

DEVELOPING TEACHERS' PROFESSIONAL COMPETENCIES THROUGH THE LESSON STUDY APPROACH

A. Abukhanova* , B. Almukhambetova , A. Mamekova 

Zhetysu University named after I. Zhansugurov, Republic of Kazakhstan, Taldykorgan

*e-mail: agar-80@mail.ru, bibigulya74@mail.ru, asem_mamekova1979@mail.ru

Abstract. The study examines the effectiveness of the Lesson Study approach as a tool for developing teachers' professional competencies and improving students' learning outcomes in geography education. The relevance of the research is determined by the need to introduce collaborative, reflective, and evidence-based forms of teacher professional development in the context of updated educational content. The purpose of the study was to evaluate the impact of Lesson Study on teachers' instructional practice and students' functional literacy. The research was conducted during the 2019–2022 academic years in Secondary School-Gymnasium No. 2 and Secondary School No. 9 in Taldykorgan, Kazakhstan. The study involved 29 eighth-grade students, including 15 boys and 14 girls. The research methods included pedagogical experiment, classroom observation, questionnaire survey, formative and summative assessment, comparative analysis, and teacher reflection. Students were divided into three levels according to academic performance and motivation: high, medium, and low. The results showed positive dynamics in learning outcomes. The quality of learning increased from 86% to 90% among Level A students, from 70% to 81% among Level B students, and from 63% to 70% among Level C students. The number of high-order questions formulated by students also increased. The findings demonstrate that Lesson Study contributed to collaborative planning, reflective practice, identification of students' learning difficulties, and the use of differentiated tasks.

Keywords: Lesson Study, content update, competence, technology, innovation, collaboration, reflection.

Introduction

Contemporary educational systems are undergoing significant transformations caused by rapid scientific, technological, and social changes. These processes require teachers not only to possess strong subject knowledge but also to continuously improve their professional competencies, apply innovative pedagogical approaches, and respond effectively to the diverse learning needs of students. In this context, teacher professional development has become one of the key conditions for improving the quality of education. Previous studies have shown that Lesson Study contributes to teachers' professional development and can improve students' academic outcomes [1, 2].

In Kazakhstan, the modernization of school education is associated with the implementation of updated educational content, competency-based learning, formative assessment, and innovative teaching methods. These reforms place new demands on teachers, including the ability to reflect critically on their own practice, collaborate with colleagues, conduct classroom-based inquiry, and make pedagogical decisions based on evidence. Therefore, the search for effective mechanisms that support teachers' professional growth remains an important scientific and practical problem.

One of the approaches that has attracted considerable international attention is Lesson Study. Lesson Study is a collaborative and cyclical model of professional learning in which teachers jointly plan, teach, observe, analyze, and improve lessons with a focus on student learning. Since Lesson Study is based on teachers' systematic investigation of their own pedagogical practice, studies in this field often examine what teachers learn through participation in collaborative lesson research [3]. As a model of professional development, Lesson Study helps teachers better understand the relationship between lesson design, classroom interaction, and students' learning outcomes [4–6]. Teacher professional learning is therefore understood as a continuous process that supports teachers' reflection, adaptation, and improvement of instructional practice [7].

Recent studies confirm that Lesson Study contributes to the development of teachers' pedagogical content knowledge, reflective practice, research skills, collaboration, and collegiality [8]. It has also been shown to support professional learning not only among school teachers but

also among teacher educators, which demonstrates the broader pedagogical potential of this approach [9]. A systematic review by Benedict et al. indicates that Lesson Study can positively influence teachers' content knowledge, understanding of students' learning needs, and changes in instructional practice [10]. In addition, recent research has demonstrated the relevance of Lesson Study for the development of teachers' technological pedagogical content knowledge, which is particularly important in the context of digital transformation in education [11].

At the same time, contemporary research emphasizes that the effectiveness of Lesson Study depends on the quality of its implementation, the clarity of observation procedures, and the depth of post-lesson reflection. Kager et al. note that many Lesson Study publications still lack sufficient transparency in describing how teachers observe lessons and reflect on student learning, which makes it difficult to replicate and compare research findings [12]. This shows the need for empirical studies that present Lesson Study implementation in a clear, systematic, and evidence-based manner.

Despite the growing number of international studies, the implementation of Lesson Study in the context of Kazakhstan's secondary education remains insufficiently explored. In particular, there is limited empirical evidence on how Lesson Study contributes simultaneously to the development of teachers' professional competencies and the improvement of students' learning outcomes. This gap is especially relevant for geography education, where the development of functional literacy, critical thinking, and problem-solving skills requires the use of active, research-oriented, and collaborative teaching strategies.

The relevance of this study is therefore determined by the need to identify effective approaches to teacher professional development that combine collaborative learning, reflective practice, and classroom-based research. The scientific significance of the study lies in examining the pedagogical potential of Lesson Study as a mechanism for improving teachers' professional competencies and students' educational achievements within geography education.

The purpose of this study is to evaluate the effectiveness of Lesson Study technology in enhancing teachers' professional competencies and improving students' learning outcomes. To achieve this purpose, the study analyzes the theoretical foundations of Lesson Study, describes the stages of its implementation, and examines the results of a pedagogical experiment conducted in secondary schools.

Materials and methods

The use of Lesson Study was selected because this approach enables teachers to investigate their own pedagogical practice, identify students' learning difficulties, and improve teaching strategies through repeated cycles of planning, observation, and reflection [13]. This methodological choice is also supported by recent studies showing that Lesson Study strengthens teachers' reflective practice, collaboration, and evidence-based instructional decision-making [8, 10]. In addition, the emphasis on observation and post-lesson reflection corresponds to current recommendations for increasing transparency and reliability in Lesson Study research [12].

The empirical part of the study was conducted during the 2019–2022 academic years and focused on the topic "The impact of creative and problem-based tasks of varying complexity on the development of functional literacy among eighth-grade geography students." The research was carried out in Secondary School-Gymnasium No. 2 and Secondary School No. 9 in Taldykorgan, Republic of Kazakhstan. The experiment involved 29 eighth-grade students aged thirteen, including 15 boys and 14 girls. The participants were conditionally divided into three groups according to their academic performance, level of motivation, and ability to complete geography tasks. Group A included high-achieving students who demonstrated strong learning motivation and the ability to complete advanced-level tasks independently. Group B consisted of students with an average level of academic achievement who required partial instructional support. Group C included students with low academic motivation and difficulties in completing tasks without teacher or peer assistance.

Three representative students from these groups were selected for systematic observation during the Lesson Study cycles. This made it possible to analyze how students with different achievement levels

responded to differentiated tasks, collaborative work, and problem-based learning activities. At the initial stage of the experiment, a group of geography teachers identified the main pedagogical problem: insufficient development of students' functional literacy, weak motivation for completing geography tasks, and difficulties in applying theoretical knowledge to practical and problem-based situations. After identifying the problem, the teachers jointly planned a series of geography lessons aimed at improving students' understanding, engagement, and ability to solve subject-related tasks.

