Journal Website

Article history:
Received 10 March 2025
Revised 15 April 2025
Accepted 21 May 2025
Published online 14 June 2025

International Journal of Education and Cognitive Sciences

Volume 6, Issue 4, pp 1-12

E-ISSN: 3041-8828

Identification of Indicators, Components, and Dimensions for the Development of Blended Learning Management in Technical and Vocational Schools of Tehran Province

Mohammad Mehdi Ahangari[1], Amineh Ahmadi[2*], Ghodsi Ahghar[3], Zahra Taleb[4]

[1] PhD student, Department of Educational Sciences, South Tehran Branch, Islamic Azad University, Tehran, Iran.
[2] Associate Professor, Department of Educational Management, South Tehran Branch, Islamic Azad University, Tehran, Iran.
[3] Full Professor, Educational Research and Planning Organization, Institute of Studies, Tehran, Iran.
[4] Assistant Professor, Department of Curriculum Planning, South Tehran Branch, Islamic Azad University, Tehran, Iran.

*** Corresponding author email address**: Farhad.tyam71@gmail.com

A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Ahangari, M.M., Ahmadi, A., Ahghar, Gh., Taleb, Z. (2025). Identification of Indicators, Components, and Dimensions for the Development of Blended Learning Management in Technical and Vocational Schools of Tehran Province. *International Journal of Education and Cognitive Sciences, 6*(4), 1-12.
https://doi.org/10.61838/kman.ijecs.6.4.5

A B S T R A C T

Purpose: This study aimed to identify the indicators, components, and dimensions of blended learning management development in technical and vocational schools in Tehran Province.

Methods and Materials: This qualitative study employed a thematic analysis approach using semi-structured interviews with 20 experts, including vocational school teachers and academic professionals specializing in educational management. The statistical population consisted of scientific documents, books, research articles, and dissertations from domestic and international databases between 2017 and 2023. The purposive sampling method was applied, and data collection involved semi-structured interviews and a researcher-developed questionnaire. Data were analyzed using MAXQDA software, following open, axial, and selective coding techniques. To ensure trustworthiness, the study applied criteria for credibility, transferability, dependability, and confirmability.

Findings: The findings identified five key dimensions, 18 components, and 70 indicators for blended learning management development. The content design and development dimension included defining learning goals, selecting and evaluating educational resources, designing learning activities, and structuring content. The technology and educational tools dimension encompassed selecting appropriate technologies, integrating technology into content, and training in technology use. The assessment and feedback methods dimension included evaluating learner and instructor performance, assessing educational tools, and structured feedback. The management and organization dimension covered data analysis, prioritization, and improvement program implementation. The support and guidance dimension included supplementary training, security and privacy, technical support, and guidance resources. The study emphasized that blended learning management should align with students' needs, industry demands, and active learning strategies.

Conclusion: Blended learning management development requires a systematic approach integrating educational technologies, diverse assessment methods, structured content design, and continuous improvement strategies. The study recommends using multimedia educational materials, active learning methodologies, web-based learning management systems, video conferencing tools, and diverse assessment techniques to enhance learning effectiveness. Limitations included the use of semi-structured interviews and the study's geographic focus on Tehran Province, excluding other regions.

Keywords: *Blended learning management, educational technology, vocational education, instructional design, assessment methods, technical education, qualitative research.*

1. Introduction

Learning is a process in which new information and skills are received and understood to acquire new knowledge and competencies (Khoshkam et al., 2023; Mardani et al., 2024). One type of learning is blended learning, which is rapidly expanding as the third wave of learning environment development. Some scholars believe that blended learning, which involves combining various learning methods, can significantly enhance the learning process and its outcomes (Faraji & Shabani, 2023). The contemporary world is experiencing rapid and continuous changes in information and technology. To navigate this dynamic environment, learning processes must also be swift and effective. The development of blended learning management can help provide access to new educational resources and ensure necessary updates (Adhi et al., 2022; Ofem, 2023).

Today's world is diverse and multifaceted, where learners have different backgrounds and learning needs (Ayob et al., 2023; Ofem, 2023; Wang et al., 2024). Blended learning is fundamentally based on the idea that each individual uniquely experiences perception and learning, and no single learning technique can fully address all educational needs (Rostami et al., 2021). Blended learning typically incorporates various methods such as classroom learning, online learning, self-study, experiential learning, and hands-on practice. This approach creates a multidimensional learning environment, enabling learners to enhance their skills and knowledge through multiple methods, including modern technologies (Kebria & Abedi, 2022).

Blended learning management refers to the administration and organization of the blended learning process. This term encompasses strategies, methods, and processes used to establish and implement an effective blended learning framework (Rastegari & Salari Chineh, 2023). In blended learning management, realistic and measurable learning objectives are defined, which may be related to specific skills, knowledge in different fields, addressing occupational and organizational needs, or personal development. Various learning resources and methods are selected, including books, articles, educational courses, videos, software, and online materials. Additionally, diverse learning methods such as self-directed learning, face-to-face training, experiential learning, peer learning, and the use of educational technology are incorporated (Rostami et al., 2021).

