International Journal of Innovative Research and Scientific Studies, 8(6) 2025, pages: 573-581

IJIRSS
International Journal of Innovative Research & Scientific Studies

ISSN: 2617-6548

URL: www.ijirss.com

Coaching as a tool for developing inclusive leadership competencies in engineering and STEM teacher education: Comparative analysis

Meruyert Janzakova[1], Perizat Parmankulova[1*], Zhannat Saparkyzy[2], Zhanat Nurzhanbayeva[3], Saule Zharbulova[2]

[1]*M. Auezov South Kazakhstan University, Shymkent, Kazakhstan.*
[2]*Korkyt Ata Kyzylorda University, Kyzylorda, Kazakhstan.*
[3]*South Kazakhstan Medical Academy, Shymkent, Kazakhstan.*

Corresponding author: Perizat Parmankulova (*Email: perizatpa11@mail.ru*)

Abstract

Coaching has demonstrated the potential to be an effective method for improving academic performance and developing leadership skills consistent with inclusive educational practices. Coaching interventions can lead to increased student achievement in STEM education, where active engagement and differentiated instruction are critical. This study explores the integration of coaching technologies into engineering and STEM teacher education to enhance inclusive leadership competencies among future educators in Kazakhstan. Amid growing global demands for inclusive and learner-centered approaches in technical education, the research investigates how coaching models can support the development of strategic thinking, team management, and inclusive instructional practices. Using a mixed-methods design, the study combines a comparative analysis and literature review with a pilot quantitative evaluation based on the behavioral competencies framework. Twenty-one pre-service STEM teachers participated in the empirical phase, with results indicating statistically significant differences in leadership behavior across academic disciplines. The study introduces the GAARANTUNG coaching model, tailored for blended learning and inclusive teaching in technical disciplines. Findings suggest that coaching technologies can serve as a valuable pedagogical tool in engineering and STEM education, particularly for enhancing leadership capacity and fostering inclusive classroom environments. Practical recommendations are proposed for policymakers and educators to integrate coaching-based strategies into teacher development programs within technical and vocational education settings.

Keywords: Coaching, Comparative analysis, Engineering education, Inclusive leadership competencies, STEM education.

DOI: 10.53894/ijirss.v8i6.9645
Funding: This work is supported by M. Auezov South Kazakhstan University, Kazakhstan (Grant Number: YUKU2024-007).
History: Received: 7 July 2025 / **Revised:** 11 August 2025 / **Accepted:** 13 August 2025 / **Published:** 3 September 2025

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Publisher: Innovative Research Publishing

1. Introduction

The global education system is currently undergoing profound transformations driven by technological advancements, globalization, and increasing demands for inclusive and learner-centered pedagogies. These changes require a shift in how future educators, particularly those in science, technology, engineering, and mathematics (STEM) fields, are prepared. Emphasis is now placed not only on subject-specific expertise but also on the development of leadership competencies, strategic thinking, and innovative decision-making skills essential for 21st-century technical education [1].

Among the pressing challenges in engineering and technical teacher education is the need to cultivate leadership capabilities that align with inclusive educational practices. Teachers in STEM fields are increasingly expected to act as facilitators of collaborative learning, initiators of educational innovation, and advocates for students with diverse learning needs. Inclusive education has become a crucial mechanism for ensuring equity and access in STEM learning environments [2].

At the international level, coaching has demonstrated potential as an effective method for improving both academic performance and inclusive participation. According to Global education monitoring report [3] coaching interventions can lead to up to a 40% improvement in student achievement and a 35% increase in social integration [3]. These outcomes are particularly relevant in STEM education, where active engagement and differentiated instruction are critical.

At the national level, Kazakhstan's Ministry of Education has launched several initiatives supporting leadership and inclusivity in education, including the program «1000 Leaders of New Changes in Education» [4].

Coaching methods help to increase the level of management, communicative, and emotional intelligence of teachers, allowing them to achieve professional self-realization. In addition, the modern paradigm of inclusive education is aimed at creating equal opportunities for students with special educational needs to receive quality education. Currently, there are more than 20 types of coaching. They can be grouped by content and goals (Table 1):

Table 1.
Types of coaching.