The lesson plans included differentiated tasks of low, medium, and high cognitive complexity. These tasks were designed in accordance with Bloom's taxonomy and focused on developing comprehension, application, analysis, explanation, and problem-solving skills. During each Lesson Study cycle, one teacher conducted the lesson, while the other teachers observed the selected students from Groups A, B, and C. The observers recorded students' engagement, task performance, interaction with peers, difficulties encountered during the lesson, and the degree of independence in completing learning activities. After each lesson, the teachers held a post-lesson discussion in which they analyzed the effectiveness of the selected teaching strategies, students' responses to differentiated tasks, and the difficulties observed during the lesson. Based on this analysis, the following lesson was revised and improved.

In total, twelve consecutive geography lessons were conducted during the experiment. The lessons included topics related to geographical data processing, the analysis of geographical models, the interpretation of maps and satellite images, and problem-solving tasks on the "Atmosphere" section. Empirical data were collected through pedagogical observation, questionnaire survey, formative assessment, summative assessment, teacher reflection, post-lesson discussion, student interviews, and feedback. The questionnaire was used to identify students' personal characteristics, including interest in learning, ability to complete tasks, self-confidence, and intellectual readiness. Formative assessment was applied during the lessons to monitor students' progress and provide feedback, while summative assessment results were used to compare students' academic achievements before and after the Lesson Study intervention.

The collected data were analyzed using both quantitative and qualitative methods. Quantitative analysis included the calculation of students' scores, percentages, and comparative indicators before and after the implementation of Lesson Study. The results of formative and summative assessments were compared across Groups A, B, and C in order to identify changes in academic performance, task completion, and learning motivation. Qualitative analysis was based on observation notes, teacher reflections, student feedback, and post-lesson discussions. This analysis made it possible to identify changes in students' independence, participation in group work, ability to solve geography-related problems, and response to differentiated instruction.

The combination of quantitative and qualitative methods provided a comprehensive assessment of the effectiveness of Lesson Study. Quantitative data made it possible to determine changes in students' learning outcomes, while qualitative data explained how these changes were associated with collaborative lesson planning, differentiated tasks, teacher reflection, and the improvement of instructional strategies. The study was conducted within the regular educational process. All data were analyzed in a generalized form without disclosing students' personal information, and observation and assessment procedures were used only for educational and research purposes.

Results and discussion

The implementation of the Lesson Study approach was analyzed on the basis of a pedagogical experiment conducted during the 2019–2022 academic years. The study focused on the topic "The impact of creative and problem-based tasks of varying complexity on the development of functional literacy among eighth-grade geography students." The experiment was carried out in Secondary School-Gymnasium No. 2 and Secondary School No. 9 in Taldykorgan, Republic of Kazakhstan. A total of 29 eighth-grade students aged thirteen participated in the study, including 15 boys and 14 girls.

At the beginning of the experiment, students demonstrated insufficient motivation for learning geography and showed difficulties in completing tasks requiring analysis, explanation,

comparison, and independent reasoning. The initial quality of learning was 58.6%, which indicated the need to revise instructional strategies and strengthen the role of problem-based and differentiated tasks in geography lessons. For this purpose, a group of geography teachers jointly planned and implemented a series of Lesson Study cycles aimed at developing students' functional literacy and critical thinking skills.

The students selected for observation were conditionally divided into three levels according to their academic performance, motivation, and ability to complete learning tasks. Group A included high-achieving students who were able to complete advanced-level tasks independently. Group B consisted of students with an average level of academic achievement who required partial instructional support. Group C included students with low motivation and difficulties in completing tasks without assistance. To identify the individual characteristics of the observed students, a questionnaire was developed in cooperation with the school psychologist.

The survey evaluated students' personal characteristics based on four criteria: interest (20 points), ability to complete tasks (20 points), self-confidence (20 points), and intelligence (30 points), with a maximum total score of 100 points.

Group A achieved the highest results, scoring 19 points for interest, 19 points for ability to complete tasks, 17 points for self-confidence, and 27 points for intelligence. The group's total score was 82 points out of 100.

Group B showed moderate performance, receiving 17 points for interest, 15 points for ability to complete tasks, 11 points for self-confidence, and 22 points for intelligence. The total score for Group B was 65 points.

Group C obtained the lowest scores among the three groups, with 11 points for interest, 11 points for ability to complete tasks, 7 points for self-confidence, and 15 points for intelligence. The group's total score was 44 points. Overall, the results indicate that Group A demonstrated the strongest personal characteristics, followed by Group B, while Group C showed the lowest levels across all assessed criteria.

The data show clear differences between the three groups. Students in Group A demonstrated high interest in learning, confidence in completing tasks, and a strong level of intellectual readiness. Students in Group B showed moderate results: they were generally able to participate in the learning process but required additional support when completing more complex tasks. Students in Group C had the lowest indicators, especially in self-confidence and task completion, which confirmed the need for differentiated instruction and continuous teacher support.

The quantitative analysis of the initial diagnostic data confirmed substantial differences among the three observed groups. Group A achieved 82 out of 100 points, Group B achieved 65 points, and Group C achieved 44 points. Thus, the difference between Groups A and C was 38 points, which indicates a considerable gap in learning motivation, confidence, and task-completion ability. In terms of individual indicators, Group A demonstrated the highest level of interest in learning and ability to complete tasks, reaching 95% in both indicators. Group B showed 85% for interest and 75% for task-completion ability, while Group C demonstrated only 55% for both indicators. The lowest result was observed in self-confidence among Group C students, which reached only 35%. These findings justified the use of differentiated tasks, individual observation, and peer-supported learning during the Lesson Study cycles.

During the Lesson Study cycles, teachers observed how students responded to tasks of different cognitive complexity. The lessons included problem-based and creative assignments related to geographical data processing, the analysis of geographical models, map interpretation, satellite imagery, and the study of atmospheric processes. Tasks were designed according to Bloom's taxonomy and included questions aimed at knowledge, understanding, application, analysis, synthesis, and evaluation Figure1.

The number and distribution of tasks used during the lessons were analyzed according to Bloom's Taxonomy levels: knowledge, understanding, application, analysis, synthesis, and evaluation.

In Lesson 1, a total of 18 questions and tasks were used. Among them, 7 were at the knowledge level, 3 at the understanding level, 3 at the application level, 2 at the analysis level, 1 at the synthesis level, and 1 at the evaluation level.

In Lesson 2, a total of 17 questions and tasks were included. The distribution was 4 knowledge-level tasks, 3 understanding-level tasks, 4 application-level tasks, 3 analysis-level tasks, 1 synthesis-level task, and 2 evaluation-level tasks.