The development of learning management refers to a process aimed at optimizing the utilization of methods, approaches, tools, and technologies in learning management. This process emphasizes the enhancement of different stages of educational design, implementation, and evaluation. Educational planning and instructional design are essential components of learning management development. The process includes defining learning objectives, designing content, selecting methods and approaches, structuring time frameworks, and developing educational programs (Bykova et al., 2021).

The development of blended learning management is closely linked to the implementation of learning processes, which involve content delivery, the use of educational technologies, facilitating interaction and collaboration, and providing assessment and feedback by teachers to students. Additionally, evaluation and optimization are critical to blended learning management, encompassing the assessment of educational performance, data analysis, identification of strengths and weaknesses, recommendations for improving instructional processes, and implementing necessary modifications (Oktavia & Zaim, 2023). As a continuous improvement process, blended learning management development aims to advance educational quality and learning experiences through scientific research, practical experiences, tools, and educational technologies (Makarem et al., 2023).

Blended learning management development allows for customization of diverse resources and methods based on learners' specific needs, improving their learning experiences while promoting cultural and institutional interactions (Diana et al., 2022). This approach enhances collaboration among various institutions, including universities, organizations, educational and cultural communities, companies, and other learning centers. Such collaboration fosters knowledge sharing, exchange of experiences, and the integration of diverse learning methodologies (Agusta & Pratiwi, 2021).

A key driver of any society's progress is its human resources. Developing blended learning management prepares individuals to confront new challenges and opportunities. By enhancing learning management, the capacities and competencies of human resources can be strengthened. This entails fostering continuous learning, expanding knowledge and skills, and increasing adaptability to change. Moreover, blended learning management development facilitates knowledge transfer, skill

E-ISSN: 3041-8828

enhancement, and structured educational programs (Rastegari & Salari Chineh, 2023).

With the rapid advancements in technology, economics, and global societies, the importance of blended learning management development is increasing. This approach enables individuals to actively engage in learning processes, interpersonal and organizational interactions, and the utilization of internal and external resources. Ultimately, it contributes to improving quality of life, enhancing capabilities, and strengthening the potential of communities and organizations (Abbasi Kasani et al., 2021).

One advantage of blended learning is its ability to overcome limitations and challenges associated with traditional learning methods. By integrating various sources of information, more accurate and effective learning outcomes can be achieved. Moreover, by utilizing multiple approaches and resources, blended learning can facilitate the learning process. Some individuals learn more efficiently and quickly through different methods and resources, while others may struggle with traditional learning methods. Blended learning can support learners who face challenges with conventional learning approaches (Shah Beigi et al., 2020).

Implementing blended learning in organizations necessitates institutional adjustments and resource management. Some organizations may face obstacles such as resistance to change, financial and technological limitations, and the need for faculty training to utilize new technologies effectively. Additionally, blended learning may increase learners' cognitive load, requiring them to simultaneously manage online and in-person learning commitments (Bhadri & Patil, 2022).

For blended learning development, teachers must be familiar with its concepts and objectives. Blended learning integrates various instructional methods, including face-to-face and online learning, to deliver content and facilitate student learning. Educators should receive training on how to use educational technologies in the classroom, including online tools, instructional design techniques, and classroom management strategies in blended environments. Training can be conducted online, through in-person workshops, or hybrid courses (Sadeghi Tabar & Shariatmadari, 2020).

Teachers must also develop content design and creation skills for blended learning, enabling them to design interactive educational materials, instructional videos, hands-on activities, and online exercises. Various tools, such as video editing software and interactive online platforms, can support content development (Islam et al., 2022). Furthermore, educators should be equipped with assessment and feedback skills in blended learning settings, utilizing tools like online tests, project-based assessments, student participation reviews, and feedback mechanisms. Given the complexity of blended learning management, teachers must continuously update their knowledge of the latest instructional strategies and educational technologies (Nourizadeh et al., 2022).

Blended learning management development for technical and vocational school teachers requires mastery of diverse instructional approaches and collaboration with fellow educators and resources to optimize the learning experience. Boelens et al. (2017) demonstrated that addressing blended learning design challenges requires a clear definition of blended learning, an analysis of online and in-person interactions, the application of learning theory-based design models, and the selection of appropriate technology (Boelens et al., 2017). Similarly, Nourizadeh and Abbasi Kasani et al. (2021) found that factors influencing blended learning adoption in higher education include learners, instructors, educational elements, environmental and institutional factors, support mechanisms, regulations, interactions, and technology. They emphasized that higher education institutions must consider these factors to successfully integrate blended learning (Nourizadeh et al., 2022).

This study seeks to answer the following question: What are the indicators, components, and dimensions of blended learning management development in technical and vocational schools in Tehran Province?

