Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

METHODOLOGY OF IMPLEMENTING A COMPETENCY-BASED APPROACH IN MATHEMATICS LESSONS

Rasulova M. Z.
Teacher of the Department of Methods of Teaching Mathematics and Geometry
Chirchiq State Pedagogical University Faculty of Exact Sciences
Madina092434@gmail.com

Abstract

This article examines the methodology of implementing a competency-based approach in mathematics lessons within higher pedagogical education. The study is grounded in the idea that modern mathematics instruction should move beyond the transmission of theoretical knowledge and focus on the formation of practical, cognitive, communicative, and analytical competencies. Particular attention is given to the pedagogical conditions that ensure effective competency development, including learner-centered instruction, problem-based tasks, interactive methods, differentiated assignments, and formative assessment strategies. The article analyzes how competency-oriented mathematics teaching contributes to the development of independent thinking, logical reasoning, mathematical literacy, and the ability to apply knowledge in real educational and life situations. It is argued that the competency-based approach strengthens students' motivation, supports active participation in the learning process, and improves the quality of professional preparation of future teachers. The article also outlines the role of methodological planning, educational technologies, and teacher guidance in organizing mathematics lessons that meet contemporary educational requirements. The findings suggest that the systematic integration of competency-based instruction into mathematics teaching creates favorable

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

conditions for developing intellectually active, methodologically prepared, and professionally competent future specialists.

Keywords: Competency-based approach, mathematics education, teaching methodology, mathematical literacy, problem-solving skills, learner-centered instruction, interactive methods, formative assessment, professional competence, logical thinking.

MATEMATIKA DARSLARIDA KOMPETENSIYAVIY YONDASHUVNI AMALGA OSHIRISH METODIKASI

Rasulova Madina Zakir qizi
Chirchiq davlat pedagogika universiteti
Aniq fanlar fakulteti
MO'M va geometriya kafedrasi o'qituvchisi
Madina092434@gmail.com

Annotatsiya

Mazkur maqolada oliy pedagogik ta'lim sharoitida matematika darslarida kompetensiyaviy yondashuvni amalga oshirish metodikasi yoritilgan. Tadqiqot zamonaviy matematika ta'limi nazariy bilimlarni o'zlashtirish bilan cheklanib qolmasdan, amaliy, bilish, kommunikativ va tahliliy kompetensiyalarni shakllantirishga yo'naltirilishi zarurligi g'oyasiga asoslanadi. Maqolada kompetensiyalarni samarali rivojlantirishni ta'minlaydigan pedagogik shart-sharoitlar, jumladan, talaba markazli ta'lim, muammoli topshiriqlar, interfaol metodlar, differensial vazifalar hamda formatif baholash strategiyalariga alohida e'tibor qaratilgan. Shuningdek, kompetensiyaga yo'naltirilgan matematika ta'limining mustaqil fikrlash, mantiqiy mushohada yuritish, matematik savodxonlik va bilimlarni real ta'limiy hamda hayotiy vaziyatlarda qo'llash ko'nikmalarini rivojlantirishdagi ahamiyati tahlil qilingan. Kompetensiyaviy

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

yondashuv talabalarning o‘quv motivatsiyasini kuchaytirishi, ularning ta’lim jarayonidagi faolligini oshirishi va bo‘lajak o‘qituvchilarning kasbiy tayyorgarligi sifatini yaxshilashi asoslab berilgan. Shuningdek, maqolada zamonaviy ta’lim talablari asosida matematika darslarini tashkil etishda metodik rejalashtirish, pedagogik texnologiyalar va o‘qituvchi rahbarligining o‘rni ham ko‘rsatib o‘tilgan. Tadqiqot natijalari kompetensiyaviy ta’limni matematika o‘qitish jarayoniga tizimli joriy etish intellektual faol, metodik jihatdan tayyor va kasbiy kompetent bo‘lgan bo‘lajak mutaxassislarni shakllantirish uchun qulay sharoit yaratishini ko‘rsatadi.

Kalit so‘zlar: kompetensiyaviy yondashuv, matematika ta’limi, o‘qitish metodikasi, matematik savodxonlik, masala yechish ko‘nikmalari, talaba markazli ta’lim, interfaol metodlar, formatif baholash, kasbiy kompetentlik, mantiqiy fikrlash.