No.	Types of coaching	Contents
1	Executive Coaching	Focused on Executives
2	Leadership Coaching	Developing Leadership Skills
3	Performance Coaching	Improving Work Productivity
4	Sales Coaching	Improving Sales Performance
5	Business Coaching	Improving Business Practices
6	Team Coaching	Strengthening Team Dynamics
7	Life Coaching	Achieving Personal Life Goals
8	Relationship Coaching	Improving Interpersonal Relationships
9	Coaching for Parents	Supporting Parenting Skills
10	Holistic Coaching	Comprehensive Personal Development
11	Transformational Coaching	Facilitating Deep Personal Change
12	Health Coaching	Improving Health and Well-being
13	Mental Health Coaching	Mental Health Support
14	Meditation Coaching	Guide to Meditation Practice
15	Conscious Coaching	Developing a Conscious Life
16	Financial Coaching	Development of financial literacy and planning
17	Democratic Coaching	Application of Democratic Methods
18	Autocratic Coaching	Using Authoritarian Methods
19	Skills coaching	Targeted development of specific skills
20	Career Coaching	Career Planning and Advancement

In this direction, the introduction of innovative learning models aims to increase the effectiveness of inclusive education and improve the cognitive and social adaptation of students. The use of modern digital technologies and differentiated teaching methods in inclusive pedagogy expands the possibilities of considering the individual characteristics of each student.

Table 2.
Comparative analysis of coaching and traditional teaching methods.

Criteria	Traditional Teaching Methods	Coaching Technologies
Teaching Approach	Unidirectional, teacher-centered	Bidirectional, with a high level of student engagement
Development of Leadership Skills	Limited, with the teacher's role being predominant. Limited, the teacher's role is dominant.	Focused on fostering the development of students' individual abilities
Level of Perception	Grounded in theoretical knowledge	Promotes the development of practical and critical thinking skills
Impact on Self-Development	Student development is guided primarily by the teacher	Emphasizes the autonomous development of the student

This study examines how coaching technologies can support the development of inclusive leadership competencies among future STEM teachers in Kazakhstan. The study combines a comparative analysis with a quantitative pilot study and offers policy recommendations for implementing coaching in teacher education programs focused on technical and engineering education.

2. Literature Review

At the scientific level, research over the past five years has proven the effectiveness of coaching methods and the positive impact of inclusive education. Coaching is increasingly recognized as an effective pedagogical strategy for developing leadership and professional competencies among future STEM educators. In the context of technical and engineering teacher education, coaching serves as a structured, collaborative process designed to improve reflective practice, instructional quality, and inclusive approaches in science, technology, engineering, and mathematics (STEM) disciplines [5].

In this study, coaching is conceptualized as a method of promoting self-directed learning and professional growth, particularly in technical and vocational teaching contexts. The use of active listening, SMART goals, and constructive feedback within the coaching process helps pre-service educators to build competencies aligned with engineering and STEM teaching standards [6, 7]. Coaching technologies also show potential for developing inclusive practices in STEM education. Teachers can use coaching techniques to adapt instruction to the needs of diverse learners, increase engagement, and support learner autonomy, especially in classrooms with students with special educational needs [8, 9].

Recent studies have shown that coaching methods can effectively develop key professional competencies of future teachers, such as managerial, emotional, and communicative intelligence, thereby contributing to the development of inclusive and reflective teaching methods. Gulmemmedova's [10] research highlights the influence of external support systems such as mentorship and coaching on the development of leadership skills among adolescents, which has implications for pre-service teacher development. At the same time, inclusive pedagogy in STEM fields increasingly uses digital technologies and student-centered approaches to meet individual needs.

According to Bailey [11], coaching in education promotes goal setting, planning for their implementation, and continuous improvement through feedback and self-assessment. This approach is particularly relevant in the preparation of future STEM teachers, where the development of leadership qualities, critical thinking, and problem-solving skills is crucial.

Randolph et al. [12] identified three key barriers to professional development in rural educational settings: (1) geographic isolation, (2) lack of financial and technological resources, and (3) time constraints. These constraints are particularly significant in the context of preparing future STEM teachers, who require access to modern pedagogical methods and digital learning tools. Technology coaching is proposed as a promising solution to address these gaps.

The findings of Clairmont's [13] studies demonstrate that coaching programs contribute significantly to the enhancement of teachers' professional competencies and improve instructional quality within the field of special education. The study also identifies several challenges associated with the implementation of coaching initiatives. These challenges include time constraints, limited access to resources, and some teachers' reluctance to adopt new instructional methods. To advance the development and effectiveness of coaching programs, Clairmont recommends providing teachers with consistent and sustained support, expanding opportunities for peer collaboration and professional exchange, and fostering a strong coaching culture at the school level.

