International Journal of Knowledge Processing Studies
(KPS)
Homepage: http://kps.artahub.ir/

ORIGINAL RESEARCH ARTICLE

Designing and Fitting the Knowledge-Enhancing Model in Effective Teaching with knowledge Management Approach

Seyed Mohammad Hadi Hosseini Hesamabadi[1], Nader Shahamat[2], Reza Zarei[3], Moslem Salehi[4]

[1] *Ph.D. candidate of Educational Management, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran. mohammadhdhosseini@gmail.com*
[2] *Assistant Professor, Department of Educationa Management, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran. (Corresponding Author) nader_shahamat@yahoo.com, 0000-0002-7059-7987*
[3] *Assistant Professor, Department of Educationa Management, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran. zareireza955@gmail.com, 0009-0008-8187-7561*
[4] *Assistant Professor, Department of Educationa Management, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran. mlsalehi@yahoo.com, 0000-0002-5189-3078*

ARTICLE INFO

Article History:
Received: 2023-04-09
Revised: 2023-04-18
Accepted: 2023-07-21
Published Online: 2023-11-24

Keywords:
Knowledge-Enhancing,
Effective Teaching,
Knowledge-Based Teaching,
Knowledge-Enhanced Teaching,
Education Ministry.

Number of Reference: 45
Number of Figures: 5
Number of Tables: 7

DOI: ***10.22034/kps.2023.392526.1120***
DOR: ***20.1001.1.27834611.2024.4.1.4.8***

ABSTRACT

The current research aimed to design and implement a knowledge-enhancing model for effective teaching. Knowledge enhancement in teaching, as a prerequisite for "life, longevity, and survival," embodies the dynamic essence of education and is built upon three pillars (students, parents, and teachers). The research method is a combination of both theoretical and practical approaches. The statistical population includes all teachers employed by the Education Ministry in Fars province. The sample size of 18 people was determined in the qualitative section using the purposeful sampling method. Quantitative sampling was conducted using Cochran's formula, which determined that a sample size of 376 people was needed. The data collection tool in the qualitative part included two components: a semi-structured interview and a review of upstream documents. In the quantitative part, a researcher-made questionnaire tool was used. Data analysis in the qualitative section was conducted using thematic analysis in ATLAS.ti software. Structural equation modeling was used in the SMARTPLS software to fit the model. The findings obtained led to the identification of three dimensions, ten components, and 176 indicators. Finally, the research model was presented. The results showed that each of the dimensions, namely teaching and evaluation, scientific-educational (0.66), and individual (0.57), had an impact on effective teaching in elementary school. Students learn by connecting new knowledge with existing knowledge and concepts, thereby constructing new meanings. Knowledge-based education emphasizes primary education focused on deep and impactful teaching and learning through shared knowledge.

►**Citation:** Hosseini Hesamabadi, M., Shahamat, N., Zarei, N., & Salehi, M. (2024). Designing and Fitting the Knowledge-Enhancing Model in Effective Teaching with knowledge Management Approach. *International Journal of Knowledge Processing Studies (KPS)*, 4(1): 52-64. Doi: 10.22034/kps.2023.392526.1120

1. Introduction

In today's era, the level of learning standards in the educational systems of different countries has improved, and societies are striving to acquire new knowledge and skills in various fields to achieve greater success (Sha et al., 2022). Knowledge-enhanced teaching, as a prerequisite for "lifelong learning, resilience, and adaptability," embodies the dynamic essence of education and is characterized by three key stakeholders: students, parents, and teachers (Zhang et al., 2022). In this regard, it is necessary for teachers to enhance their knowledge and skills to meet the needs of their society. This will enable them to transform learners into lifelong learners by creating diverse learning situations and, in essence, expanding knowledge (Wahlström, 2023). Undoubtedly, in the modern era, the teaching profession is considered one of the most challenging occupations (Bagoly-Simó, 2023). In addition to being knowledgeable and experienced in their respective fields, a seminary should also possess the art and skill of teaching to ensure sustainable knowledge enhancement (Xueliang et al., 2020). Regarding this perspective, it is required in many countries around the world for teachers to possess scientific and valid teaching certificates when they start their careers. Furthermore, they are expected to continuously enhance their scientific and practical skills through in-service training courses and actively expand their knowledge (Safavi, 2018).

Although the term "teaching" in educational science texts seems to be a familiar concept, most teachers and curriculum implementers are rarely familiar with its true meaning and nature (Hudson et al., 2023). Teachers' varying perceptions of the concept of teaching can have either a positive or negative impact on their attitude towards learners and how they engage with them (Shabani, 2018). 21st-century skills include a wide range of competencies, including critical thinking, problem-solving, creativity, metacognition, communication, digital and technological literacy, civic responsibility, and global awareness (Pazhooheshgar, 2022). The development of such qualifications is one of the most important issues in developing countries. The significant lack of progress in learning outcomes in these countries highlights the need to improve the quality of education and increase knowledge. This has become one of the essential tasks of educational systems (Kim, Raza & Seidman, 2019). What is observed in the elementary school period in Iran are unsatisfactory conditions. When students enter higher elementary classes, they are expected to improve their reading, writing, math skills, as well as engage in activities related to art and religion subjects, among others. But statistics and results do not support this claim, so it can be argued that educational effectiveness and knowledge enhancement are not truly achieved (Kaviani and Vaezi, 2017).