2. Methods and Materials

2.1. Study Design and Participants

This study is applied in terms of its objective. It follows a qualitative exploratory approach regarding data type, a cross-sectional design concerning data collection timing, and thematic analysis in the qualitative phase based on the nature and method of research. The statistical population of this study consisted of scientific documents and sources, including specialized books, conducted research, dissertations, and articles retrieved from domestic and international databases on the development of blended learning management from 2017 to 2023. Additionally, the study population included two groups:

a) All teachers of technical and vocational schools in Tehran Province during the academic years 2022-2023, selected based on the following inclusion criteria:

E-ISSN: 3041-8828

1. A minimum of three years of teaching experience and academic background related to educational policymaking and curriculum planning.
2. Holding a PhD degree and being a faculty member in educational management, curriculum planning, or educational research.
3. Having sufficient expertise and experience in the field of blended learning management development and educational management, including authorship of articles, books, and research projects.

b) Academic or university experts (faculty members in educational management) selected based on the following criteria:

1. Faculty members in educational management with over five years of experience in teaching, research, and the development of blended learning management.
2. Adequate expertise and experience in blended learning management development and educational management, including authorship of research articles, books, and research projects.
3. Holding at least a Master's degree in Educational Sciences.

For participant selection, non-random purposive sampling was employed, adhering to the predefined inclusion criteria. In this approach, the researcher selected participants based on the study's objectives and research nature. A total of 20 interviewees were included in the study based on the saturation principle, meaning that interviews with participants 20 and 21 did not generate new codes, and therefore, data collection was concluded.

The data collection instruments included semi-structured interviews with experts in the first phase, followed by a structured interview form in the second phase. After eliminating redundant and overlapping components, the research reached theoretical saturation, resulting in 18 components and 70 indicators. These indicators were categorized as follows:

1. Content Design and Development dimension, including:
    - Defining learning objectives and goals (4 indicators)
    - Selecting and evaluating educational resources (5 indicators)
    - Designing learning activities (3 indicators)
    - Structuring and sequencing content (4 indicators)
2. Technology and Educational Tools dimension, including:
    - Selecting and utilizing appropriate technology (4 indicators)
    - Integrating technology into content (4 indicators)
    - Training in technology use (3 indicators)
3. Assessment and Feedback Methods dimension, including:
    - Evaluating learners' performance (4 indicators)
    - Evaluating instructors' performance (3 indicators)
    - Assessing technology and educational tools (3 indicators)
    - Providing structured feedback (3 indicators)
4. Management and Organization dimension, including:
    - Data analysis (4 indicators)
    - Prioritization (5 indicators)
    - Designing and implementing improvement programs (5 indicators)
5. Support and Guidance dimension, including:
    - Providing supplementary training (5 indicators)
    - Ensuring security and privacy (4 indicators)
    - Offering technical support (4 indicators)
    - Providing guidance and resources (3 indicators)

The questionnaire measurement scale was based on a five-point Likert scale (ranging from very high to very low).

The validity of the interview form was confirmed using content validity assessed by ten educational management experts, incorporating feedback from advisory professors. Additionally, construct validity was evaluated through confirmatory factor analysis. After data collection, responses related to the study variables were organized, categorized, and coded to identify entrepreneurial education components for sustainable employment through concept extraction and thematic analysis. Ultimately, the dimensions and components of blended learning management development in technical and vocational schools in Tehran Province were identified.

To assess the trustworthiness of this qualitative study, four key criteria were applied: credibility, transferability, dependability, and confirmability. Credibility was ensured

E-ISSN: 3041-8828

through maximum diversity in interviewee selection from the education sector. To establish transferability, the study's implementation stages, research context, and objectives were thoroughly described for readers. For dependability, the research process was reviewed by experienced qualitative research scholars. Since the three previous criteria were met, confirmability was inherently established.

3. Findings and Results

Based on the collected interview data—which reached theoretical saturation through continuous comparison—after defining the main research (interview) questions for which a quantitative scale was established, coding of the collected interviews was initiated by identifying their characteristics and dimensions, along with the diagrams describing these characteristics. It is noteworthy that 20 experts in this field were interviewed using a semi-structured format with five questions. By employing thematic analysis and the MAXQDA software, the research question was addressed. Subsequently, the interview questions and the interview results checklist are presented in separate tables. The responses provided for each question, following content analysis and coding by the researcher and two statistical experts, are summarized in a table indicating the study's main indicators and components.

From the review of databases, informational resources, and the conducted interviews—and following data collection, categorization, and coding—the indicators, components, and dimensions of blended learning management development in technical and vocational schools of Tehran Province were ultimately identified and elaborated upon. In this stage of the qualitative analysis process, the findings were organized around the main objective, the development of blended learning management in technical and vocational schools of Tehran Province. Through open coding (linking codes), axial coding (concepts), and selective coding (establishing connections among categories through the storyline), categories were formed around the development of blended learning management in technical and vocational schools of Tehran Province.