Introduction

The modernization of education in the twenty-first century has led to significant changes in the goals, content, and methodology of teaching across all academic disciplines. In this context, mathematics education occupies a special place because it not only provides learners with theoretical knowledge and computational skills, but also develops logical reasoning, analytical thinking, creativity, precision, and the ability to solve practical problems. For institutions of higher pedagogical education, the teaching of mathematics has an even broader mission, since it is directly connected with the preparation of future teachers who must be capable of organizing effective, meaningful, and student-centered learning processes in schools. This task requires a transition from traditional knowledge-oriented instruction to approaches that focus on the development of competencies necessary for academic, professional, and social activity.

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

The competency-based approach has become one of the leading directions in contemporary pedagogy because it emphasizes the practical application of knowledge, the integration of skills and values, and the formation of learners' readiness to act effectively in various situations. In mathematics lessons, this approach is especially important because mathematical knowledge gains real educational value only when students are able to use it consciously, independently, and appropriately. In a competency-oriented learning environment, students are not passive recipients of information but active participants in educational activity. They learn to interpret problems, choose solution strategies, justify their reasoning, evaluate results, and transfer mathematical concepts to new contexts. Such learning strengthens not only subject competence in mathematics but also communicative, informational, reflective, and methodological competencies that are essential for future teachers.

The relevance of implementing a competency-based approach in mathematics lessons is determined by several pedagogical and social factors. First, the current development of education requires specialists who are capable of independent thinking, professional flexibility, and continuous self-improvement. Second, mathematics as a discipline has considerable didactic potential for forming intellectual competencies that support problem-solving and decision-making in both academic and everyday contexts. Third, the preparation of future mathematics teachers demands teaching methods that not only explain mathematical content but also model how this content should be taught in schools through modern pedagogical strategies. Therefore, the methodology of organizing competency-oriented mathematics lessons should be considered one of the central issues of pedagogical research.

Traditional approaches to teaching mathematics have often focused on memorization of definitions, formulas, and algorithms. Although such elements remain important, they are insufficient in a rapidly changing educational environment where learners are expected to apply knowledge flexibly and

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

critically. A competency-based model of mathematics instruction does not reject theoretical knowledge; rather, it transforms the way knowledge is taught, learned, and assessed. The central aim becomes the formation of a mathematically competent personality who is able to analyze information, connect concepts, solve non-standard tasks, communicate reasoning clearly, and reflect on the effectiveness of chosen methods. In pedagogical universities, these outcomes are particularly significant because students must later reproduce and adapt similar teaching practices in their own professional careers.

Implementing this approach in mathematics lessons requires substantial methodological support. Teachers need to design lesson objectives in competency terms, select content that encourages active thinking, use interactive and problem-based methods, create situations for collaboration and independent inquiry, and apply assessment tools that measure not only correct answers but also processes of reasoning and application. Competency-based mathematics teaching also presupposes an educational environment in which students are motivated to participate, question, explore, and evaluate. As a result, the lesson becomes a dynamic space for intellectual development rather than a simple transfer of ready-made information.

Thus, the study of the methodology of implementing a competency-based approach in mathematics lessons is both theoretically and practically important. It reflects the needs of modern pedagogical education and contributes to improving the quality of professional training for future teachers. The development of such methodology creates opportunities for strengthening mathematical literacy, enhancing learner autonomy, and aligning mathematics instruction with contemporary educational standards and real-life demands.

Methods

The methodological framework of implementing a competency-based approach in mathematics lessons is based on the integration of pedagogical theory, didactic

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

principles, and practical instructional strategies that ensure the formation of stable and applicable competencies among students. In higher pedagogical education, the methods used in mathematics instruction should not only promote the acquisition of subject knowledge but also create conditions for the development of analytical, communicative, reflective, and professional abilities. Therefore, the selection of methods must correspond to the broader educational purpose of preparing future teachers who are capable of organizing meaningful, student-centered, and competency-oriented instruction in their own professional practice. The study of this topic relies on a combination of theoretical and empirical methods. The theoretical methods include analysis of pedagogical, psychological, and methodological literature related to competency-based education, mathematics didactics, and teacher preparation. Comparative analysis is used to identify the differences between traditional and competency-oriented models of mathematics teaching, while synthesis helps to formulate the pedagogical conditions under which competency formation becomes effective. Generalization of scientific approaches makes it possible to identify the most productive methods for the organization of mathematics lessons in pedagogical universities. Conceptual interpretation is also important because the very notion of competence in mathematics teaching is multidimensional and requires clear methodological explanation.