Creativity and innovation are often overlooked in traditional teaching methods. However, in today's knowledge-based world, there is a growing need for creative learning (Muller, 2022). Teachers play a crucial role in fostering creativity through specialized techniques. With their unique dedication, teachers understand the learning needs of primary school students and employ active and child-centered approaches to enhance their knowledge (Rahmat Zahi and Fatehi, 2017). Teachers must possess the skills to analyze the curriculum and tailor it to the needs of learners. They should also have a fundamental understanding of scientific concepts, be able to ask questions, explore, reason, collaborate, share knowledge, express opinions, present content and topics, and take advantage of opportunities to design effective learning experiences. Additionally, teachers should support students with appropriate knowledge of the curriculum (Saki, 2021).

Evidence shows that investing in educational measures during the primary period has positive effects on children's mental and physical health, as well as their social outcomes, such as family life, job opportunities, and reducing crime rates (Al-Hasan, 2018). In the official education system of any country, the primary stage is

one of the most fundamental and crucial stages of education, both in terms of quantity (the number of teachers and students) and quality (the impact this stage has on students' academic success throughout their lives and study period). None of the academic courses have such importance (Houshmandi, 2017). Despite the need for teachers to enhance their knowledge-based teaching, they are rarely encouraged to use new teaching methods. Since teachers' knowledge-enhanced teaching describes how teachers utilize their existing knowledge to explain and interpret scientific phenomena, it is evident that the infrastructural components of knowledge-enhanced teaching must be examined to ensure the necessary effectiveness of the implementation model (Nordgren, 2021).

In the process of teaching and developing a curriculum, utilizing transparency and knowledge-centered techniques can simultaneously empower both the teacher and the student. In this situation, priority is given to enhancing the knowledge of the curriculum, which also increases its effectiveness. Enhancing knowledge is a new and innovative phenomenon in the field of education, and implementing it at the early stages of education enhances students' understanding and insight. Knowledge-enhanced teaching can enhance the knowledge infrastructure of education by compelling teachers to develop profound and effective teaching methods. The present study aimed to address this research gap by investigating the effectiveness of a knowledge-enhanced teaching method, while considering the knowledge-oriented nature of instruction. This study aimed to investigate the extent to which teaching enhanced knowledge for elementary students. Therefore, this research aims to answer the question: What is the design and implementation of a knowledge-enhancing model for effective teaching?

2. Literature Review

Effective Teaching

Teaching is an interactive and two-way process in which the learner and the teacher both influence each other. In this sense, teaching is the explicit expression of what needs to be learned (Pour Javaid et al., 2020). Teaching encompasses a range of skills that occur before, during, and after the implementation of the teaching process (Noroozvand & Shafiei, 2019). It enables comprehensive education and assists learners in adapting to their learning style and goals within the given conditions to achieve the desired learning outcomes (Goodwin, 2016). In general, effective teaching involves both the teacher and the learner actively participating in the educational process. The teacher should utilize the most up-to-date and effective methods to present educational materials, stimulating the minds and creativity of the students. This allows them not only to comprehend the materials, but also to provide comments or even criticism on them (Masimanja, 2017). Effective teaching is an activity aimed at engaging students, encouraging them to think critically and solve problems, fostering self-confidence in weaker students, promoting open discussion and thinking aloud (Dinarvand & Golzari, 2018), and using questioning techniques to stimulate students' thinking. It is also important to clearly communicate lesson objectives at the beginning of each teaching session (Van der Lance et al., 2018). Effectiveness in teaching is defined as a combination of skills, abilities, and interests that contribute to the attainment of educational objectives for both the teacher and the learner (Laki, 2020; Samari, 2017). Effective teaching is a complex activity (Swik Baz & Kaiser, 2020) that requires specialized knowledge in the relevant subject field, an understanding of how students learn (Irwin, 2020), familiarity with various teaching methods, and the ability to apply these methods effectively. Most importantly, it requires a positive attitude towards active teaching methods (Saeidi, Yektash & Zulfiqar Sedek, 2017).

Knowledge-Enhanced Teaching

The conceptual framework that combines different elements of learning is to consider knowledge and how to increase or change it (Rata, 2019). During the process of learning, an individual's knowledge undergoes various changes and transformations. Knowledge-

oriented focus describes these changes in knowledge as people learn more about a topic and explain them. The main elements identified in this paper refer to key aspects of the stages of the change process (Johnson & Voltsianos, 2020). The process of teaching and learning can be defined as the process of knowledge transfer from teacher to student (Ebrahimi, 2022). It is referred to as a combination of different elements in the process in which an instructor identifies and sets learning goals, develops instructional resources, and implements a teaching and learning strategy. On the other hand, learning is an agent. It is essential that the teacher should consider this while teaching the students (Khori, 2022).

This teaching process, which increases the knowledge of the teacher and the student at the same time, is defined as knowledge-enhanced teaching. This focus also sees knowledge as a goal or an outcome for learning. People engage in learning to change their knowledge. