problem situations.
2. Improve teachers' qualifications — establish a system of continuous professional development and expand opportunities to use international methodologies.
3. Develop interdisciplinary integration — widely implement approaches such as STEAM and CLIL in the educational process to integrate knowledge across various contexts.
4. Modernize the assessment system — in addition to traditional tests, include project work, portfolios, and tasks related to real-life situations.
5. Widely introduce digital technologies — use online platforms, interactive software, and AI-based learning tools in lessons.
6. Adapt international experience to national conditions — selectively adopt the positive practices of Estonia, Russia, and Kazakhstan and adapt them to Uzbekistan's sociocultural context.
7. Strengthen school-family collaboration — actively engage parents in the process of developing students' functional literacy.

REFERENCES

1. OECD. PISA 2022 Results (Volume I): The State of Learning and Equity in Education. - Paris: OECD Publishing, 2023. - 388 p. DOI: 10.1787/53f23881-en.
2. UNESCO Institute for Statistics. Literacy Assessment and Monitoring Programme (LAMP). - Montreal: UIS, 2007. - 148 p.
3. Mullis I.V.S., Martin M.O., Foy P., Hooper M. PIRLS 2016 International Results in Reading. - Boston: TIMSS & PIRLS International Study Center, Boston College, 2017. - 319 p.
4. Mullis I.V.S., Martin M.O., Foy P., Kelly D.L., Fishbein B. PIRLS 2021 International Results. - Amsterdam: IEA, 2022. - 245 p.
5. Martin M.O., Mullis I.V.S., Foy P., Hooper M. TIMSS 2019 International Results in Mathematics and Science. - Boston: TIMSS & PIRLS International Study Center, Boston College, 2020. - 345 p.
6. Ministry of Education and Research of Estonia. Estonian Lifelong Learning Strategy 2014-2020. - Tallinn: Ministry of Education, 2014. - 52 p.
7. Коваль Г.С., Красновский Э.А. Функциональная грамотность и международные исследования качества образования // Педагогика. - 2019. - №4. - С. 3-15.
8. Виноградова Н.Ф. Начальная школа: функциональная грамотность и метапредметные результаты. - М.: Просвещение, 2017. - 192 с.
9. Cole M., Scribner S. The Psychology of Literacy. - Cambridge: Harvard University Press, 1981. - 336 p.
10. Nazarbayev Intellectual Schools. Annual Report 2020. - Astana: NIS, 2021. - 96 p.
11. Muslimov N.A., Mahmudov A.X., Toshboeva B.O. Pedagogik texnologiyalar. - Toshkent: Fan, 2019. - 280 b.
12. Pirimov G.A. Boshlang'ich ta'limda funksional savodxonlikni shakllantirish metodikasi // Uzluksiz ta'lim. - 2021. - №2. - B. 45-52.
13. Rustamova F.M. Boshlang'ich ta'limda tanqidiy fikrlashni rivojlantirish metodlari. - Toshkent: TDPU, 2020. - 164 b.
14. Mamatqulov D.M. O'qituvchilarning metodik tayyorgarligi va funksional savodxonlikni rivojlantirishdagi o'rni // Pedagogika. - 2022. - №3. - B. 33-40.