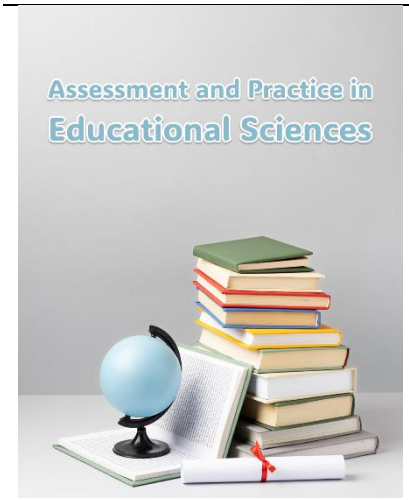
Assessment and Practice in Educational Sciences



Identification of the Constituent Components of Reengineering the Educational System of Farhangian University in Tehran

1. Nazanin. Houshiarjah: Department of Educational Governance and Human Capital, CT.C., Islamic Azad University, Tehran, Iran
2. Mehdi. Shariatmadari: Department of Educational Governance and Human Capital, CT.C., Islamic Azad University, Tehran, Iran
3. Fereshteh. Kordestani*: Department of Educational Governance and Human Capital, CT.C., Islamic Azad University, Tehran, Iran (Email: fe.kordestani92@iau.ac.ir)
3. Fatemeh. Hamidifar: Department of Educational Governance and Human Capital, CT.C., Islamic Azad University, Tehran, Iran

Article type:
Original Research

Article history:
Received 29 October 2025
Revised 4 February 2026
Accepted 09 February 2026
Initial Publish 28 July 2026
Published online 01 September 2026

How to cite this article:
Houshiarjah, N., Shariatmadari, M., Kordestani, F., & Hamidifar, F. (2026). Identification of the Constituent Components of Reengineering the Educational System of Farhangian University in Tehran. *Assessment and Practice in Educational Sciences*, *4*(4), 1-12. https://doi.org/10.61838/japes.218

ABSTRACT

Reengineering the university educational system is of great importance for responding to the changing needs of the labor market and society. This process enhances the quality of education by improving teaching and assessment methods and increases student satisfaction. Moreover, by focusing on the development of key skills, it produces competent graduates who are well suited to the labor market and establishes a more effective connection with social and cultural needs. Accordingly, considering the above, the present study was conducted with the aim of identifying the constituent components of reengineering the educational system of Farhangian University in Tehran. In terms of purpose, the research was applied; in terms of data type, it employed a sequential mixed-methods design with an exploratory approach; in terms of paradigm, it was interpretive; and in terms of analytical nature, it utilized qualitative content analysis with a thematic analysis approach. The participants included theoretical experts (university faculty members in the field of educational sciences) and practical experts (relevant higher education administrators). Based on the principle of saturation and purposive sampling, 20 interviewees were selected. Data collection was conducted through semi-structured interviews, and the validity and reliability of the instrument were examined and confirmed. Data analysis was performed using thematic analysis with Maxqda software (V18). The findings indicated that the constituent components of reengineering the educational system of Farhangian University in Tehran include a focus on skill-based learning, the practical application of education provided at Farhangian University, the usefulness and up-to-dateness of educational content, the development of students' multi-skilling, an emphasis on specialized courses across different disciplines, and the training of up-to-date and literate students. The results of this study provide the groundwork for fundamental transformations in the educational system of Farhangian University and, by identifying effective constituent components, contribute to improving the quality of education and the teaching–learning process. These findings offer valuable information to educational decision-makers and enable the design of more efficient educational programs that are better aligned with contemporary needs. Consequently, the recommendations of this study can lead to improvements in teacher education processes and foster more effective engagement between teachers and society.

Keywords: Reengineering of the educational system; skill-based learning; real needs of schools; Farhangian University

Introduction

The accelerating pace of social, economic, and technological change has fundamentally reshaped expectations of higher education systems across the world. Universities are no longer perceived solely as institutions for knowledge transmission, but

as dynamic social systems responsible for preparing graduates who are adaptable, skilled, ethically grounded, and capable of responding to complex labor market and societal demands. In this context, the concept of re-engineering educational systems has emerged as a strategic response to structural inefficiencies, curricular misalignment, and pedagogical inertia within traditional higher education models. Educational re-engineering involves the systematic redesign of educational processes, content, management structures, and learning environments to enhance effectiveness, relevance, and sustainability in rapidly changing contexts (1, 2). Rather than incremental reform, re-engineering emphasizes fundamental reconsideration of how education is conceptualized, delivered, and evaluated, positioning learners at the center of adaptive and skill-oriented systems.

From a sociological perspective, educational systems are deeply embedded within broader social structures and power relations, and thus reflect societal values, economic priorities, and cultural norms. The re-engineering of education is therefore not merely a technical or managerial intervention, but a socially situated process that seeks to realign education with contemporary social realities. Global transformations such as digitalization, the knowledge economy, and the reconfiguration of work have intensified the need for educational systems that promote lifelong learning, multi-skilling, and social responsiveness (3, 4). As societies increasingly rely on knowledge-intensive and technology-mediated forms of production, higher education institutions are expected to cultivate not only disciplinary expertise but also transversal competencies such as critical thinking, communication, collaboration, and ethical reasoning.

Teacher education institutions occupy a particularly critical position within this landscape, as they are responsible for shaping future educators who will, in turn, influence generations of learners. The effectiveness of national education systems is closely linked to the quality of teacher preparation programs, making the re-engineering of teacher education a strategic priority for sustainable development and social cohesion (5, 6). Traditional models of teacher education, often characterized by theory-heavy curricula and limited engagement with real-world school contexts, have been increasingly criticized for their inability to equip graduates with practical skills, adaptive pedagogies, and digital competencies required in contemporary classrooms (7, 8). Consequently, re-engineering teacher education systems has become central to addressing gaps between academic preparation and professional practice.

One of the most salient dimensions of educational re-engineering is the shift toward skill-based and competency-oriented learning. Modern labor markets demand graduates who can apply knowledge flexibly, engage in problem-solving, and continuously update their skills in response to evolving professional contexts. The emphasis on multi-skilling and transferable competencies reflects a broader transformation in how education is valued within society, moving beyond credentialism toward demonstrable capabilities (4, 9). In teacher education, this translates into prioritizing pedagogical skills, classroom management, assessment literacy, communication abilities, and technological proficiency alongside subject-matter knowledge. Re-engineering initiatives that foreground skill-based learning are therefore aligned with both sociological theories of human capital development and contemporary workforce requirements.

Digital transformation has further intensified calls for educational re-engineering, particularly in higher education. The expansion of virtual learning environments, digital platforms, and online assessment systems has challenged conventional pedagogical models and institutional structures. Re-engineering educational contexts to integrate digital technologies effectively requires not only technological infrastructure but also redesigned pedagogical frameworks that support interaction, engagement, and meaningful learning (10, 11). From a sociological standpoint, digitalization also raises critical questions about equity, access, and the digital divide, particularly in teacher education programs tasked with preparing educators for diverse and often under-resourced learning environments (12). Educational re-engineering must therefore address both the opportunities and the structural inequalities associated with digital transformation.

Another central aspect of educational re-engineering is the practicalization of learning and the integration of theory with real-world application. Research consistently highlights the limitations of purely theoretical curricula in preparing graduates for professional roles, especially in education-related fields where experiential knowledge and contextual understanding are essential (13, 14). Re-engineered educational systems emphasize internships, school-based projects, collaborative partnerships with educational institutions, and reflective practice as mechanisms for bridging the gap between academic knowledge and professional competence. Such approaches align with sociological perspectives that view learning as a socially situated process shaped by interaction, practice, and institutional contexts.