Table 1

List of all concepts extracted via the semi-structured interview technique with experts

Dimension	Organizing Themes	Basic Themes	Theoretical Foundations Frequency	Academic Experts Frequency	Organizational Experts Frequency	Total Frequency
Content Design and Development	Defining learning goals and objectives	Content must align with educational objectives	2	5	—	7
		Content must employ appropriate instructional methods to enhance engagement and comprehension for the audience	2	—	—	2
		Content must be presented clearly and comprehensibly to the audience	2	—	—	2
		Content must facilitate diversity and multiplicity in understanding and sharing information	1	2	1	4
	Selecting and evaluating educational resources	Educational resources must be reliable and credible	2	3	—	5
		Educational resources must foster diversity and multiplicity in presenting information	—	4	1	5
		Educational resources must be readily accessible and updatable as needed	2	—	—	2
		Educational resources must align with the real needs and requirements of the audience	3	—	—	3
		Educational resources must utilize diverse formats and media to present content	2	4	—	6

E-ISSN: 3041-8828

	Designing learning activities	Educational activities must have a suitable structure to enhance the learning process	3	—	—	3
		Educational activities must incorporate diverse methods and formats for delivery	2	3	—	5
		Educational activities must comply with the standards and regulations associated with learning management	2	—	—	2
	Structuring and sequencing content	Content must be presented in a logical and organized manner	3	4	—	7
		Content must be delivered gradually and progressively	—	3	2	5
		Content must provide opportunities for learner interaction and participation	2	—	—	2
		Content must relate to learners' real-life experiences and practical needs	2	1	3	6
Technology and Educational Tools	Selecting and using appropriate technology	Educational technology and tools must align with instructional goals and learning approaches	2	1	2	5
		Educational technology and tools must be accessible and usable for users	—	4	1	5
		Educational technology and tools must create opportunities for interaction and engagement	2	4	—	6
		Educational technology and tools must be sufficiently flexible in delivering content and activities	3	—	—	3
	Integrating technology into content	Educational technology and tools must allow for easy content updates and modifications	2	—	—	2
		Educational technology and tools must support collaboration and content-sharing for educational activities	2	3	1	6
		Educational technology and tools must interact with external resources such as online databases, videos, etc.	—	4	1	5
		Educational technology and tools must comply with recognized educational standards and formats	2	4	—	6
	Training in technology use	Educational technology and tools must provide ease of use for users	3	—	—	3
		Educational technology and tools must adapt to diverse learning styles	3	2	1	6
		Educational technology and tools must enable both online and offline access to content and educational tools	2	2	1	5
Assessment and Feedback Methods	Evaluating learners' performance	Blended learning management must use diverse methods to evaluate learner performance	3	—	—	3
		Assessment and feedback methods must align with the intended learning objectives	2	—	—	2
		Assessment and feedback methods must be well-defined, transparent, and equitable	2	3	1	6
		Assessment and feedback methods must offer immediate and timely feedback to learners	3	—	—	3

E-ISSN: 3041-8828

	Evaluating instructors' performance	Assessment and feedback methods must be capable of evaluating instructors' teaching skills	2	—	—	2
		Blended learning management must employ diverse methods to evaluate instructor performance (e.g., class observation, peer evaluations, questionnaires, interviews with learners and colleagues)	—	2	2	4
		Assessment and feedback methods must align with the intended learning objectives	3	—	—	3
	Evaluating educational technology and tools	Educational technology and tools must offer appropriate features to evaluate performance and provide feedback	3	—	—	3
		Educational technology and tools must be flexible and adaptable to various assessment and feedback needs	2	3	2	7
		Educational technology and tools must be easy to use for assessment and feedback	—	3	2	5
	Providing structured feedback	The selected assessment and feedback methods must be appropriate and reliable	2	3	2	7
		Assessment and feedback methods must offer two-way feedback between teachers, schools, and students	2	—	—	2
		Assessment and feedback methods must measure the impact and changes resulting from the feedback provided	2	4	—	6
Management and Organization	Data analysis	Data systems must be designed to accurately record and store information on learning, performance indicators, and educational outcomes	2	1	3	6
		Data analysis tools must be utilized to interpret and analyze learning-related information	2	1	3	6
		Existing learning data must inform decision-making and organizational processes (e.g., performance evaluation, educational needs, learning preferences)	3	1	3	7
		The model must be capable of analyzing learning patterns and trends (e.g., identifying high performance, educational needs, individuals' learning preferences, and the impact of educational measures)	—	2	3	5
	Prioritization	Teachers must pay attention to and value the learning process	2	2	2	6
		The model must identify which learning needs require more focused attention	2	—	—	2
		Providing the necessary resources for implementing learning programs	1	3	1	5
		Determining the priority of existing learning programs in the school	2	—	—	2
		Determining how well learning programs align with the school's	2	—	—	2