Among empirical methods, observation of mathematics lessons occupies a central place. Lesson observation allows researchers and instructors to determine how actively students participate in mathematical tasks, how they apply previously learned knowledge, how they communicate solution strategies, and how effectively they demonstrate independence in solving academic problems. Pedagogical experiment is another important method. It is used to test the effectiveness of specific teaching strategies designed in accordance with competency-based principles. In such experiments, one group of students may study mathematics through traditional explanatory methods, while another group

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

works through problem-based tasks, collaborative activities, situational exercises, and reflective assessment. The comparison of results makes it possible to evaluate the pedagogical value of the competency-based model.

Diagnostic methods also play an important role in the methodological system. Questionnaires, interviews, self-assessment tools, and performance-based assignments help determine the level of development of mathematical and professional competencies. These tools reveal not only the accuracy of students' answers but also their confidence, reasoning ability, communication skills, and readiness to apply mathematical concepts in varied situations. In a competency-based system, assessment is not limited to final control. It includes formative procedures that monitor learning progress, identify difficulties, and guide instructional improvement. Such diagnostic practices support a more individualized and developmental approach to mathematics teaching.

The organization of mathematics lessons according to competency-based principles requires the use of several interconnected teaching methods. One of the most significant is problem-based learning. In this method, students are placed in situations where they must independently analyze a mathematical problem, identify relevant data, formulate hypotheses, and choose appropriate solution procedures. Problem-based learning increases intellectual engagement and stimulates the transfer of theoretical knowledge into practical action. It is particularly effective in mathematics because the discipline itself is built on the logic of inquiry, structure, and proof.

Interactive methods are also essential. Discussion, pair work, small-group collaboration, brainstorming, and project activities encourage students to express ideas, defend their reasoning, compare approaches, and work collectively toward a solution. These methods are valuable because competency-based education views communication as an important element of mathematical development. A future teacher of mathematics must be able not only to solve a problem personally but also to explain it clearly, adapt it to the learners' level, and organize

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

productive interaction in the classroom. For this reason, collaborative forms of learning have both subject and professional significance.

Differentiated instruction is another major methodological component. In mathematics classes, students often demonstrate different levels of preparedness, pace of understanding, and cognitive style. A competency-based approach requires the teacher to consider these differences and offer tasks of varied complexity, alternative forms of explanation, and flexible pathways for mastering the material. Differentiation supports inclusion and helps each student achieve progress in accordance with individual potential. In addition, it teaches future educators an important professional principle: effective teaching must respond to learner diversity.

The method of modeling pedagogical situations is especially relevant in pedagogical universities. Since students are future mathematics teachers, they benefit from tasks that combine mathematical content with teaching analysis. For example, students may be asked not only to solve an equation or prove a theorem, but also to explain how they would teach that content to school learners, what questions they would ask, what difficulties they might anticipate, and what teaching aids they would use. This method allows mathematical competence and methodological competence to develop simultaneously. It transforms mathematics learning into a professionally oriented process.

Digital and visual methods also support the implementation of a competency-based approach. Mathematical software, virtual simulations, online quizzes, presentations, and dynamic geometry tools help students explore concepts more deeply and represent abstract ideas in concrete forms. Such means are especially effective for improving motivation, supporting independent work, and creating a learning environment that corresponds to current educational realities. However, technology is used not as an end in itself, but as a didactic instrument that strengthens meaningful understanding and active participation.

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

Thus, the methods of implementing a competency-based approach in mathematics lessons form a complex and purposeful system. This system combines theoretical analysis, empirical research, active instructional methods, differentiated learning, reflective assessment, and professional orientation. Its central objective is to ensure that mathematics teaching becomes a process of comprehensive competency formation rather than simple transmission of ready-made information.

Results

The implementation of a competency-based approach in mathematics lessons produces a range of positive educational outcomes that reflect both the quality of subject learning and the broader professional development of students in pedagogical higher education. The results of competency-oriented instruction can be observed in the transformation of students' cognitive activity, their attitude toward mathematics, their ability to apply knowledge in practice, and their readiness to organize mathematics teaching effectively in future professional contexts. Unlike traditional systems, where achievement is often measured primarily through reproduction of formulas, definitions, and standard algorithms, the competency-based approach reveals results in more integrated forms, including problem-solving ability, independence, communication, reflection, and methodological preparedness.