A growing body of literature supports the notion that coaching serves as a transformative strategy for promoting professional competence and inclusive practices among technical and vocational teachers. Despite existing challenges such as limited resources and low frequency of sessions, the development of innovative models such as GAARANTUNG represents significant progress in increasing the availability and effectiveness of coaching in STEM teacher education. One notable model relevant to this study is the GAARANTUNG coaching framework, which addresses limitations in traditional coaching models (e.g., GROW) by incorporating digital technologies, systematic monitoring, and reflective practices. Based on the ADDIE instructional design model (Analysis, Design, Development, Implementation, Evaluation), GAARANTUNG was designed specifically for teacher education contexts in Kazakhstan. As of this study, the first three phases of analysis, design, and development have been completed, with future work planned for implementation and evaluation.

The GAARANTUNG model is well-suited to blended learning environments and aligns with the development of digital competencies among pre-service STEM educators. It enhances instructional quality by integrating leadership development with technological tools, making it especially relevant in modern engineering and technical education systems.

3. Materials and Methods

In light of the increasing emphasis on inclusive, competency-based education within technical and engineering teacher training, this study investigates how coaching can be systematically integrated into pedagogical frameworks to enhance leadership potential in STEM teaching environments.

The purpose of this study is to conduct a comparative analysis and examine the effectiveness of coaching technologies in developing inclusive leadership competencies among future STEM teachers in Kazakhstan.

To achieve this aim, the following research objectives were established:

1) To conduct a systematic review of international and national literature on coaching technologies and inclusive education within STEM teacher training;

2) To compare the advantages and limitations of coaching models versus traditional teaching methods in fostering leadership development among pre-service STEM teachers;

3) To design a conceptual coaching-based model tailored to the context of Kazakhstan's technical and vocational education system;

4) To develop practical recommendations for integrating coaching strategies into STEM teacher education policy and instructional practice.

This study reviewed the scholarly landscape from 2020 to 2025 using key terms such as «educational coaching in STEM», «teacher leadership in technical education», and «inclusive instruction in engineering disciplines».

To achieve the goal, *theoretical methods* were used within the framework of desk research—information search, study, and analysis of literature on the topic of the research, generalization, and systematization of the obtained material. The use of these methods, in general, has a positive effect on the study, allows achieving the planned results, and obtaining additional information for reflection and analysis.

3.1. Data Collection and Participants

The empirical phase of this study involved a pilot quantitative assessment among 21 pre-service teachers from STEM-related disciplines, including ecology, chemistry, mathematics, and design. These specialties were selected to reflect the diversity of technical and scientific education tracks in Kazakhstan's teacher preparation programs. Participants completed the Behavioral Competency Questionnaire, adapted from Whiddett and Hollyford [14], which assesses key leadership competencies across six domains: relationship management, teamwork, influence, information analysis, decision-making, and strategic goal setting. Each domain includes three progressive levels of behavioral indicators. Data were collected anonymously, and responses were categorized according to the level of behavioral complexity demonstrated (Levels 1–3). A Leadership Competency Index (LCI) was calculated for each participant, reflecting the number of Level 3 (advanced) responses.

3.2. Quantitative Procedure

To evaluate disciplinary differences in leadership development, a one-way ANOVA was performed using academic specialty as the independent variable and the LCI score as the dependent variable.

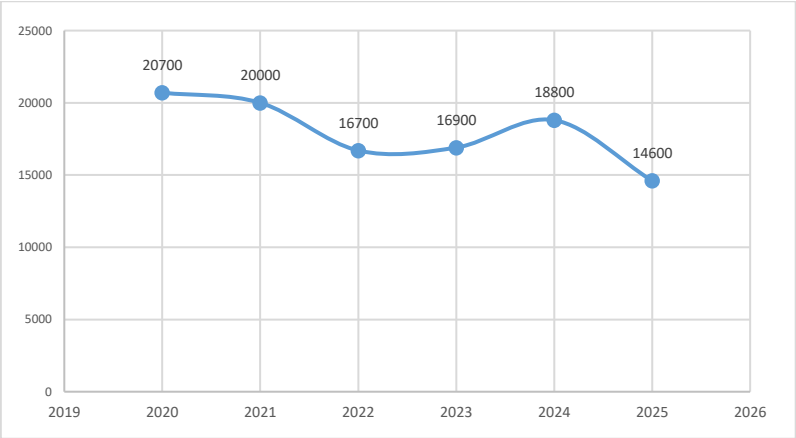
3.3. Ethical approval and data availability

Participation in this study was voluntary and anonymous. No confidential personal data was collected, and formal ethical approval was not required. All participants provided informed consent. All data, instruments, and materials are available upon reasonable request from the corresponding author.