Quality assurance and governance structures also play a decisive role in the success of educational re-engineering efforts. Without supportive leadership, strategic planning, and accountability mechanisms, re-engineering initiatives risk remaining superficial or fragmented. Visionary leadership and participatory governance have been identified as key drivers of successful educational transformation, enabling institutions to align re-engineering goals with organizational culture and stakeholder expectations (15, 16). In teacher education universities, effective governance is particularly important given the multiplicity of stakeholders involved, including policymakers, school systems, faculty members, and student teachers.

International experiences further underscore the importance of coherent frameworks for re-engineering educational systems. The Tuning Project in Europe, for example, has demonstrated how competency-based curriculum design and learning outcomes can enhance transparency, comparability, and relevance across higher education systems (17). Such initiatives highlight the value of systematic approaches to curriculum redesign that are informed by labor market needs, disciplinary standards, and societal expectations. Similarly, process re-engineering models in engineering and management education have shown that comprehensive redesign of educational processes can lead to improved efficiency, learning quality, and institutional performance (14, 18).

Despite the growing body of international literature on educational re-engineering, sociologically grounded, context-specific studies remain essential. Educational systems operate within unique cultural, institutional, and policy environments, and re-engineering models cannot be transferred uncritically across contexts. In Iran, and particularly within teacher education institutions, there is a pressing need to examine how global re-engineering principles can be adapted to local educational realities, social expectations, and policy frameworks. Universities responsible for teacher education face distinctive challenges, including aligning curricula with school needs, responding to rapid curricular reforms in primary and secondary education, and preparing teachers capable of addressing social diversity and cultural complexity.

Farhangian University, as the primary institution for teacher education in Iran, occupies a strategic position within the national education system. Its educational structure directly influences the quality of teaching and learning in schools across the country. However, like many teacher education institutions globally, it faces challenges related to curriculum relevance, skill development, digital readiness, and alignment with societal and labor market needs. Addressing these challenges requires a comprehensive re-engineering of its educational system that goes beyond isolated reforms and targets the fundamental components of teaching, learning, and institutional organization (6, 7).

From a sociological lens, re-engineering the educational system of Farhangian University also entails rethinking the social role of teachers and teacher education. Teachers are not only transmitters of knowledge but also agents of socialization, cultural reproduction, and social change. Preparing teachers who are scientifically literate, digitally competent, culturally aware, and socially responsible is therefore essential for addressing broader societal challenges. Educational re-engineering that emphasizes updated knowledge, specialized disciplinary training, and lifelong learning capacities contributes to strengthening the social function of education and enhancing its legitimacy within society (3, 8).

Moreover, the literature cautions against uncritical adoption of re-engineering rhetoric without careful conceptual and empirical grounding. While re-engineering promises efficiency and innovation, it also carries risks of oversimplification, managerialism, and neglect of educational values if not guided by robust theoretical and ethical considerations (2). Therefore, empirical studies that identify contextually grounded components of educational re-engineering are essential for ensuring that reform efforts remain pedagogically sound and socially meaningful.

In light of these considerations, there is a clear need for systematic qualitative inquiry into the constituent components of educational system re-engineering within teacher education universities. Identifying these components through the perspectives of both theoretical experts and practitioners can provide a comprehensive understanding of how re-engineering can be operationalized in practice. Such research not only contributes to the academic literature on educational transformation but also offers evidence-based guidance for policymakers and educational leaders seeking to enhance the quality and relevance of teacher education.

Accordingly, the aim of the present study is to identify the constituent components of re-engineering the educational system of Farhangian University in Tehran.