E-ISSN: 3041-8828

		overarching strategy and classroom objectives				
	Designing and implementing improvement program	Establishing clear and measurable goals for the improvement program	2	2	2	6
		Defining a timetable for implementing the improvement program	3	—	—	3
		Selecting and forming a working team and fostering collaboration among team members during program execution	2	—	—	2
		Obtaining feedback and suggestions throughout the improvement program	2	2	2	6
		Establishing mechanisms to monitor progress, measure performance, and evaluate the improvement program's effectiveness	2	—	—	2
Support and Guidance	Providing supplementary training	Ensuring easy and effective access to supplementary educational resources	3	—	—	3
		Offering guidance and counseling on utilizing supplementary educational resources	2	3	1	6
		Creating connections and learning communities among participants	2	—	—	2
		Providing customized supplementary training aligned with various needs and levels of knowledge and experience	3	—	—	3
		Measuring and evaluating the effectiveness of supplementary training	2	—	—	2
	Security and privacy	Offering security and privacy training to staff and users	2	—	—	2
		Assessing and testing the security of educational systems and programs	2	2	3	7
		Employing appropriate access management and protection measures for sensitive information (e.g., encryption, authentication methods, and protective policies)	2	—	—	2
		Implementing monitoring and intrusion detection systems, as well as security threat response mechanisms in educational programs and learning management systems	2	—	—	2
	Technical support	Providing technical guidance to users on using learning management systems	—	3	2	5
		Offering technical support to users	3	1	3	7
		Updating and advancing technology in learning management systems to reduce technical issues	2	2	2	6
		Defining processes for error management and troubleshooting in learning management systems, ensuring timely and high-quality resolution of technical issues	2	2	2	6
	Providing guidance and resources	Providing suitable and high-quality educational content	2	2	2	6

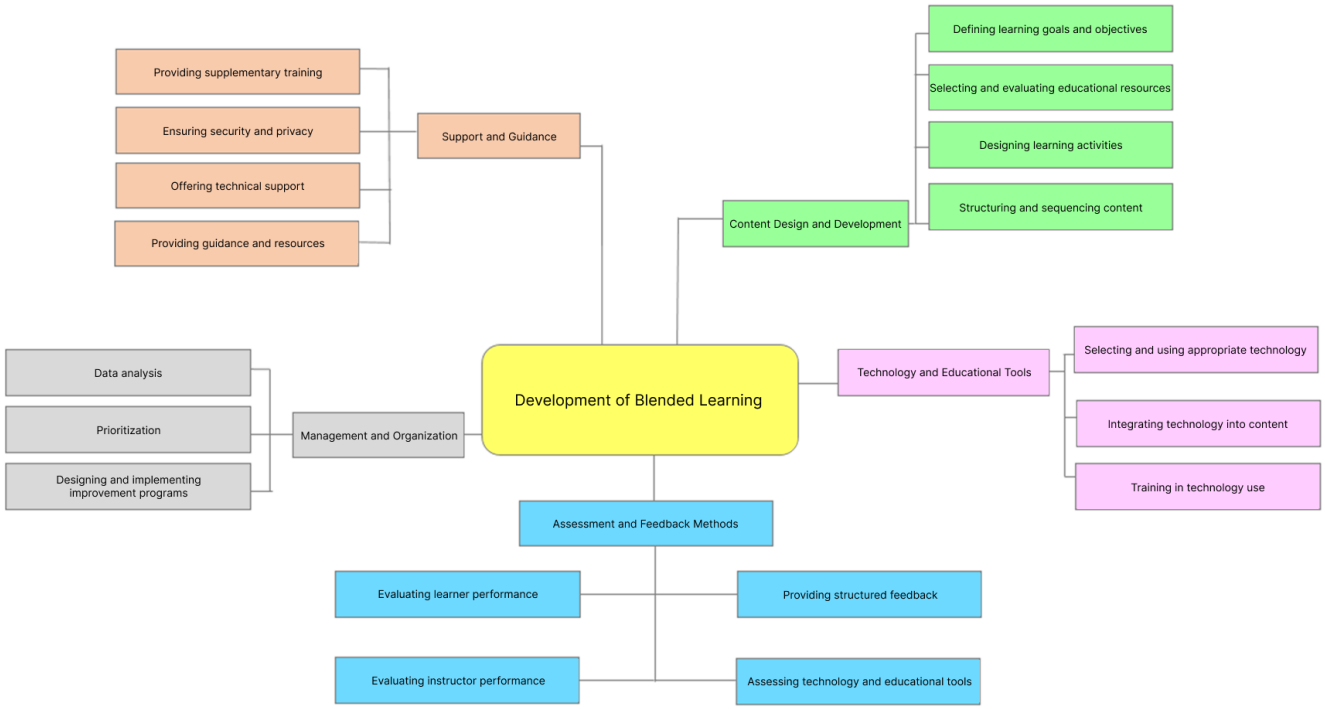
E-ISSN: 3041-8828

	Ensuring flexibility in accessing resources and guides at any time and place	3	2	2	7
	Facilitating tools for user collaboration, such as group assignments, online discussions, and collaborative activities	3	—	—	3