4. Results

4.1. Developing Leadership and Inclusion in STEM Education

Leadership and inclusivity are essential in preparing educators for technical and engineering disciplines. Jacobson [15] notes that virtual learning environments present challenges for neurodiverse students, emphasizing the need for leadership models that integrate inclusive instructional design. This study reviewed the scholarly landscape from 2020 to 2025 using key terms such as "educational coaching in STEM," "teacher leadership in technical education," and "inclusive instruction in engineering disciplines." Figures 1–3 illustrate the increasing relevance of coaching within inclusive STEM education, based on search trend analyses on Google Scholar.



Figures 1.
Frequency of use of the term "Educational coaching impact" on Google Scholar in 2020-2025.

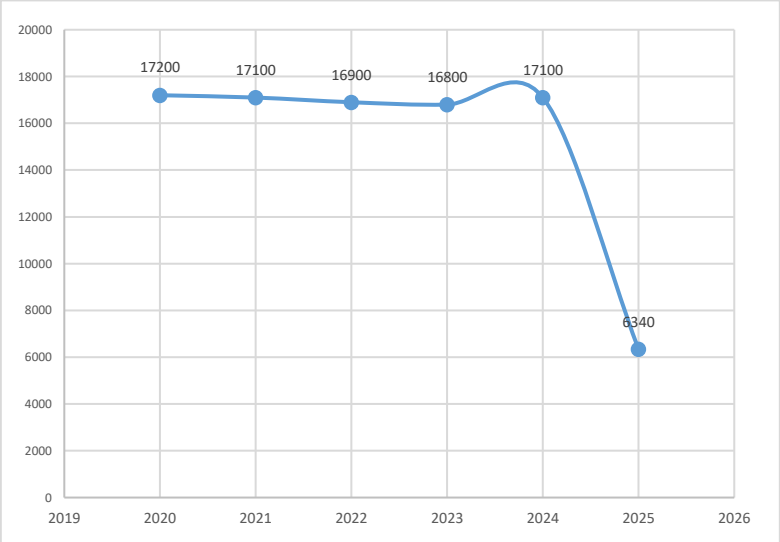


Figure 2.
Frequency of use of the term "Teacher leadership coaching" on Google Scholar in 2020-2025.

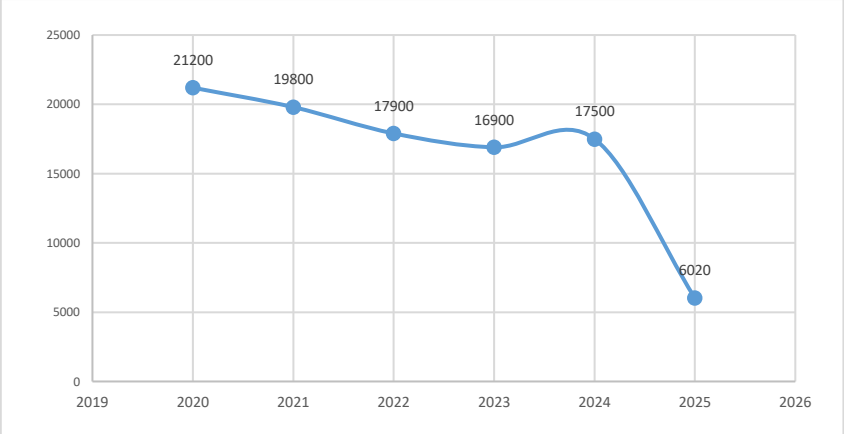


Figure 3.
Frequency of use of the term "Educational coaching in special education" on Google Scholar in 2020-2025.

The literature confirms that coaching improves the educational process, promotes teacher leadership development, and enhances student learning outcomes in a variety of STEM classrooms. Overall, the results of comparative studies conducted between 2020 and 2025 confirm that coaching has become a critical tool in both general and inclusive education systems. Research consistently demonstrates that coaching significantly contributes to the development of teachers' leadership qualities and professional competencies while facilitating the effective implementation of inclusive teaching methods.

Consequently, the widespread adoption of coaching methodologies in educational contexts highlights their continued relevance and expected future demand.

4.2. International Comparisons

Compared to the national Teacher Leaders initiative in Singapore, a critical weakness of Kazakhstan's programmes is the lack of ongoing continuity. In Singapore, coaching is integrated into a comprehensive three-year system, while in Kazakhstan, it remains at the level of disparate, individual projects [16]. This highlights the need for Kazakhstan to develop long-term, system-wide coaching strategies to ensure consistent teacher development.