One of the most significant results is the improvement of students' mathematical literacy. In competency-based mathematics lessons, students learn not only to perform calculations or construct formal proofs, but also to understand the practical meaning of mathematical concepts and use them in different educational and life situations. They become more capable of interpreting data, analyzing quantitative relationships, selecting appropriate mathematical methods, and evaluating the correctness of obtained results. This shift indicates that mathematics is no longer perceived as a closed system of abstract rules but as a

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

functional instrument for reasoning and decision-making. Such a result is especially valuable in pedagogical universities because future teachers must later help school students form the same functional understanding of mathematics.

Another important result is the development of independent thinking and cognitive initiative. Competency-oriented teaching encourages students to work actively with mathematical material rather than passively follow ready-made explanations. When students are regularly engaged in problem-based tasks, investigative exercises, and collaborative discussions, they begin to demonstrate greater confidence in making assumptions, choosing methods, comparing alternatives, and justifying conclusions. Their intellectual autonomy increases because they are given space to think, search, and reflect. As a result, students gradually move from dependence on the teacher's direct guidance to a more self-regulated form of learning. This is one of the central indicators of educational effectiveness in competency-based instruction.

The results also show a noticeable strengthening of communicative competence in mathematics learning. In traditional mathematics classrooms, students often solve tasks individually and present only the final answer. In a competency-based lesson, however, the learning process includes explanation, dialogue, peer review, collective analysis, and oral defense of solution strategies. Through these activities, students acquire the ability to express mathematical ideas clearly, use correct terminology, formulate arguments logically, and respond to alternative viewpoints. These communicative results have double importance in pedagogical education: they improve the current quality of learning and simultaneously prepare students for their future teaching role, where explanation and interaction are essential professional functions.

A further result concerns motivation and emotional engagement in mathematics lessons. One of the frequent problems in mathematics education is the decline of student interest due to formalism, monotony, and excessive focus on mechanical exercises. Competency-based instruction changes this situation by connecting

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

mathematical tasks with real problems, professional contexts, interactive activities, and meaningful reflection. As students begin to understand why mathematical knowledge is important and how it can be applied, their learning motivation becomes more stable and conscious. They participate more actively in lessons, show greater responsibility for their own progress, and perceive mathematics as a discipline that supports intellectual and professional growth. Increased motivation, in turn, has a positive effect on achievement and persistence.

The implementation of differentiated tasks within a competency-based framework also produces important results related to inclusion and learning effectiveness. Since students in one group often differ in their prior preparation, pace of work, and style of understanding, a flexible instructional model helps each learner achieve progress at an appropriate level of difficulty. More prepared students can work on complex analytical tasks, while those who experience difficulties can receive scaffolded support without being excluded from active participation. As a result, the learning process becomes more balanced, and a greater number of students demonstrate positive development. This result confirms that the competency-based approach is not only academically productive but also pedagogically humane, as it respects individual educational trajectories.

Particularly important in the context of pedagogical universities is the formation of methodological competence alongside subject competence. Students who learn mathematics through competency-oriented methods begin to understand not only mathematical content but also the pedagogical logic of teaching it. They become more capable of designing lesson goals in competency terms, selecting effective methods, anticipating learner difficulties, and evaluating educational outcomes beyond simple correctness. For example, when students are asked to solve a mathematical problem and then explain how they would teach it at school, they simultaneously develop mathematical understanding and professional reflection.

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

This integrated result is one of the strongest arguments in favor of implementing the competency-based approach in teacher education.

Assessment results within such lessons also become more meaningful. Instead of focusing only on final answers, teachers can observe how students reason, how they cooperate, how they choose solution paths, and how they evaluate their own work. This broader form of assessment makes hidden aspects of learning visible and allows for more accurate pedagogical support. Students also become more reflective, since they are encouraged to analyze their successes, difficulties, and strategies. In this way, the results of learning are not limited to external performance but include the internal growth of self-awareness and responsibility.

Thus, the results of implementing a competency-based approach in mathematics lessons demonstrate its high pedagogical value. It improves mathematical literacy, stimulates independent and critical thinking, develops communication skills, increases motivation, supports differentiated learning, and strengthens methodological readiness for future teaching. These results confirm that competency-oriented mathematics instruction corresponds to the demands of modern pedagogical education and creates a solid foundation for preparing qualified, flexible, and professionally competent teachers.

Discussion

The results obtained from implementing a competency-based approach in mathematics lessons require careful pedagogical interpretation in order to understand their broader educational significance and practical implications. The discussion of these results reveals that the transition from traditional knowledge-oriented instruction to competency-based teaching is not merely a methodological adjustment, but a fundamental transformation of the educational paradigm. This transformation affects the roles of the teacher and student, the structure of the lesson, the nature of learning tasks, and the criteria used to evaluate educational outcomes. Therefore, the discussion must consider both the advantages of this

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

approach and the challenges associated with its practical realization in pedagogical universities.