Finally, based on the analysis of identified themes derived from expert interviews in the qualitative phase, along with the quantitative results, the research model is presented as follows:

Figure 1

Final Research Model Based on Qualitative Findings



4. Discussion and Conclusion

This study was conducted with the aim of identifying the indicators, components, and dimensions of blended learning management development in technical and vocational schools in Tehran Province. The findings revealed that the indicators, components, and dimensions of blended learning management development in these schools—derived from expert interviews and a systematic review of the literature and theoretical foundations—consist of five dimensions, 18 components, and 70 indicators. The content design and development dimension includes the components of defining learning goals and objectives, selecting and evaluating educational resources, designing learning activities, and structuring and sequencing content. The technology and educational tools dimension includes the components of selecting and using appropriate technology, integrating technology into content, and training in technology use. The assessment and feedback methods dimension includes the components of evaluating learner performance, evaluating instructor performance, assessing technology and educational tools, and providing structured feedback. The management and organization dimension includes the components of data analysis, prioritization, and designing and implementing improvement programs. The support and guidance dimension includes the components of providing supplementary training, ensuring security and privacy, offering technical support, and providing guidance and resources. Each of these components consists of separate indicators. These findings align with the prior studies (Adhi et al., 2022; Ayob et al., 2023; Bhadri & Patil, 2022; Diana

E-ISSN: 3041-8828

et al., 2022; Faraji & Shabani, 2023; Ghafrani et al., 2023; Islam et al., 2022; Karami, 2024; Kebria & Abedi, 2022; Khoshkam et al., 2023; Makarem et al., 2023; Nourizadeh et al., 2022; Oktavia & Zaim, 2023; Rastegari & Salari Chineh, 2023; Rostami et al., 2021; Seraji, 2018). The following discussion elaborates on the dimensions and components of this model. The interpretation of the study's findings is presented continuously and concisely.

Regarding content design and development, it is essential that this process be tailored to the needs of students and industry, integrating both theoretical knowledge and practical exercises. The use of educational technologies facilitates blended learning opportunities and supports goal-oriented learning. Teachers should leverage these tools to guide learning and assess students (Faraji & Shabani, 2023).

Regarding defining learning goals and objectives, these should be based on students' needs and industry requirements, ensuring they are measurable to help students acquire the necessary skills for employment. Teachers must utilize technology to facilitate learning (Nourizadeh et al., 2022).

Regarding selecting and evaluating educational resources, these resources must be diverse and up-to-date, aligning with students' needs and industry demands. Their selection should be based on scientific credibility and student engagement, with active participation from teachers and students in the process (Ghafrani et al., 2023).

Regarding designing learning activities, these must be tailored to students' needs and industry demands, fostering meaningful learning. Activities should encourage active student participation and enhance skills relevant to the job market (Seraji, 2018).

Regarding structuring and sequencing content, content should be organized logically based on students' needs and effective teaching methods. It must promote meaningful and practical learning and encourage active student engagement (Karami, 2024).

Regarding technology and educational tools, the use of educational technologies facilitates both theoretical and practical learning, expanding blended learning opportunities. Teachers must use these tools to guide learning and transition from traditional teaching methods (Ayob et al., 2023).

Regarding selecting and using appropriate technology, the choice of technology should align with educational needs and learning objectives. Educational technologies can support conceptual learning and practical exercises, and teachers must be adequately skilled in their use (Boelens et al., 2017).

Regarding integrating technology into content, this integration must be aligned with students' needs and educational goals, ensuring meaningful and goal-oriented learning. Teachers should leverage educational technologies to facilitate learning (Islam et al., 2022).

Regarding training in technology use, training must be aligned with students' needs and learning objectives, equipping teachers to effectively utilize technology (Oktavia & Zaim, 2023).

Regarding assessment and feedback methods, these must address students' and industry needs using both quantitative and qualitative approaches. Teachers should utilize technology for assessment and feedback (Sadeghi Tabar & Shariatmadari, 2020).

Regarding evaluating learner performance, assessments must be aligned with educational goals and regularly updated, incorporating both quantitative and qualitative measures. Providing constructive feedback is essential (Diana et al., 2022).

Regarding evaluating instructor performance, assessments must be aligned with educational objectives and teaching content. Data collection should be conducted without bias or judgment (Adhi et al., 2022).

Regarding evaluating technology and educational tools, assessments must align with educational objectives and students' needs, incorporating both quantitative and qualitative data. It is crucial to consider factors influencing educational quality in online learning environments (Karami, 2024).