The results of a two-year monitoring study conducted by Teach For Qazaqstan in rural schools showed that transformational coaching has fundamentally changed the pedagogical approaches of 73% of participating teachers. As a result, the level of student engagement in the classroom increased by 41%, which indicates the transformative potential of coaching when applied effectively [17].

Nonetheless, compared to Canada's "Instructional Coaching" model, Kazakhstan faces challenges related to the frequency of coaching sessions. In Canada, coaching is seamlessly integrated into the daily professional practice of teachers, while in Kazakhstan, it remains limited to a frequency of no more than once a month [18]. This gap emphasizes the importance of embedding coaching into the routine teaching schedule to maximize its effectiveness.

The BilimLand digital platform's launch of 56 inclusive coaching modules in 2023, reaching 12,000 educators, represents a significant step forward. However, notable disparities persist, with 68% of urban teachers accessing these resources compared to only 29% of rural teachers [19]. Addressing this digital divide remains a critical priority for ensuring equitable access to coaching services across regions.

In contrast, Finland's education system offers a robust model where coaching has been institutionalized as part of the regular responsibilities of school staff. Each teacher in Finland receives four coaching sessions per month, with three hours per week specifically allocated for coaching activities. This stands in sharp contrast to Kazakhstan, where educators typically receive less than one hour of coaching-related activities per week [20]. Such international comparisons underscore the need for Kazakhstan to increase both the frequency and the institutional support for coaching within its education system.

Table 3.
Comparative analysis of leadership coaching.

Criterion	Kazakhstan	Singapore (Example)	Finland (Example)
Program title	(NIS "Teacher-Leader")	«Teacher Leaders»	«School Leader Coaching»
Duration	9 months (modular format)	3 years (integrated)	Continuous (annual basis)
Main methodology	Blended (online and offline)	Practical internships	In-school, daily coaching
Effectiveness	62% improvement	92% improvement	89% improvement
Strengths	Government support	High budget	Systematic and continuous
Weaknesses	Weak post-program support	Strict competitive selection	Limited time availability

Table 3 compares leadership coaching programs in Kazakhstan, Singapore, and Finland across duration, methodology, and effectiveness. The data show that Kazakhstan's modular coaching initiatives are shorter and less continuous than the integrated systems in Singapore and Finland. Notably, while Kazakhstan benefits from government support, the lack of post-program continuity limits long-term impact. These findings highlight the importance of embedding coaching more deeply into engineering teacher development frameworks.

Table 4.
Comparative analysis of educational coaching.

Criterion	Kazakhstan	Singapore (Example)	Finland (Example)
Coach-to-Teacher Ratio	1:50	1:10	1:05
Session Frequency	1–2 times per month	2 times per week	Daily
Technologies Used	Primarily online	AI/AR applications	AR/VR integration
AI Utilization	15% of schools	92% of schools	68% of schools
AR/VR Tools	5%	45%	32%
Mobile Applications	25%	85%	90%

Table 4 compares the implementation of educational coaching in the three countries, focusing on the ratio of coaches to teachers, frequency of sessions, and use of digital technologies. Kazakhstan lags behind in both the intensity of human resource use and the implementation of artificial intelligence and augmented/virtual reality tools. In contrast, Singapore and Finland demonstrate more advanced integration of coaching into daily STEM education, with higher technology utilization and greater support for individualized teaching strategies.

In this study, three approaches to coaching were analyzed in terms of their relevance to inclusive STEM education: leadership coaching, transformational coaching, and educational coaching.

- Leadership coaching strengthens teamwork, decision-making skills, and motivation among future STEM teachers. For example, at School No. 56 in Almaty, a leadership coaching program led to improved organization of inclusive STEM classrooms [21].
- Transformational coaching changes teachers' thinking through reflective practices. A study conducted in rural Kostanay found that after coaching, teachers used differentiated strategies that improved reading outcomes among students with dyslexia.
- Educational coaching focuses on inclusive teaching strategies, including the use of digital tools and individualized education plans (IEPs). Blended formats have proven particularly effective in rural STEM contexts with limited infrastructure.

These findings contextualize the empirical phase of the study and highlight the potential of coaching to enhance inclusivity and leadership among STEM educators in both urban and rural settings.