Methods and Materials

The present study was designed as an applied qualitative investigation aimed at identifying the constituent components of reengineering the educational system of Farhangian University in Tehran. From a paradigmatic perspective, the research was grounded in an interpretive paradigm, as it sought to understand meanings, perceptions, and experiences constructed by key actors involved in higher education and teacher education. In terms of data type and methodological orientation, the study adopted a qualitative approach using qualitative content analysis with a thematic analysis framework. The participants were divided into two analytically complementary groups: theoretical experts and experiential experts. Theoretical experts consisted of university faculty members and academic staff in the field of educational sciences, education, and educational management who were actively engaged in teaching and research related to educational systems and reform, particularly educational reengineering. The inclusion criteria for this group included holding a doctoral degree in a relevant field, possessing at least five years of teaching and research experience related to educational systems, having published peer-reviewed scientific articles in reputable national or international journals, and maintaining membership in recognized scientific or professional associations in education or educational sciences. Experiential experts included senior administrators, managers, and policy-related officials in higher education institutions, as well as educational consultants involved in the planning, implementation, or evaluation of educational programs within governmental or non-governmental organizations. The selection criteria for this group included holding a managerial or advisory position in higher education-related institutions, having a minimum of five years of practical experience in higher education or educational management, possessing in-depth knowledge of the challenges and needs of educational systems, and having experience participating in educational planning or reform committees at national or local levels. In qualitative research, particularly when semi-structured interviews and thematic analysis are employed, sample size is determined by the principle of theoretical saturation rather than statistical representativeness. Based on methodological recommendations that suggest a sample size ranging from 10 to 30 participants for qualitative interviews to achieve saturation (Creswell & Poth, 2018), this study selected 20 participants through purposive non-probability sampling. Sampling continued until no new concepts, categories, or themes emerged from the data, indicating saturation.

Data collection in this study was conducted through a combination of library-based and field-based methods in order to ensure both theoretical grounding and empirical depth. The library-based phase involved a systematic review and analysis of existing literature related to educational system reengineering, teacher education, skill-based learning, curriculum relevance,

and higher education reform. These sources included academic books, peer-reviewed journal articles, doctoral dissertations, and research reports retrieved from معتبر national and international academic databases. The purpose of this phase was to identify existing theoretical models, empirical findings, best practices, and documented challenges relevant to the reengineering of educational systems. The field-based phase consisted of semi-structured interviews with the selected theoretical and experiential experts. Semi-structured interviews were chosen as the primary qualitative tool because they provide a balance between structure and flexibility, allowing the researcher to address core research questions while also enabling participants to introduce new perspectives and insights. The interview protocol was designed to cover key domains aligned with the study objectives, including challenges of the current educational system, skill-based learning, practicalization of education, updating educational content, emphasis on specialized courses, and the development of scientifically literate and up-to-date students. Interviews were conducted in settings familiar and comfortable for participants to enhance openness and reduce response bias. Each interview lasted approximately 60 to 90 minutes and was audio-recorded with the informed consent of participants to ensure accuracy and completeness of data. Following data collection, all interviews were transcribed verbatim for analysis. The credibility and trustworthiness of the qualitative instrument were ensured through established qualitative validity and reliability strategies. Content validity was supported through alignment with prior theoretical frameworks and empirical studies, consistency between multiple coders, and member checking, whereby extracted themes were shared with selected participants for confirmation (Rose & Johnson, 2020). Reliability was addressed through meticulous documentation of the research process, intra-coder consistency checks through repeated coding of selected interviews at two-week intervals, and inter-coder agreement achieved through independent coding by the researcher and an external expert familiar with qualitative analysis, resulting in acceptable agreement coefficients.