In Lesson 3, the teacher used 19 questions and tasks. Of these, 6 were knowledge-level, 4 were understanding-level, 3 were application-level, 2 were analysis-level, 3 were synthesis-level, and 1 was an evaluation-level task.

In Lesson 4, there were 18 questions and tasks in total. The lesson included 6 knowledge-level tasks, 3 understanding-level tasks, 9 application-level tasks, 3 analysis-level tasks, 1 synthesis-level task, and 2 evaluation-level tasks.

Overall, the findings indicate that lower-level and middle-level cognitive tasks (knowledge, understanding, and application) were used more frequently than higher-order thinking tasks (analysis, synthesis, and evaluation), although all levels of Bloom's Taxonomy were represented across the lessons.

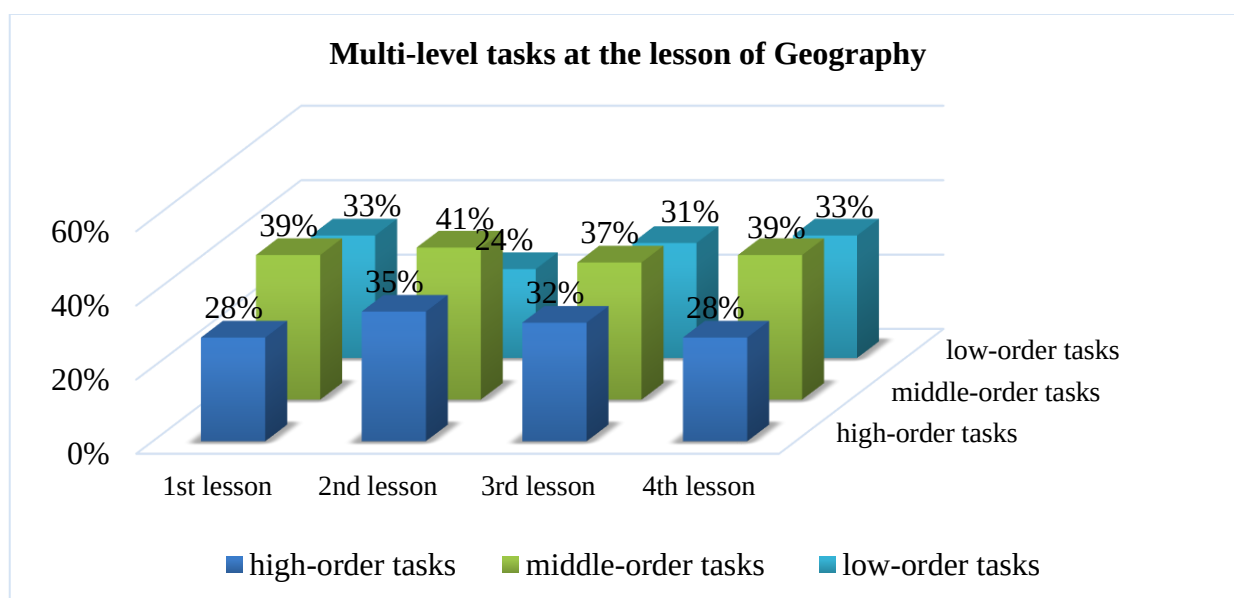


Figure1 – The proportion of multi-level tasks in geography lesson

The obtained results and Figure 1 demonstrate that the structure of the lessons gradually shifted from reproductive tasks to more complex tasks requiring application, analysis, and evaluation. Lower-level questions were used to activate students' prior knowledge and provide the necessary conceptual foundation, while higher-order tasks encouraged students to interpret geographical information, identify cause-and-effect relationships, compare phenomena, and formulate well-reasoned conclusions.

A combined quantitative and qualitative assessment of task completion was conducted by the teachers and the mentor throughout the series of lessons. The quality of students' performance on low-, medium-, and high-level tasks is presented in Figure 2.

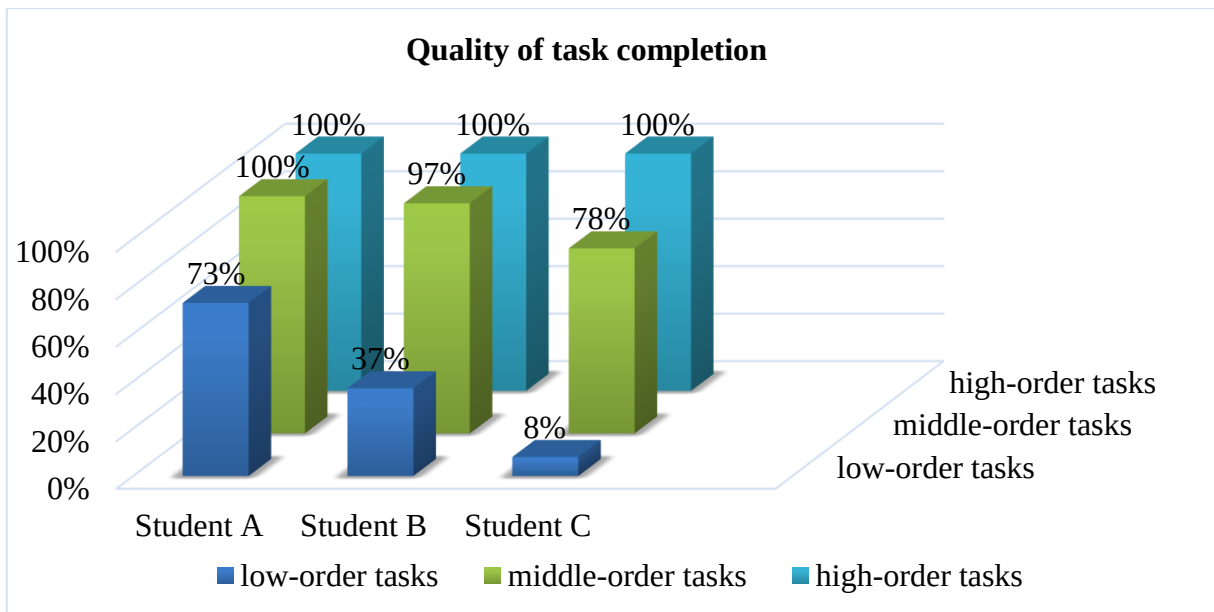


Figure 2 – The quality of level tasks completion

The results presented in Figure 2 indicate that all three groups were able to complete low-level tasks. Students from Groups A and B successfully completed most medium-level tasks, while students from Group C completed them only partially and mainly with teacher or peer support. High-level tasks were successfully completed primarily by students from Group A. Students from Group B attempted to complete such tasks but often required additional explanation, whereas students from Group C generally avoided tasks requiring analysis, synthesis, and evaluation.