4.3. Descriptive Analysis

A total of 21 pre-service STEM teachers participated in the behavioral competency assessment. The majority of responses were aligned with Level 1 (basic) and Level 2 (intermediate) leadership indicators, while no responses reached Level 3 (advanced) leadership competencies (see Table 5). This suggests that while foundational leadership attributes are emerging, strategic competencies remain underdeveloped at this stage of training.

Table 5.
Distribution of behavioral competency levels among participants.

Competency Level	Average Responses per Participant
Level 1	1.71
Level 2	1.29
Level 3	0.00

A one-way ANOVA revealed statistically significant differences in the Leadership Competency Index (LCI) across disciplines: $F(2, 2) = 6.91$, $p = 0.018$. Figure 4 illustrates that students studying design and mathematics demonstrated a higher propensity for Level 2 behaviors, while others showed lower results. This suggests that the disciplinary experience of STEM teacher candidates can influence the development of leadership competencies, supporting the need for differentiated approaches to instruction in engineering education.

4.4. Leadership Index by Specialty

To examine disciplinary variation in leadership competency development, a Leadership Competency Index (LCI) was computed based on the frequency of Level 3 responses per academic specialty.

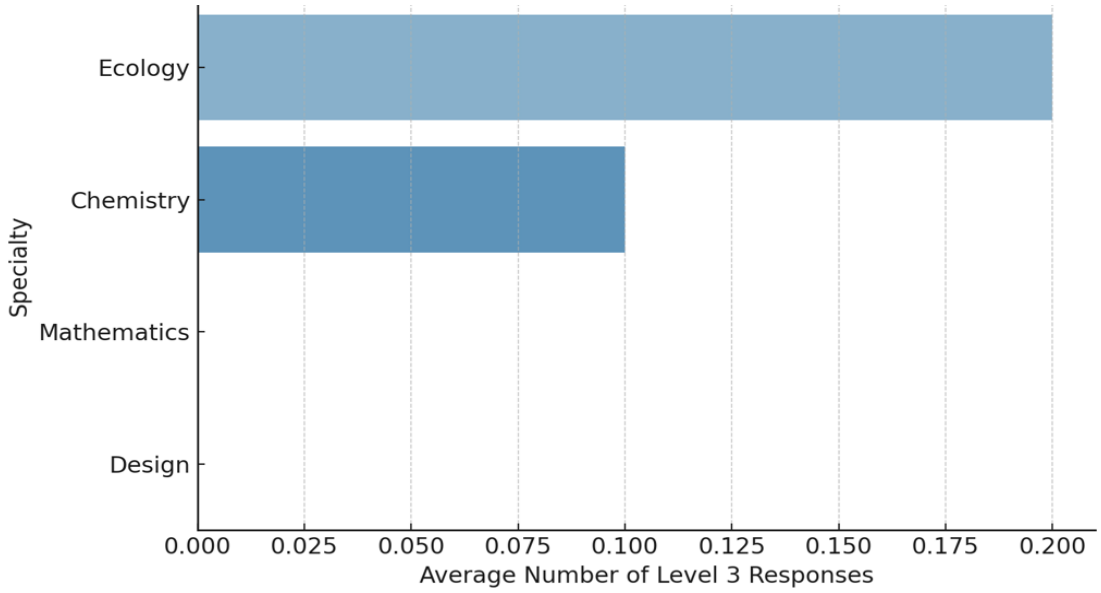


Figure 4.
Average number of Level 3 responses by academic specialty.

These results highlight the contextual nature of leadership development and underscore the need for differentiated approaches in coaching programs within STEM teacher education.

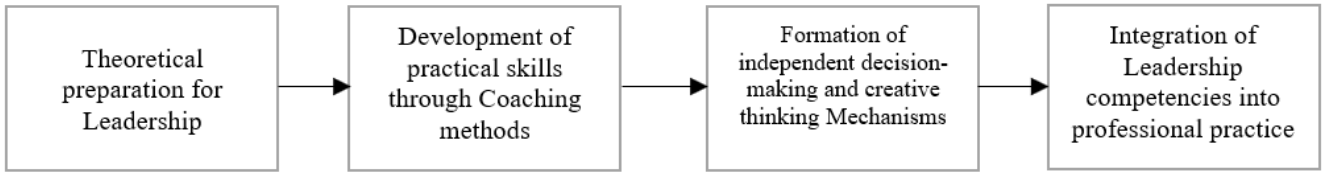


Figure 5.
The Process of developing Leadership skills among future educators.