Regarding providing structured feedback, feedback must be aligned with educational objectives and students' needs, incorporating input from both students and teachers. Such feedback enhances educational quality and helps identify learning needs (Sadeghi Tabar & Shariatmadari, 2020).

Regarding management and organization, educational management must focus on students' and industry needs, utilizing educational technologies for course administration. Student participation in management processes is essential (Rastegari & Salari Chineh, 2023; Rostami et al., 2021).

Regarding data analysis, data analysis aids in identifying educational patterns and trends, providing valuable insights for improving teaching methodologies (Ayob et al., 2023).

Regarding prioritization, identifying and prioritizing students' educational needs and learning programs must be based on necessity and impact (Makarem et al., 2023).

E-ISSN: 3041-8828

Regarding designing and implementing improvement programs, recognizing challenges and implementing corrective actions is crucial for enhancing educational quality (Kebria & Abedi, 2022).

Regarding support and guidance, educational support must be aligned with students' and industry needs, including teacher training in educational technology use (Seraji, 2018).

Regarding providing supplementary training, this component involves training teachers and students in blended learning methodologies and educational tools (Faraji & Shabani, 2023).

Regarding ensuring security and privacy, securing learning platforms and protecting personal data is of paramount importance (Ghafrani et al., 2023).

Regarding technical support, ensuring adequate technical and technological infrastructure is vital for blended learning success (Ghafrani et al., 2023).

Regarding providing guidance and resources, this component includes offering training and resources to teachers for designing blended learning courses (Faraji & Shabani, 2023).

As a result, it is recommended that educational content be developed in multimedia formats (text, images, audio, video) to accommodate various student learning styles. Active learning strategies such as project-based learning, problem-based learning, and inquiry-based learning should be incorporated into educational content design. Web-based learning management systems should be used to ensure seamless access to content and educational tools. Video conferencing tools such as Zoom, Microsoft Teams, and Google Meet should be utilized for virtual classes and online consultations. A combination of formative and summative assessments should be used to continuously monitor and document student progress, incorporating diverse assessment methods such as project-based assessments, portfolio-based assessments, and performance-based evaluations to comprehensively evaluate students' learning.

The limitations of this study include the use of semi-structured interviews and a researcher-developed questionnaire, without incorporating additional tools to enhance depth. The study population was limited to technical and vocational school teachers in Tehran Province, excluding other regions. Time constraints may have prevented a more comprehensive investigation or practical application of the findings.

Authors' Contributions

This article is derived from the first author's doctoral dissertation. All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We hereby thank all individuals for participating and cooperating us in this study.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

References

Abbasi Kasani, H., Mehri, D., Mahjoub, H., & Raoufi, A. (2021). Factors Influencing the Implementation of Blended Learning in Higher Education. *Education in Law Enforcement Sciences*, *9*(32), 127-157. https://doi.org/10.5812/erms.101587

Adhi, S., Achmad, D., & Herminarto, S. (2022). Developing a blended learning model in Islamic religious education to improve learning outcomes. *International Journal of Information and Education Technology*, *12*(2), 100-107. https://doi.org/10.18178/ijiet.2022.12.2.1592

Agusta, A. R., & Pratiwi, D. A. (2021). Developing blended learning model Martapura to improve soft and social skills. *4th Sriwijaya University Learning and Education International Conference (SULE-IC 2020)*, 294-302. https://doi.org/10.2991/assehr.k.201230.121

Ayob, H. H., Daleure, G., Solovieva, N., Minhas, W., & White, T. (2023). The effectiveness of using blended learning teaching and learning strategy to develop students' performance at higher education. *Journal of Applied Research in Higher Education*, *15*(3), 650-662. https://doi.org/10.1108/JARHE-09-2020-0288

E-ISSN: 3041-8828

Bhadri, G. N., & Patil, L. R. (2022). Blended learning: An effective approach for online teaching and learning. *Journal of Engineering Education Transformations*, *35*(1), 2394-1707. https://doi.org/10.16920/jeet/2022/v35is1/22008

Boelens, R., De Wever, B., & Voet, M. (2017). Four key challenges to the design of blended learning: A systematic literature review. *Educational Research Review*, *22*, 1-18. https://doi.org/10.1016/j.edurev.2017.06.001

Bykova, T. B., Ivashchenko, M. V., Kassim, D. A., & Kovalchuk, V. I. (2021). Blended learning in the context of digitalization.