The qualitative observations confirmed these differences. Students in Group A demonstrated confidence in completing analytical and creative tasks. They were able to explain geographical processes using examples such as tornadoes, tropical cyclones, and Hurricane Katrina. However, observations also showed that some high-achieving students experienced difficulties in verbalizing their ideas clearly when presenting answers to the class. To address this, teachers provided them with opportunities to act as peer tutors and explain lesson content to students from Groups B and C.

Students in Group B were attentive during lessons, actively participated in discussions, and responded to teacher questions. They were able to organize group work and assume the role of presenter or group leader. However, they often preferred low- and medium-level tasks and showed less confidence when working with creative and analytical assignments. The experiment showed that students in this group benefited from peer-supported learning, particularly when explanations were provided by students from Group A.

Students in Group C experienced the greatest difficulties. They were more dependent on external support and often relied on textbooks, glossaries, and the assistance of peers. Nevertheless, when tasks were adapted to their level and presented in a structured form, these students became more involved in the learning process. They were able to complete reproductive and partially problem-based tasks, especially when they were supported by visual materials, schemes, and step-by-step instructions.

At the beginning and at the end of the Lesson Study cycle, students were asked to complete an individual task: “Imagine that your classmate is preparing for a test. Create five questions on the lesson topic to assess their knowledge.” This task made it possible to assess whether students were able to formulate questions of different cognitive levels.

The results obtained at the beginning and at the end of the Lesson Study process were compared according to the levels of questions used: high-order, middle-order, and low-order.

At the beginning of the Lesson Study, Group A used a total of 6 questions, including 2 high-order questions, 3 middle-order questions, and 1 low-order question. By the end of the Lesson Study, Group A still used 6 questions in total; however, the number of high-order questions increased to 4, while the number of middle-order questions decreased to 2, and no low-order questions were used.

Group B also used a total of 6 questions at the beginning of the Lesson Study. These included 1 high-order question, 3 middle-order questions, and 1 low-order question. At the end of the Lesson Study, the total number of questions remained 6, with 2 high-order questions and 3 middle-order questions, while low-order questions were no longer present.

Group C began with 5 questions in total. No high-order questions were observed, while 2 questions were classified as middle-order and 3 as low-order. At the end of the Lesson Study, the number of high-order questions increased to 1, the number of middle-order questions increased to 3, and the number of low-order questions decreased to 1.

Overall, the findings demonstrate a positive shift in the quality of questioning during the Lesson Study process. The proportion of high-order questions increased across all groups, whereas the use of low-order questions decreased considerably. These results suggest that Lesson Study contributed to the development of higher-order thinking and more cognitively demanding classroom tasks.

The final results indicate positive changes in students' ability to formulate questions. At the beginning of the Lesson Study cycle, students, particularly those in Groups B and C, mainly produced low- and middle-order questions. By the end of the cycle, the number of high-order questions had increased, with the most noticeable improvement observed in Groups A and B. These findings suggest that systematic work with differentiated and problem-based tasks contributed to the development of students' critical thinking skills and functional literacy.

A more detailed quantitative comparison shows that the number of high-order questions increased in all three groups. In Group A, the number of high-order questions increased from 2 to 4, indicating a twofold improvement. In Group B, this indicator increased from 1 to 2, while in Group C it increased from 0 to 1. Overall, the total number of high-order questions increased from 3 at the beginning of the Lesson Study cycle to 7 at the end. At the same time, the number of low-order questions decreased from 4 to 1. This shift demonstrates that students gradually moved from reproductive questioning to more complex cognitive operations, including analysis, comparison, explanation, and evaluation.

The results of summative assessment also showed improvement. A comparison of the first- and third-quarter results demonstrated a positive trend in all three groups. The percentage of students achieving Level A increased by 39%, Level B by 28.5%, and Level C by 37%. These results are presented in Figures 3 and 4.

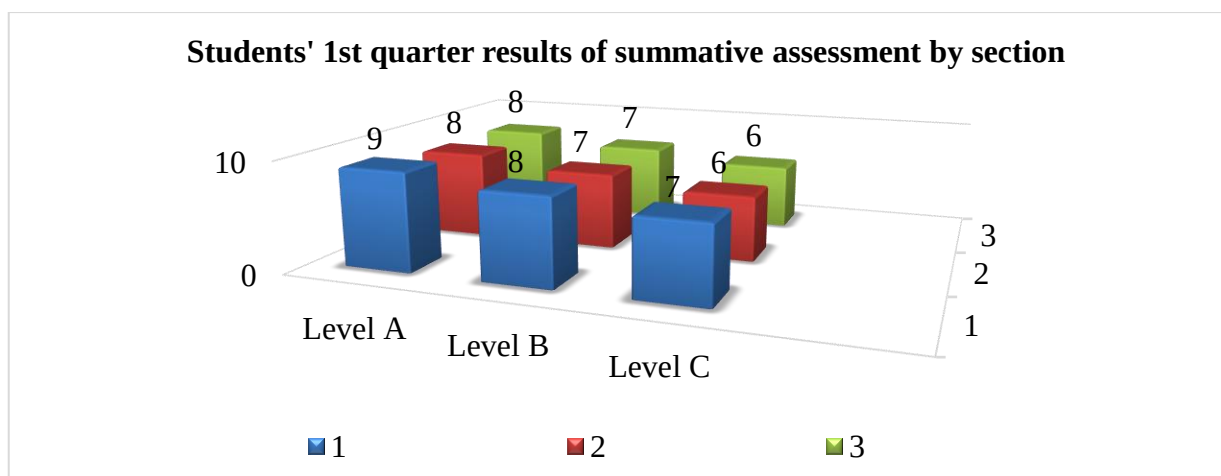


Figure 3 – Indicators of the results of summative assessment in the section for the 1st quarter of students at the ABC level