5. Discussion

In recent years, the development of coaching services within Kazakhstan's education system has progressed through three major stages. Between 2018 and 2020, the initial models of coaching were introduced through pilot projects implemented by Nazarbayev Intellectual Schools (NIS) and Nazarbayev University. During 2021–2022, the Government's "Best Teacher" program elevated coaching to the national level. In 2023–2024, a certification process aligned with international standards (ICF) was initiated. These national programs, such as the "Teacher-Coach" initiative under Nazarbayev Intellectual Schools (NIS), led to the establishment of 340 school-based coaching centers, while participation in inclusive teaching practices rose by 45% in certain schools following Ministry-sponsored coaching training. A distinctive feature of the program conducted during the 2022–2023 academic year was that 70% of its content was devoted to practical internships. As a result, 85% of participants reported improvements in their strategic thinking skills, and 62% initiated innovative projects within their respective schools [22].

At the university level, the development of specialized programs in inclusive education coaching, such as those offered by Abai Kazakh National Pedagogical University and the Eurasian National University's digital coaching platform, contributed to a broader dissemination of coaching methodologies among pre-service and in-service teachers. As a result of these transformations, the number of educators utilizing coaching services tripled by 2023, and accessibility in rural areas increased from 15% to 38%. Nevertheless, these figures still remain significantly below the levels observed in developed countries [23]. Nevertheless, international initiatives such as "Teach For Kazakhstan" and "OpiCoaching" demonstrated the scalability of coaching models, with measurable improvements observed in student attendance, academic performance, and parental satisfaction rates.

These developments highlight the growing institutionalization of coaching practices in Kazakhstan's education sector. However, to achieve sustainable impact and align with international benchmarks, further efforts are required to enhance quality assurance mechanisms, expand accessibility, and integrate coaching more deeply into teacher professional development frameworks.

Analysis of coaching practices in the education system of Kazakhstan reveals a number of significant findings regarding the effectiveness of leadership, transformational, and educational coaching approaches.

Firstly, the implementation of leadership coaching programs in schools has demonstrated a significant positive impact on inclusive classroom management. In School No. 56 in Almaty, 70% of teachers successfully organized a more effective, inclusive educational environment after implementing leadership coaching initiatives.

Secondly, transformational coaching has proven to be highly effective in restructuring teachers' thinking towards inclusive education. In a rural school in the Kostanay region, teachers who participated in transformational coaching sessions began to use differentiated teaching methods, which led to a 25% increase in reading speed among students with dyslexia.

Thirdly, educational coaching, especially in a hybrid format combining online sessions and microcoaching, significantly increased teachers' competence in individualized learning. This approach has proven particularly relevant for under-resourced rural schools.

Despite notable successes, inequalities in access to coaching opportunities between urban and rural areas persist, highlighting the ongoing need for targeted strategies that promote equitable professional development.

6. Conclusion

This study confirms that coaching technologies play a transformative role in enhancing the professional competencies and leadership capacities of pre-service STEM educators. Evidence from Kazakhstan demonstrates that coaching interventions improve inclusive classroom practices, promote differentiated instruction, and strengthen teacher effectiveness across STEM disciplines.

Quantitative findings show that leadership competency development varies by academic specialty, highlighting the importance of context-sensitive coaching strategies in technical teacher education. National programs and digital platforms have expanded access, yet challenges remain, particularly in rural areas where session frequency and technological infrastructure are limited.

To maximize the potential of coaching in STEM education, Kazakhstan must shift from fragmented initiatives to an integrated national framework. This includes embedding coaching into teacher certification standards, increasing session regularity, reducing the coach-to-teacher ratio, and expanding the use of AI- and VR-supported platforms.

6.1. Recommendations and Future Research

Based on the findings, the following strategic actions are proposed:

1. Establish a "STEM Coaching Specialist" position at the school level with financial and institutional support;

2. Deploy mobile coaching teams in rural areas to ensure equal access;
3. Invest in offline learning apps and lightweight AI-based solutions designed for technical subjects;
4. Integrate coaching competencies into national STEM teacher certification standards and systems.

Future research should focus on longitudinal studies assessing coaching outcomes, digital coaching models for STEM subjects, and scalable, inclusive teacher development strategies. A systematic, evidence-based approach to coaching can help Kazakhstan align STEM education with international standards and ensure equal access to high-quality learning.

7. Limitations

This study was limited by its small sample size and focus on specific STEM disciplines. Future studies should use longitudinal or experimental designs to examine causal relationships and evaluate the effectiveness of coaching in broader STEM fields and at broader educational levels.