Diana, E., Rahmah, N., & Rofiki, M. (2022). Blended Learning Management: The Efforts to Develop Students' Soft Skills in the New Normal Era. *Jurnal Basicedu*, *6*(3), 4272-4281. https://doi.org/10.31004/basicedu.v6i3.2835

Faraji, R. M., & Shabani, R. (2023). Requirements and Strategies for Developing Blended Learning in Physical Education Courses in Schools. *Research in Educational Sports*. https://res.ssrc.ac.ir/article_3980.html

Ghafrani, N. T., Shah Hosseini, A. K., & Pourkarimi. (2023). Designing a Model for a Blended Teaching-Learning System in Universities: Explanation of Dimensions and Components. *Educational Technology*, *17*(4), 881-902. https://www.sid.ir/paper/1159427/fa

Islam, M. K., Sarker, M. F. H., & Islam, M. S. (2022). Promoting student-centred blended learning in higher education: A model. *E-Learning and Digital Media*, *19*(1), 36-54. https://doi.org/10.1177/20427530211027721

Karami, M. (2024). Examining the Impact of Blended Learning on Students' Motivation and Academic Achievement. *Movement and Behavioral Sciences*. https://www.jmbs.ir/article_194974.html

Kebria, A., & Abedi, M. (2022). Effectiveness of Blended Learning and Traditional Methods on Mathematics Progress and Improving the Attitudes of Elementary Teachers. *Movement and Behavioral Sciences*, *5*(4), 317-323. https://www.jmbs.ir/article_170481_e0883203935413ab6f1a0df1b8eb1f83.pdf

Khoshkam, M., Karamati, H., Mo'azami, D. Z., & Esfandiar. (2023). Designing an Interpretive Structural Model for Strategies to Develop Collaborative Learning Management in Virtual Education in Physical Education High Schools. *Sports Media Communication Management*. https://sportmedia.journals.pnu.ac.ir/article_10101.html?lang=en

Makarem, P., Karimian, S., & Sanayei, Z. (2023). Examining the Perceptions of Dentistry Students Towards E-Learning and the Effectiveness of Interactive Blended Learning Tools: A One-Group Study on the Clinical Biochemistry Course. *Jundishapur Journal of Educational Development*, *14*(3), 311-326. https://www.sid.ir/paper/1357893/en

Mardani, F., Vázquez, N. P., Rajendrakumar, J., & Saadati, S. M. (2024). The Experience of Learning a Second Language as an Adult: A Qualitative Exploration of Motivation and Challenges. *International Journal of Education and Cognitive Sciences*, *5*(2), 16-22. https://doi.org/10.61838/kman.ijeas.5.2.3

Nourizadeh, Z.-A. H.-R., Nooh, E., & Abdollahi. (2022). Designing an Optimal Model for Blended Learning at Payame Noor University. *Scientific Journal of Education and Evaluation (Quarterly)*, *15*(58), 33-66. https://sanad.iau.ir/en/Journal/jinev/Article/972219

Ofem, U. J. (2023). Adjustment Tendencies Among Transiting Students: A Mediation Analysis Using Psychological Wellbeing Indices. *International Journal of Education and Cognitive Sciences*, *4*(3), 1-19. https://doi.org/10.61838/kman.ijecs.4.3.1

Oktavia, Y., & Zaim, M. (2023). Development of a learning model for writing scientific articles based on blended learning integrated creative problem solving. *KEMBARA: Jurnal Keilmuan Bahasa, Sastra, dan Pengajarannya*, *9*(1), 239-250. https://doi.org/10.22219/kembara.v9i1.22787

Rastegari, N., & Salari Chineh, P. (2023). Identifying Effective Factors in Implementing Blended Learning for Student-Teachers at Farhangian University. *Curriculum Studies*, *18*(71), 205-232. http://www.jcsicsa.ir/article_166899.html?lang=en

Rostami, B., Jabari, S., Fathi, M., Safavi, S. Z. A.-A., Oruji, M. R., & Karimi, R. (2021). Examining the Mediating Role of Spiritual Intelligence in the Relationship Between the Quality of Blended Learning and Creativity from the Perspective of Students at Zanjan University of Medical Sciences. *Research in Medical Science Education*, *13*(1), 14-23. https://doi.org/10.52547/rme.13.1.14

Sadeghi Tabar, P., & Shariatmadari, M. (2020). Identifying the Dimensions and Components of Continuing Medical Education Based on Blended Learning with a Sustainable Development Approach. *Environmental Education and Sustainable Development*, *9*(2), 63-82. https://ee.journals.pnu.ac.ir/article_7537.html?lang=en

Seraji, F. (2018). Blended Learning in Distance Education: A Comparative Study of Selected Universities. *Iranian Journal of Distance Education*, *1*(1), 9-24. https://idej.journals.pnu.ac.ir/article_4201.html

Shah Beigi, M., Aghahosseini, T., & Kalbasi, A. (2020). Feasibility Study of Applying the Blended Learning Method for Students from the Perspective of Primary School Principals and Teachers. *Research in Primary Science Education*, *2*(3), 36-49. https://reek.cfu.ac.ir/article_1277.html?lang=en

Wang, J., Sheng, M., & Song, R. (2024). Enhancing Classroom Behaviors and Creativity: The Impact of a Critical Thinking Workshop. *International Journal of Education and Cognitive Sciences*, *5*(1), 8-15. https://doi.org/10.61838/kman.ijecs.5.1.6

E-ISSN: 3041-8828