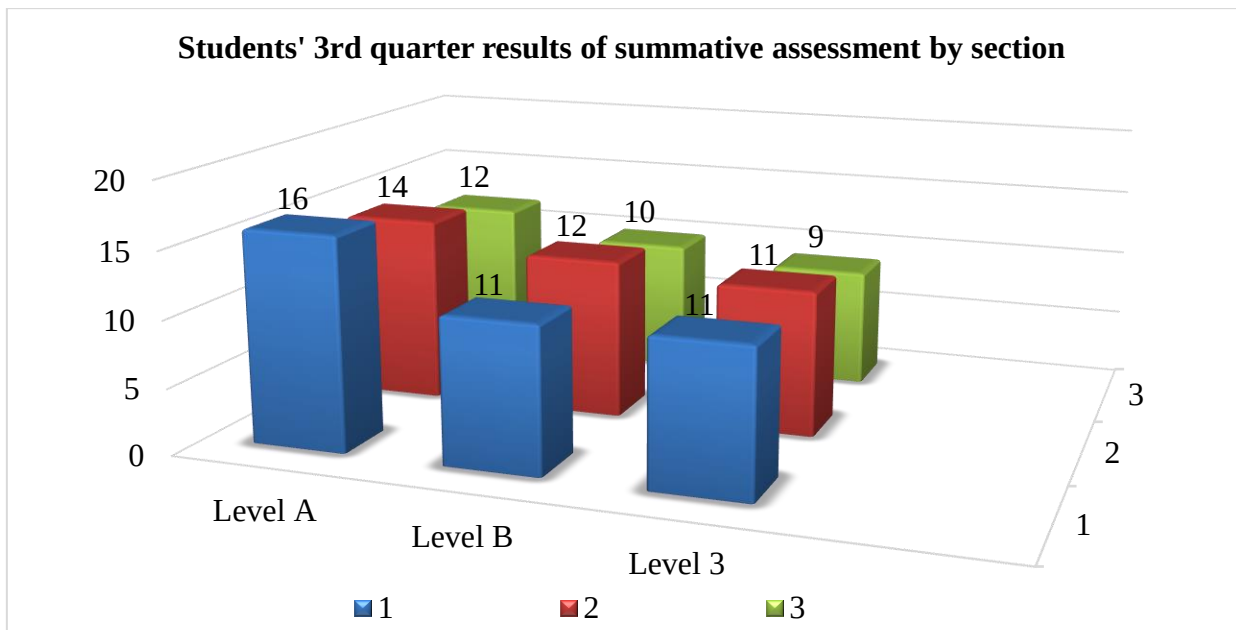


Figure 4 – Indicators of the results of summative assessment in the section for the 3rd quarter of students at the ABC level

The comparison of Figures 3 and 4 indicates that students' learning outcomes improved after the implementation of Lesson Study. The greatest progress was observed among students who initially experienced difficulties in geography. This suggests that differentiated tasks, peer interaction, formative feedback, and teacher reflection contributed to a more active involvement of students in the learning process.

The overall dynamics of summative assessment results across the quarters are presented in Figure 5.

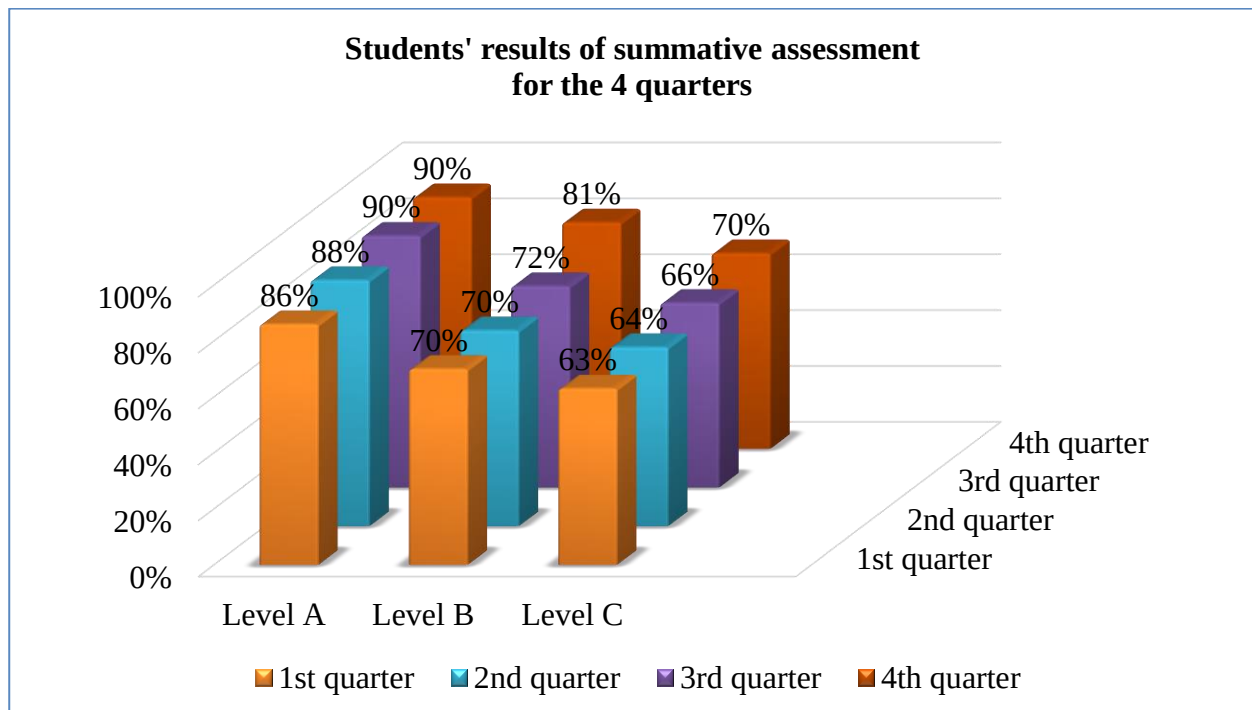


Figure 5 – Indicators of the results of summative assessment for the quarters of students of level A, B, C

According to Figure 5, compared with the first-quarter summative assessment results, the quality of learning by the fourth quarter increased by 4% among students at Level A, reaching 90%. Among students at Level B, the increase was 11%, while among students at Level C, the increase was 7%. These results confirm that the Lesson Study approach had a positive effect not only on high-achieving students but also on students with average and low levels of academic performance.

Thus, the quantitative results confirm that the implementation of Lesson Study contributed to measurable improvements in students' learning outcomes. The most significant progress was observed among Level B students, whose learning quality increased by 11 percentage points. This suggests that students with an average level of academic achievement benefited most from differentiated tasks, peer interaction, formative feedback, and teacher reflection. The improvement among Level C students also confirms that structured support and adapted tasks helped low-achieving students become more actively involved in the learning process.

The pedagogical experiment also had a positive impact on teachers' professional development. During the Lesson Study cycles, teachers gained experience in collaborative lesson planning, designing differentiated tasks, observing students' learning behavior, and analyzing the relationship between teaching methods and learning outcomes. Teachers became more attentive to students' difficulties, more aware of the gap between expected and actual classroom performance, and more prepared to revise lesson plans on the basis of evidence obtained during observation.

The findings are consistent with previous studies showing that Lesson Study supports teachers' reflective practice, professional collaboration, and evidence-based instructional decision-making [8, 13]. The positive dynamics in students' learning outcomes correspond to studies demonstrating the potential of Lesson Study to improve classroom instruction and academic performance [2, 14]. The importance of systematic observation during the research lesson is also emphasized by Yoshida, who considers classroom observation one of the key mechanisms for improving teaching and learning through Lesson Study [15]. Similar practical applications of Lesson Study in school settings have been described by Medetbekova, who highlights its role in organizing collaborative teacher work and improving lesson analysis [16]. Doig et al. also note that Lesson Study can be adapted to different educational contexts and used as a practical model for teachers' professional learning [17]. In addition, Mikušková emphasizes that teachers' professional competencies are influenced by various factors, including professional experience, generational differences, and institutional conditions, which should be taken into account when implementing professional development models [18].