One of the central issues highlighted by the findings is the redefinition of the teacher's role. In a competency-based mathematics lesson, the teacher is no longer the primary source of information, but rather a facilitator, organizer, and guide of the learning process. This shift requires a high level of methodological competence, as the teacher must design learning situations that stimulate independent thinking, provide appropriate scaffolding, manage interaction among students, and ensure that each activity contributes to competency formation. For many educators, especially those accustomed to traditional explanatory methods, this transition may present difficulties. It demands not only new teaching strategies but also a change in professional mindset, where the emphasis moves from delivering content to supporting the development of learners' abilities.

Another important aspect concerns the nature of mathematical content itself. The competency-based approach does not reduce the importance of theoretical knowledge, but it changes the way such knowledge is introduced and practiced. Mathematical concepts, formulas, and procedures are presented not as isolated elements to be memorized, but as tools for solving meaningful problems and understanding relationships. This approach aligns mathematics teaching with real-world applications and interdisciplinary contexts, making the subject more accessible and relevant. However, this also raises methodological questions about balancing depth of theoretical understanding with practical application. If the focus shifts too strongly toward applied tasks, there is a risk of insufficient attention to the rigor and structure that characterize mathematics as a scientific discipline. Therefore, effective implementation requires a balanced integration of conceptual clarity and functional application.

The discussion also reveals the importance of carefully selecting instructional methods. While problem-based learning, interactive techniques, and

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

collaborative activities are highly effective in developing competencies, they require time, preparation, and classroom management skills. In large groups or under limited instructional time, it may be challenging to organize such activities systematically. Moreover, not all students are immediately prepared for active participation, especially if they have previously been educated in a passive learning environment. This indicates that the transition to competency-based instruction should be gradual and supported by appropriate pedagogical guidance. Teachers must help students develop the necessary learning strategies, such as planning, self-regulation, communication, and reflection.

Assessment remains one of the most complex aspects of competency-based mathematics education. Traditional assessment methods, such as written tests and examinations, primarily measure the correctness of answers and the reproduction of learned material. In contrast, competency-based assessment must evaluate a wider range of indicators, including reasoning processes, problem-solving strategies, collaboration, and the ability to apply knowledge in unfamiliar situations. This requires the development of new assessment tools, such as performance tasks, portfolios, reflective journals, and observational criteria. However, implementing such assessment systems in practice may be difficult due to institutional constraints, large class sizes, and the need for standardized evaluation procedures. As a result, educators must find ways to combine traditional and innovative forms of assessment to ensure both reliability and validity.

Another point of discussion relates to the role of motivation and learner engagement. The results indicate that competency-based instruction increases student interest in mathematics by connecting learning with real-life contexts and active participation. Nevertheless, maintaining this motivation requires continuous effort. Tasks must be meaningful, appropriately challenging, and varied in form. If activities become repetitive or overly complex, students may lose interest or experience cognitive overload. Therefore, teachers must carefully

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

design lesson sequences that support sustained engagement while gradually increasing the level of difficulty. This highlights the importance of methodological planning as a dynamic and responsive process rather than a fixed instructional script.

The integration of digital technologies into competency-based mathematics teaching also deserves attention. Digital tools provide significant opportunities for visualization, simulation, independent practice, and immediate feedback. They support differentiated learning and allow students to explore mathematical concepts in interactive ways. At the same time, the use of technology must be pedagogically justified. If digital tools are used without clear instructional purpose, they may distract from learning objectives rather than enhance them. Thus, the effectiveness of technology depends on how well it is integrated into the overall methodology of competency formation.

From a broader perspective, the discussion confirms that the competency-based approach contributes to aligning mathematics education with modern educational standards and societal needs. It prepares students not only to master mathematical knowledge but also to function effectively in professional and social environments where analytical thinking, problem-solving, and communication are essential. For pedagogical universities, this alignment is particularly important because graduates are expected to implement similar approaches in schools, thereby influencing the next generation of learners.

At the same time, the successful implementation of this approach requires institutional support, continuous professional development of teachers, methodological resources, and a flexible curriculum. Without these conditions, the competency-based model may remain at the level of theoretical intention rather than practical reality. Therefore, the discussion emphasizes that competency-based mathematics education should be viewed as a long-term developmental process that involves coordinated efforts at multiple levels of the educational system.