Data analysis was conducted using flexible thematic analysis, which is well suited for identifying, analyzing, and reporting patterns within qualitative data. After transcription, the researcher engaged in repeated reading of the interview texts to achieve immersion and familiarity with the data. Open coding was then performed to identify meaningful units, concepts, and initial patterns emerging from participants' narratives. These initial codes were subsequently compared, refined, and grouped into broader categories and themes based on conceptual similarity and analytical relevance. Theme development involved iterative movement between data excerpts, codes, and emerging thematic structures to ensure that the final themes accurately represented participants' perspectives and experiences. The credibility of the themes was continuously examined through peer review, comparison with theoretical expectations, and participant validation. The entire analytical process was supported by the use of MAXQDA Analytics Pro software (version 2018), which facilitated systematic coding, retrieval, comparison, and visualization of qualitative data. The final stage of analysis involved interpreting the themes in relation to the research objectives and contextualizing them within the broader literature on educational system reengineering and teacher education. This rigorous and transparent analytical procedure enabled the extraction of coherent, empirically grounded components that form the basis of the proposed reengineering framework for the educational system of Farhangian University.

Findings and Results

Table 1 presents the constituent components of reengineering the educational system of Farhangian University in Tehran.

Table 1. Constituent Components of Reengineering the Educational System of Farhangian University in Tehran

Dimension	Component	Indicator
Focus on skill-based learning	Practical skills training	Number of practical workshops held per semester for students.
		Ratio of practical training hours to theoretical training hours in each field of study.

		Number of group projects that contribute to the development of practical skills.
		Evaluation of students' performance in practical activities and internships.
	Communication skills development	Organization of training courses on communication skills for students.
		Number of counseling sessions with instructors aimed at improving communication skills.
		Assessment of students' communication skills through group projects.
		Collection of feedback from classmates and instructors regarding communication abilities.
	Technical skills training	Number of training courses on the use of educational technologies.
		Assessment of students' ability to use educational software and tools.
		Organization of seminars and workshops related to technical skills.
		Provision of valid certificates for technical skills training courses.
	Managerial skills training	Number of project management and teamwork courses for students.
		Assessment of students' ability to manage time and resources in group projects.
		Organization of management competitions and challenges for students.
		Provision of instructors' feedback on students' managerial skills.
Practical application of education provided at Farhangian University	Integration of theory and practice	Number of courses that include practical projects alongside theoretical content.
		Assessment of the impact of practical projects on students' theoretical learning.
		Organization of seminars related to practical experiences in each field.
		Number of university collaborations with schools to implement joint projects.
	Development of collaboration with educational institutions	Number of cooperation agreements with schools and educational institutions for internships.
		Level of satisfaction of partner institutions with students' quality.
		Assessment of the impact of internships on students' skill development.
		Number of joint educational programs with other institutions.
	Use of emerging technologies	Number of training courses on emerging educational technologies.
		Assessment of students' ability to use digital tools.
		Organization of workshops on producing online educational content.
		Extent of the use of emerging technologies in the teaching–learning process.
	Project-based learning	Number of research projects conducted by students during their studies.
		Assessment of the quality of students' submitted projects.
		Number of advisory sessions with faculty to improve projects.
		Organization of exhibitions and conferences to present students' projects.
Usefulness and up-to-dateness of education and students' multi-skilling	Updating educational content	Number of periodic revisions of course content to align with current needs.
		Assessment of students' satisfaction with course content.
		Use of new and up-to-date educational resources in each field.
		Organization of training workshops for faculty to familiarize them with updated content.
	Development of multiple skills	Number of training courses focused on developing interdisciplinary skills.
		Assessment of students' ability to perform multitasking.