Thus, the implementation of Lesson Study created conditions for the improvement of both teaching practice and student learning outcomes. For teachers, the approach promoted professional cooperation, reflection, and the renewal of instructional strategies. For students, it contributed to increased engagement, better understanding of geographical concepts, improved question-formulation skills, and greater readiness to complete tasks requiring critical thinking. At the conclusion of the program, the participating teachers agreed to continue studying the topic: "How do high- level and low-level questions and tasks enhance functional literacy and critical thinking?"

Conclusion

The results of the pedagogical experiment demonstrated that the implementation of the Lesson Study approach contributed to the development of teachers' professional competencies and improved students' learning outcomes in geography lessons. The use of collaborative lesson planning, classroom observation, post-lesson reflection, and differentiated tasks enabled teachers to identify students' learning difficulties more accurately and to adjust instructional strategies according to their needs.

The quantitative data confirmed positive dynamics in students' academic performance. By the end of the experiment, the quality of learning among Level A students increased from 86% to 90%, among Level B students from 70% to 81%, and among Level C students from 63% to 70%. The most significant progress was observed among Level B students, whose results increased by 11 percentage points. This indicates that students with an average level of achievement benefited most from differentiated instruction, peer interaction, formative feedback, and systematic teacher reflection.

The development of students' critical thinking was also reflected in their ability to formulate questions of different cognitive levels. The number of high-order questions increased from 2 to 4 in Group A, from 1 to 2 in Group B, and from 0 to 1 in Group C. These changes show that students gradually moved from reproductive learning to more analytical and evaluative forms of thinking. In addition, classroom observations showed that students became more active in discussions, expressed their opinions more confidently, listened to their peers, and participated more effectively in collaborative problem-solving.

The study also showed that Lesson Study had a positive influence on teachers' professional development. Teachers improved their skills in collaborative planning, observation of student learning, analysis of classroom situations, development of differentiated tasks, and revision of lesson plans based on evidence. The approach helped teachers recognize the gap between expected and actual learning outcomes and encouraged them to focus not only on the class as a whole but also on the individual progress, difficulties, and strengths of each student.

Thus, Lesson Study can be considered an effective mechanism for developing teachers' reflective practice, professional cooperation, and evidence-based decision-making. The practical significance of the study lies in the possibility of applying this approach in secondary schools to improve lesson quality, develop students' functional literacy, and strengthen teachers' professional competencies. Further research may focus on expanding the sample, applying Lesson Study in different subjects, and conducting a comparative analysis of its effectiveness across various educational contexts.

Author Contributions:

Abukhanova A. – supervised the study, developed the research concept and methodology, and performed the scientific editing of the manuscript.

Almukhambetova B. – conducted the empirical study, analyzed and interpreted the results, and contributed to writing and editing the manuscript.

Mamekova A., Almukhambetova B. – carried out data collection and processing, and contributed to the visualization and presentation of the research results.

LITERATURE:

1 Verhoef N.C., Tall D.O. Lesson Study: The effect on teachers' professional development // Proceedings of the 35th Conference of the International Group for the Psychology of Mathematics Education (PME). – Ankara, Turkey. – 2011. – P. 287–304. URL: https://ris.utwente.nl/ws/files/5538039/RR_verhoef.pdf

2 Ming Cheung W., Yee Wong W. Does lesson study work? // International Journal for Lesson and Learning Studies. – 2014. – Vol. 3. – No. 2. – P. 137–149. DOI: <https://doi.org/10.1108/IJLLS-05-2013-0024>

3 Schipper T., Goei S.L., de Vries S., van Veen K. Professional growth in adaptive teaching competence as a result of Lesson Study // Teaching and Teacher Education. – 2017. – Vol. 68. – P. 289–303. – DOI: <https://doi.org/10.1016/j.tate.2017.09.015>.

4 Holmqvist M., Mattisson J. Variation theory: a tool to analyse and develop learning at school // Problems of Education in the 21st Century. – 2008. – Vol. 7. – No. 7. – P. 31–38. URL: <https://www.proquest.com/openview/0f434e01d3c6ec8367ec11801fbedfa2/1?pq-origsite=gscholar&cbl=4477239>

5 Runesson U. Variation theory as a tool for analyzing learning and designing teaching // In: Carlgren I. (Ed.). Undervisningsutvecklande Forskning – exempel Learning Study. – Malmö: Gleerups. – 2017. – P. 45–60.

6 Iqbal M.H., Siddiqie S.A., Mazid M.A. Rethinking theories of lesson plan for effective teaching and learning // Social Sciences and Humanities Open. – 2021. – Vol. 4. – No. 1. – P. 1–7. DOI: <https://doi.org/10.1016/j.ssaho.2021.100172>

7 Opfer V.D., Pedder D. Conceptualizing teacher professional learning // Review of Educational Research. – 2011. – Vol. 81. – P. 376–407. DOI: <https://doi.org/10.3102/0034654311413609>

8 Bayram I., Bıkmaz F. Implications of Lesson Study for tertiary-level EFL teachers' professional development: A case study from Turkey // SAGE Open. – 2021. – Vol. 11. – No. 2. DOI: <https://doi.org/10.1177/21582440211023771>

9 Schipper T.M., Willemsse T.M., Goei S.L. Supporting teacher educators' professional learning through Lesson Study // Journal of Education for Teaching. – 2022. – Vol. 48. – No. 3. – P. 316–331. DOI: <https://doi.org/10.1080/02607476.2021.1988825>

10 Benedict A.E., Williams J., Brownell M.T., Chapman L., Sweers A., Sohn H. Using lesson study to change teacher knowledge and practice: The role of knowledge sources in teacher change // Teaching and Teacher Education. – 2023. – Vol. 122. – Article 103951. DOI: <https://doi.org/10.1016/j.tate.2022.103951>

11 Jiménez Sierra Á.A., Ortega Iglesias J.M., Cabero-Almenara J., Palacios-Rodríguez A. Development of the teacher's technological pedagogical content knowledge (TPACK) from the Lesson Study: A systematic review // *Frontiers in Education*. – 2023. – Vol. 8. – Article 1078913. DOI: <https://doi.org/10.3389/feduc.2023.1078913>

12 Kager K., Kalinowski E., Jurczok A., Vock M. A systematic review of transparency in Lesson Study research: How do we report on the observation and reflection stages? // *Frontiers in Education*. – 2024. – Vol. 9. – Article 1322624. DOI: <https://doi.org/10.3389/feduc.2024.1322624>