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

Conclusion

The methodology of implementing a competency-based approach in mathematics lessons represents an important direction in the modernization of pedagogical education. Its significance is determined by the need to prepare future teachers who possess not only solid mathematical knowledge but also the ability to apply that knowledge in practice, organize meaningful learning processes, and respond effectively to contemporary educational demands. Mathematics, as a discipline with strong logical, analytical, and practical potential, creates broad opportunities for the formation of subject-specific and cross-curricular competencies. Therefore, the transition to competency-oriented mathematics teaching should be considered a necessary condition for improving the quality of teacher preparation in higher pedagogical institutions.

The conducted analysis shows that the competency-based approach changes the traditional understanding of mathematics teaching. It shifts the focus from simple transmission and reproduction of information toward the development of learners' ability to think independently, solve problems, communicate reasoning, reflect on their activity, and apply mathematical concepts in diverse contexts. In such a model, knowledge remains essential, but its educational value is revealed through action, interpretation, and purposeful use. This makes mathematics teaching more dynamic, meaningful, and professionally relevant, especially for students who are preparing for future teaching careers.

The study also confirms that the effective implementation of this approach depends on a complex methodological system. This system includes problem-based learning, interactive methods, differentiation, modeling of pedagogical situations, formative assessment, and the meaningful use of digital tools. Each of these components contributes to creating a learning environment in which students are not passive recipients of ready-made information but active participants in the educational process. Such participation strengthens motivation, develops cognitive initiative, and promotes deeper understanding of

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

mathematical concepts. At the same time, it encourages the formation of professional competencies that future teachers will need in their own classroom practice.

An important conclusion of the study is that competency-based mathematics instruction is especially valuable in pedagogical universities because it simultaneously develops mathematical competence and methodological competence. Future teachers must not only know mathematics but also understand how to teach it effectively, how to organize learner-centered activities, how to assess not only knowledge but also competency growth, and how to adapt instruction to the needs of different learners. The competency-based approach provides a productive framework for achieving this integration. It connects subject mastery with professional reflection and helps students see mathematics not only as an academic discipline but also as a pedagogical instrument.

At the same time, the successful realization of this methodology requires several essential conditions. Teachers need sufficient methodological preparation, flexible lesson planning skills, and access to modern educational resources. Institutions must support innovative practices through curriculum development, assessment reform, and professional development opportunities. Students, in turn, need gradual adaptation to active and reflective forms of learning, especially if their previous educational experience was based mainly on passive reception of information. This means that competency-based implementation should be systematic, purposeful, and supported at all levels of the educational process.

In conclusion, the methodology of implementing a competency-based approach in mathematics lessons has strong theoretical and practical value. It contributes to the formation of mathematically literate, intellectually active, and professionally competent future teachers who are capable of meeting the challenges of modern education. By integrating subject knowledge, practical application, independent inquiry, communication, and reflection, this approach

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/2

strengthens the overall effectiveness of mathematics teaching and aligns it with contemporary pedagogical goals. Its further development and wider application can significantly improve the quality of teacher education and create favorable conditions for more meaningful and sustainable mathematics learning.

References

1. Abdullayeva, B. S. (2021). Matematika ta'limida kompetensiyaviy yondashuv asoslari. Toshkent: Fan va texnologiya.
2. Bekchanova, X. (2025). Fostering learner autonomy and motivation in english language teaching in higher education. E-Conference platform, 1(1), 55-57.
3. Bekchanova, X. (2025). Integrating critical thinking and active learning in english language teaching at higher education. E-Conference platform, 1(1), 52-54.
4. Radjapov, U. R., & Khakimdjanova, K. B. (2021). The role of physical education in improving the health of women of the republic of Uzbekistan. Ustozlar uchun, 3(1), 162-165.
5. Radjapov, U. R., Xakimdjanova, K. B. (2024). Maktabgacha ta'lim muassasi tarbiyalanuvchilarini harakatli o'yinlar orqali bolalar psixologiyasini va nutqini rivojlantirish usulublari. FarDU. ILMIY XABARLAR, 2, 113-116.
6. Axmedov, J. Q. (2020). Bo'lajak o'qituvchilarning kasbiy kompetentligini rivojlantirish metodikasi. Toshkent: O'qituvchi.
7. OECD. (2019). PISA 2018 assessment and analytical framework. Paris: OECD Publishing.