		Organization of team-based workshops to develop multiple skills.
		Impact of multi-skilling courses on graduates' employability.
	Soft skills training	Number of training courses on soft skills such as critical thinking and problem solving.
		Assessment of the impact of soft skills training on students' academic performance.
		Organization of counseling programs to strengthen soft skills.
		Collection of labor market feedback on graduates' soft skills.
	Development of lifelong learning	Number of informal training courses for students during their studies.
		Assessment of students' motivation for lifelong learning.
		Organization of workshops introducing online learning resources.
		Extent of students' use of educational resources outside the university.
Emphasis on specialized courses across different disciplines	Diversity of specialized courses	Number of specialized courses offered in each field.
		Assessment of labor market needs for new specialized courses.
		Organization of specialized workshops for each field.
		Assessment of the impact of specialized courses on graduates' occupational competencies.
	Development of specialized content	Number of updates to specialized course content per semester.
		Use of specialized and new educational resources.
		Organization of specialized seminars with field experts.
		Assessment of the impact of specialized content on students' learning.
	Experiential learning in specialized courses	Number of practical projects related to specialized courses.
		Assessment of the quality of practical experiences in specialized courses.
		Organization of scientific visits to related institutions and organizations.
		Level of students' satisfaction with practical experiences in specialized courses.
	Training specialized faculty	Number of faculty members with specialized degrees in each field.
		Assessment of faculty teaching competencies in specialized fields.
		Organization of training courses for faculty in new areas.
		Level of faculty interaction with industry and the labor market.
Training up-to-date and literate students	Enhancement of scientific literacy	Number of recommended study hours for students per semester.
		Assessment of students' scores on standardized tests.
		Organization of scientific and research competitions for students.
		Level of students' participation in scientific conferences and symposia.
	Development of digital literacy	Number of training courses on digital literacy for students.
		Assessment of students' ability to use digital tools.
		Organization of workshops on cybersecurity.
		Extent of students' use of online resources and databases.
	Education on culture and identity	Number of courses related to culture and identity in curricula.
		Assessment of the impact of cultural education on students' attitudes.
		Organization of cultural and artistic programs at the university.
		Level of students' participation in cultural activities.

	Development of research skills	Number of research projects conducted by students during their studies. Assessment of the quality of students' research projects. Organization of training workshops on research methods. Level of students' participation in scientific and research journals.

In addition to the thematic framework, a frequency portrait of codes is presented in the figure below. This figure displays the number of times each code or term appears in the text, and researchers can use this output to identify key codes and examine their distribution in the data. The code portrait, as a visual tool, provides an overall view of different codes and their frequencies within the qualitative data. This visual representation helps determine which codes were used more frequently and which components were emphasized more in the interviews.

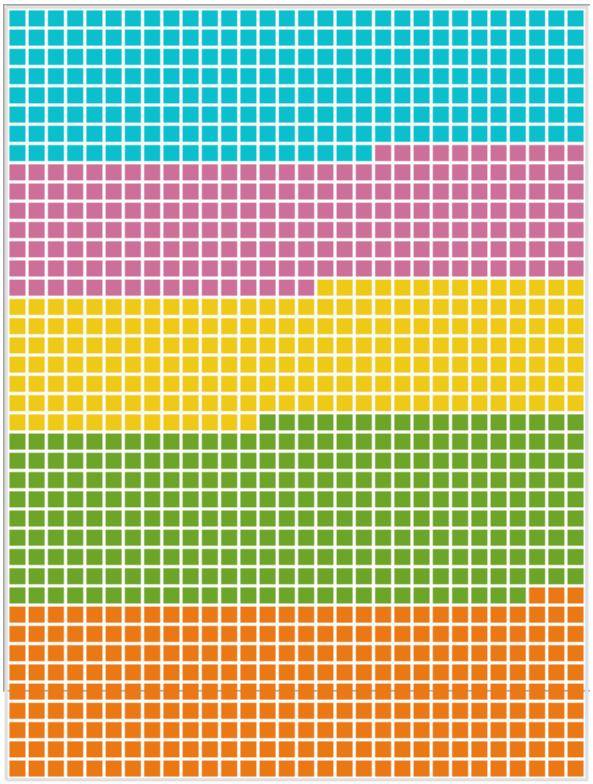


Figure 1. Frequency portrait and matrix of codes for identifying key codes and examining their distribution in the data

The above information indicates which dimensions and components received greater attention in the research data. According to the figure, observation of the distribution of codes in the matrix shows that all identified dimensions were addressed in a balanced manner across the interviews.