13 Lewis C., Takahashi A. Facilitating curriculum reforms through lesson study // *International Journal for Lesson and Learning Studies*. – 2013. – Vol. 2. – No. 3. – P. 207–217. DOI: <https://doi.org/10.1108/IJLLS-01-2013-0006>

14 Bahri A., Arifin A.N., Jamaluddin A.B., Muharni A., Hidayat W. Smart teaching based on lesson study promoting students' digital literacy in the rural area // *European Journal of Educational Research*. – 2023. – Vol. 12. – No. 2. – P. 901–911. DOI: <https://doi.org/10.12973/eu-jer.12.2.901>

15 Yoshida M. Lesson Study: A Japanese Approach to Improving Mathematics Teaching and Learning. – Chicago: University of Chicago. – 1999. DOI: <https://doi.org/10.4324/9781410610867>

16 Медетбекова А.Т. Проведение исследования Lesson Study в начальной школе. – 2020. – URL: <https://28.alschool.kz/o-shkole/metodika-i-opyt/6961-provedenie-issledovaniya-lesson-study-v-nachalnoj-shkole.html> (қаралған күні: 15.02.2026).

17 Mikušková E. Generational differences in teachers' professional competencies // *European Journal of Educational Research*. – 2023. – Vol. 12. – No. 4. – P. 1657–1665. DOI: <https://doi.org/10.12973/eu-jer.12.4.1657>

REFERENCES:

1 Verhoef N.C., Tall D.O. (2011). Lesson Study: The effect on teachers' professional development. Proceedings of the 35th Conference of the International Group for the Psychology of Mathematics Education (PME), Ankara, Turkey, pp. 287–304. URL: https://ris.utwente.nl/ws/files/5538039/RR_verhoef.pdf

2 Ming Cheung W., Yee Wong W. (2014). Does lesson study work? *International Journal for Lesson and Learning Studies*, vol. 3, no. 2, pp. 137–149. DOI: <https://doi.org/10.1108/IJLLS-05-2013-0024>

3 Schipper T., Goei S.L., de Vries S., van Veen K. (2017). Professional growth in adaptive teaching competence as a result of Lesson Study. *Teaching and Teacher Education*, vol. 68, pp. 289–303. DOI: <https://doi.org/10.1016/j.tate.2017.09.015>.

4 Holmqvist M., Mattisson J. (2008). Variation theory: a tool to analyse and develop learning at school. *Problems of Education in the 21st Century*, vol. 7, no. 7, pp. 31–38. URL: <https://www.proquest.com/openview/0f434e01d3c6ec8367ec11801fbefda2/1?pq-origsite=gscholar&cbl=4477239>

5 Runesson U. (2017). Variation theory as a tool for analyzing learning and designing teaching. In: Carlgren I. (Ed.), *Undervisningsutvecklande Forskning – exempel Learning Study*. Malmö: Gleerups, pp. 45–60.

6 Iqbal M.H., Siddiqie S.A., Mazid M.A. (2021). Rethinking theories of lesson plan for effective teaching and learning. *Social Sciences and Humanities Open*, vol. 4, no. 1, pp. 1–7. DOI: <https://doi.org/10.1016/j.ssaho.2021.100172>

7 Opfer V.D., Pedder D. (2011). Conceptualizing teacher professional learning. *Review of Educational Research*, vol. 81, pp. 376–407. DOI: <https://doi.org/10.3102/0034654311413609>

8 Bayram I., Bıkmaz F. (2021). Implications of Lesson Study for tertiary-level EFL teachers' professional development: A case study from Turkey. *SAGE Open*, vol. 11, no. 2. DOI: <https://doi.org/10.1177/21582440211023771>

9 Schipper T.M., Willemse T.M., Goei S.L. (2022). Supporting teacher educators' professional learning through Lesson Study. *Journal of Education for Teaching*, vol. 48, no. 3, pp. 316–331. DOI: <https://doi.org/10.1080/02607476.2021.1988825>

10 Benedict A.E., Williams J., Brownell M.T., Chapman L., Sweers A., Sohn H. (2023). Using lesson study to change teacher knowledge and practice: The role of knowledge sources in teacher change. *Teaching and Teacher Education*, vol. 122, article 103951. DOI: <https://doi.org/10.1016/j.tate.2022.103951>

11 Jiménez Sierra Á.A., Ortega Iglesias J.M., Cabero-Almenara J., Palacios-Rodríguez A. (2023). Development of the teacher's technological pedagogical content knowledge (TPACK) from the Lesson Study: A systematic review. *Frontiers in Education*, vol. 8, article 1078913. DOI: <https://doi.org/10.3389/feduc.2023.1078913>

12 Kager K., Kalinowski E., Jurczok A., Vock M. (2024). A systematic review of transparency in Lesson Study research: How do we report on the observation and reflection stages? *Frontiers in Education*, vol. 9, article 1322624. DOI: <https://doi.org/10.3389/feduc.2024.1322624>

13 Lewis C., Takahashi A. (2013). Facilitating curriculum reforms through lesson study. *International Journal for Lesson and Learning Studies*, vol. 2, no. 3, pp. 207–217. DOI: <https://doi.org/10.1108/IJLLS-01-2013-0006>

14 Bahri A., Arifin A.N., Jamaluddin A.B., Muharni A., Hidayat W. (2023). Smart teaching based on lesson study promoting students' digital literacy in the rural area. *European Journal of Educational Research*, vol. 12, no. 2, pp. 901–911. DOI: <https://doi.org/10.12973/eu-jer.12.2.901>

15 Yoshida M. (1999). Lesson Study: A Japanese Approach to Improving Mathematics Teaching and Learning. Chicago: University of Chicago. DOI: <https://doi.org/10.4324/9781410610867>

16 Медетбекова А.Т. Проведение исследования Lesson Study в начальной школе. [Conducting a Lesson Study study in primary school]. URL: <https://28.alschool.kz/o-shkole/metodika-i-opyt/6961-provedenie-issledovaniya-lesson-study-v-nachalnoj-shkole.html> (accessed: 15.02.2026). (in Russian)

LESSON STUDY ТӘСІЛІН ҚОЛДАНУ АРҚЫЛЫ МҰҒАЛІМДЕРДІҢ КӘСІБИ ҚҰЗЫРЕТТІЛІКТЕРІН ДАМУ

А.Б. Абуханова*, Б.Ж. Альмухамбетова, А.Т. Мамекова

І. Жансүгіров атындағы Жетісу университеті,
Қазақстан Республикасы, Талдықорған қ.