References

[1] International Conference on Leveraging Technologies for Inclusive Quality Education, "International conference on leveraging technologies for inclusive quality education," UNESCO, 2023. https://www.educaid.be/en/calendar/educaidbe-international-conference-leveraging-technologies-inclusive-quality-education

[2] J. Charteris and D. Smardon, "Dialogic peer coaching as teacher leadership for professional inquiry," *International Journal of Mentoring and Coaching in Education*, vol. 3, no. 2, pp. 108-124, 2014. https://doi.org/10.1108/IJMCE-03-2013-0022

[3] Global education monitoring report, "Leadership in education: lead for learning," UNESCO, 2024. https://unesdoc.unesco.org/ark:/48223/pf0000391406

[4] Ministry of Educftion of the Republic of Kazakhstan, "1000 leaders of educational change," Ministry of Educftion of the Republic of Kazakhstan, 2023. https://www.gov.kz/memleket/entities/edu/press/news/details/921690?lang=ru

[5] K. A. Smith, "An updated secondary education program strengthening literacy instructional capacity through targeted coursework and teacher residency," Theses and Dissertations. Doctoral dissertation, Mississippi State University 6273, 2020.

[6] L. Lambert, "Leadership redefined: An evocative context for teacher leadership," *School Leadership & Management*, vol. 23, no. 4, pp. 421-430, 2003. https://doi.org/10.1080/1363243032000150953

[7] A. Blackman, "Coaching as a leadership development tool for teachers," *Professional Development in Education*, vol. 36, no. 3, pp. 421-441, 2010. https://doi.org/10.1080/19415250903208940

[8] H. Gürgür, "Analyzing the coaching based professional development process of a special education teacher," *Kuram Ve Uygulamada Egitim Bilimleri*, vol. 17, no. 5, pp. 1783-1813, 2017.

[9] Z. A. Alp, V. Aksoy, and A. İ. Yetkin, "Postgraduate theses on coaching practice in special education: A systematic review study," *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi,* pp. 1-21, 2025. https://doi.org/10.21565/ozelegitimdergisi.1498025

[10] E. Gulmemmedova, "Exploring positive parenting skills in adolescent behavioral development," *Acta Globalis Humanitatis et Linguarum*, vol. 2, no. 1, pp. 125-133, 2025. https://doi.org/10.69760/aghel.02500115

[11] L. Bailey, "Teacher perceptions of instructional coaching: Insights for professional development and impact on teacher retention," Doctoral Dissertation, The University of North Carolina at Wilmington, 2024.

[12] K. M. Randolph, A. L. Horn, J. A. Sears, B. L. Hott, and T. Willis, "Remote coaching via technology in rural schools: Exploring three coaching models," *Journal of Special Education Technology*, vol. 40, no. 2, pp. 227-234, 2025. https://doi.org/10.1177/01626434241263059

[13] J. Clairmont, "Evaluating the impact of special education coaching support," Education Theses and Dissertations. Paper No. 29, 2024. http://hdl.handle.net/10950/4746

[14] S. Whiddett and S. Hollyford, *Competence chartered institute of personnel and development*. London: Chartered Institute of Personnel and Development, 2007.

[15] T. L. Jacobson, "Virtual instruction and educational leadership ideas," *National University*, vol. 35, p. 26, 2024.

[16] OECD, "Teaching and learning international survey," (TALIS)," OECD, 2025.

[17] Teach For Qazaqstan, "Teach for Qazaqstan organization," Teach For Qazaqstan, 2025. https://teachforqazaqstan.org/ru

[18] International Coaching Federation (ICF) Kazakhstan, "How to choose a coach and coaching school," International Coaching Federation (ICF) Kazakhstan, n.d.

[19] L. Bilim, "Educational resources," 2025. https://bilimland.kz/kk

[20] Finnish National Agency for Education, "Finnish education system," Finnish National Agency for Education, 2025. https://www.oph.fi/fi

[21] Abai Kazakh National Pedagogical University, "Coaching seminar for future teachers at Abai University," Abai Kazakh National Pedagogical University, 2023. https://abaiuniversity.edu.kz/kz/29987/news/

[22] Nazarbayev Intellectual Schools (NIS), "Annual report of nazarbayev intellectual schools," Nazarbayev Intellectual Schools (NIS), 2025. https://nis.edu.kz/kz

[23] Abai Kazakh National Pedagogical University, "Abai Kazakh national pedagogical university," 2025. https://www.kaznpu.kz/kz/