Discussion and Conclusion

The findings of the present study provide a comprehensive and empirically grounded framework for understanding the constituent components of re-engineering the educational system of Farhangian University in Tehran. The results indicate that educational re-engineering in teacher education is a multidimensional process encompassing skill-based learning, practicalization of education, up-to-date and useful curricula with an emphasis on multi-skilling, strengthening specialized disciplinary courses, and the training of scientifically literate and contemporary students. These findings align closely with the

broader theoretical and empirical literature that conceptualizes educational re-engineering as a holistic transformation rather than a set of isolated reforms (1, 2). From a sociological standpoint, the balanced attention given to all identified dimensions reflects an awareness of the complex social, professional, and institutional roles that teacher education universities are expected to fulfill.

One of the most salient results of this study is the strong emphasis on skill-based learning as a core dimension of educational re-engineering. Participants consistently highlighted the necessity of shifting from content-heavy, theory-dominated curricula toward educational models that prioritize practical, communicative, technical, and managerial skills. This finding is strongly supported by international research emphasizing that contemporary labor markets, including the education sector, increasingly demand adaptable professionals equipped with transferable and applied competencies rather than purely theoretical knowledge (4, 9). In the context of teacher education, skill-based learning is particularly critical, as teaching is inherently a practice-oriented profession that requires classroom management, communication, assessment, and problem-solving abilities. The alignment of this result with prior studies suggests that re-engineering initiatives that foreground skills are more likely to produce graduates capable of meeting real classroom and school needs (5, 6).

Closely related to skill-based learning is the practicalization of educational programs, which emerged as another central component in the findings. Participants emphasized the integration of theory and practice through internships, collaborative projects with schools, and experiential learning opportunities. This result resonates with process re-engineering models in higher education that stress the redesign of learning processes to ensure coherence between academic instruction and professional application (13, 14). The findings suggest that when teacher education programs actively engage with schools and educational institutions, they enhance the social relevance and professional legitimacy of university training. This is consistent with sociological theories of situated learning, which view knowledge acquisition as deeply embedded in social contexts and professional communities (8). Therefore, the practicalization of education can be interpreted not only as a pedagogical improvement but also as a mechanism for strengthening the social embeddedness of teacher education.

Another major finding concerns the importance of ensuring that educational content is useful, up-to-date, and conducive to multi-skilling among students. Participants noted that rapidly changing educational technologies, pedagogical approaches, and societal expectations necessitate continuous curriculum updating and the development of interdisciplinary and multiple skill sets. This result aligns strongly with global policy frameworks that call for education systems capable of preparing learners for uncertain and rapidly evolving futures (3). Studies on educational re-engineering similarly emphasize that curriculum relevance and flexibility are key determinants of institutional effectiveness and graduate employability (11, 19). In teacher education, multi-skilling enables future teachers to assume diverse roles, including instructional designers, mentors, digital facilitators, and cultural mediators, thereby enhancing their adaptability within complex school environments.

The findings also underscore the critical role of digital competencies and technological integration within re-engineered educational systems. Participants emphasized the need for training in educational technologies, digital content creation, and online teaching tools, reflecting broader trends in the digital transformation of education. This result is strongly supported by prior research demonstrating that re-engineering pedagogical design in virtual and hybrid learning environments can significantly enhance interaction, engagement, and learning outcomes when guided by coherent frameworks (10). At the same time, the findings resonate with sociological concerns about the digital divide, particularly in teacher education programs tasked with preparing educators for diverse and unequal educational contexts (12). By embedding digital literacy and technological skills within the re-engineering framework, Farhangian University can better equip future teachers to address both opportunities and inequalities associated with digital education.