*e-mail: agar-80@mail.ru, bibigulya74@mail.ru, asem_mamekova1979@mail.ru

Аңдатпа. Зерттеуде Lesson Study тәсілінің мұғалімдердің кәсіби құзыреттіліктерін дамыту және география пәні бойынша оқушылардың оқу нәтижелерін жақсарту құралы ретіндегі тиімділігі қарастырылады. Зерттеудің өзектілігі жаңартылған білім беру мазмұны жағдайында мұғалімдердің кәсіби дамуын ынтымақтастыққа, рефлексияға және дәлелді педагогикалық шешімдерге негіздеп ұйымдастыру қажеттілігімен айқындалады. Зерттеудің мақсаты – Lesson Study тәсілінің мұғалімдердің оқыту тәжірибесіне және оқушылардың функционалдық сауаттылығына әсерін бағалау. Зерттеу 2019–2022 оқу жылдары Қазақстан Республикасы, Талдықорған қаласындағы №2 мектеп-гимназиясында және №9 орта мектепте жүргізілді. Зерттеуге 8-сыныптың 29 оқушысы қатысты, оның ішінде 15 ұл және 14 қыз болды. Зерттеу әдістері ретінде педагогикалық эксперимент, сабақ барысындағы бақылау, сауалнама, қалыптастырушы және жиынтық бағалау, салыстырмалы талдау және мұғалімдердің рефлексиясы қолданылды. Оқушылар оқу үлгерімі мен мотивациясына қарай жоғары, орта және төмен деңгейлерге бөлінді. Зерттеу нәтижелері оқу жетістіктерінде оң динамика болғанын көрсетті. А деңгейіндегі оқушылардың білім сапасы 86%-дан 90%-ға, В деңгейінде 70%-дан 81%-ға, С деңгейінде 63%-дан 70%-ға артты. Сонымен қатар, оқушылар құрастырған жоғары деңгейлі сұрақтар саны көбейді. Нәтижелер Lesson Study мұғалімдердің бірлесіп жоспарлау, рефлексия жасау, оқушылардың оқу қиындықтарын анықтау және сараланған тапсырмаларды қолдану дағдыларын дамытуға ықпал еткенін көрсетті.

Кілт сөздер: Lesson Study, оқу мазмұнын жаңарту, құзыреттілік, технология, инновация, ынтымақтастық, рефлексия.

РАЗВИТИЕ ПРОФЕССИОНАЛЬНЫХ КОМПЕТЕНЦИЙ УЧИТЕЛЕЙ ПОСРЕДСТВОМ ПРИМЕНЕНИЯ ПОДХОДА LESSON STUDY

Абуханова А.Б.*, Алмухамбетова Б.Ж., Мамекова А.Т.

Жетысуский университет имени И. Жансугурова,
Республика Казахстан, г. Талдықорған

*e-mail: agar-80@mail.ru, bibigulya74@mail.ru, asem_mamekova1979@mail.ru

Аннотация. В исследовании рассматривается эффективность подхода Lesson Study как инструмента развития профессиональных компетенций учителей и повышения учебных результатов учащихся по географии. Актуальность исследования определяется необходимостью внедрения в условиях обновленного содержания образования форм профессионального развития педагогов, основанных на сотрудничестве, рефлексии и принятии педагогических решений на основе фактических данных. Цель исследования заключалась в оценке влияния Lesson Study на педагогическую практику учителей и развитие функциональной грамотности учащихся. Исследование проводилось в 2019–2022 учебные годы на базе школы-гимназии №2 и средней школы №9 города Талдықорғана, Республика Казахстан. В исследовании приняли участие 29 учащихся 8 класса, в том числе 15 мальчиков и 14 девочек. В качестве методов использовались педагогический эксперимент, наблюдение на уроках, анкетирование, формативное и суммативное оценивание, сравнительный анализ и рефлексия учителей. Учащиеся были распределены на три уровня в соответствии с учебной успеваемостью и мотивацией: высокий, средний и низкий. Результаты исследования показали положительную динамику учебных достижений. Качество обучения у учащихся уровня А повысилось с 86% до 90%, уровня В – с 70% до 81%, уровня С – с 63% до 70%. Также увеличилось

количество вопросов высокого порядка, сформулированных учащимися. Полученные результаты показывают, что Lesson Study способствовал развитию навыков совместного планирования, рефлексивной практики, выявления учебных затруднений учащихся и применения дифференцированных заданий.

Ключевые слова: Lesson Study, обновление содержания, компетентность, технология, инновация, сотрудничество, рефлексия.

Information about authors:

Abukhanova Azhar* – PhD, Zhetysu University named after I. Zhansugurov (Kazakhstan, Taldykorgan, e-mail: agar-80@mail.ru, ORCID: <https://orcid.org/0000-0002-6056-0881>).

Almukambetova Bibigul – PhD, Zhetysu University named after I. Zhansugurov (Kazakhstan, Taldykorgan, e-mail: bibigulya74@mail.ru, ORCID: <https://orcid.org/0000-0002-6453-7443>).

Mamekova Assem – PhD, Zhetysu University named after I. Zhansugurov, (Kazakhstan, Taldykorgan, e-mail: assem_mamekova1979@mail.ru, ORCID: <https://orcid.org/0000-0001-5772-5588>).

Авторлар туралы мәліметтер:

Абуханова Ажар Базарбаевна* – PhD, I. Жансүгіров атындағы Жетісу университеті (Қазақстан, Талдықорған қ., e-mail: agar-80@mail.ru ORCID: <https://orcid.org/0000-0002-6056-0881>).

Алмухамбетова Бибикуль Жексембаевна – PhD, I. Жансүгіров атындағы Жетісу университеті (Қазақстан, Талдықорған қ., e-mail: bibigulya74@mail.ru, ORCID: <https://orcid.org/0000-0002-6453-7443>).

Мамаева Асем Танирбергеновна – PhD, I. Жансүгіров атындағы Жетісу университеті, (Қазақстан, Талдықорған қ., e-mail: assem_mamekova1979@mail.ru, ORCID: <https://orcid.org/0000-0001-5772-5588>).

Сведения об авторах:

Абуханова Ажар Базарбаевна* – PhD, Жетысуский университет имени И. Жансугурова (Казахстан, г. Талдықорған, e-mail: agar-80@mail.ru, ORCID: <https://orcid.org/0000-0002-6056-0881>).

Алмухамбетова Бибикуль Жексембаевна – PhD, Жетысуский университет имени И. Жансугурова (Казахстан, г. Талдықорған, e-mail: bibigulya74@mail.ru, ORCID: <https://orcid.org/0000-0002-6453-7443>).

Мамаева Асем Танирбергеновна – PhD, Жетысуский университет имени И. Жансугурова (Казахстан, г. Талдықорған, e-mail: asem_mamekova1979@mail.ru, ORCID: <https://orcid.org/0000-0001-5772-5588>).