Another important dimension identified in the findings is the emphasis on specialized courses across different disciplines. Participants highlighted the necessity of strengthening disciplinary depth alongside pedagogical competence, suggesting that effective teachers must possess both strong subject-matter knowledge and the ability to translate that knowledge into meaningful learning experiences. This finding is consistent with international curriculum reform initiatives, such as the Tuning Project, which advocate for clear articulation of disciplinary competencies and learning outcomes in higher education programs (17). Re-engineering educational systems to enhance specialized content also aligns with research indicating that disciplinary expertise is a key predictor of teaching effectiveness and professional credibility (16, 18). From a sociological perspective, this emphasis reflects the continued importance of academic disciplines as social institutions that structure knowledge production and professional identity.

The training of up-to-date and scientifically literate students emerged as a further central outcome of educational re-engineering. Participants associated scientific literacy with critical thinking, research skills, engagement with academic communities, and continuous learning. This finding aligns with learning theories that emphasize active knowledge construction, metacognition, and self-regulated learning as foundations of deep and lasting understanding (8). It also resonates with broader discussions on the social role of universities in fostering informed, reflective, and responsible citizens capable of contributing to knowledge-based societies (3). Re-engineering initiatives that promote scientific literacy thus serve not only institutional goals but also broader societal objectives related to democratic participation and social development.

The balanced distribution of codes across all identified dimensions, as indicated by the frequency portrait and matrix analysis, suggests that participants viewed educational re-engineering as an integrated and interdependent process. This finding supports cautionary arguments in the literature against fragmented or overly technocratic approaches to re-engineering that prioritize efficiency at the expense of educational values (2). Instead, the results point toward a comprehensive model in which pedagogical, curricular, technological, and organizational components are mutually reinforcing. Such an integrated perspective is consistent with studies emphasizing the role of visionary leadership and strategic planning in sustaining educational transformation (15).

Overall, the discussion of results indicates strong convergence between the empirical findings of this study and existing international research on educational re-engineering. At the same time, the context-specific insights generated through expert interviews contribute original knowledge regarding the particular challenges and priorities of teacher education at Farhangian University. By grounding re-engineering components in both sociological understanding and practitioner experience, the study provides a robust framework for informed educational reform.

Despite its contributions, this study has several limitations that should be acknowledged. First, the qualitative nature of the research and the reliance on purposive sampling limit the generalizability of the findings beyond the specific context of Farhangian University in Tehran. Second, the data were derived from expert perspectives, which, while valuable, may not fully capture the experiences and perceptions of other stakeholders such as students, novice teachers, or school administrators. Third, although efforts were made to ensure credibility and reliability, qualitative interpretation inherently involves a degree of subjectivity that cannot be entirely eliminated. Finally, the study focused on identifying components rather than evaluating the effectiveness of existing re-engineering initiatives, which limits its ability to draw conclusions about outcomes or impact.

Future research could build on the present findings by employing mixed-methods or quantitative designs to test and validate the proposed re-engineering components across different campuses of Farhangian University or other teacher education institutions. Comparative studies examining re-engineering models in different national or cultural contexts would also enhance understanding of how contextual factors shape educational transformation. Additionally, longitudinal research tracking the implementation and outcomes of re-engineering initiatives could provide valuable insights into their long-term effectiveness

and sustainability. Including the perspectives of students, school principals, and policymakers in future studies would further enrich the analytical depth and practical relevance of the research.

From a practical perspective, educational leaders and policymakers can use the identified components as a strategic framework for systematic reform of teacher education programs. Curriculum planners should prioritize skill-based and practice-oriented learning while ensuring continuous updating of content and integration of digital competencies. Strengthening partnerships with schools and educational institutions can enhance experiential learning and professional relevance. Investment in faculty development and supportive leadership structures is essential for sustaining re-engineering efforts. Finally, embedding a culture of lifelong learning and scientific literacy within teacher education can contribute to the preparation of educators who are not only professionally competent but also socially responsive and adaptable to future challenges.

Acknowledgments

We would like to express our appreciation and gratitude to all those who helped us carrying out this study.

Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

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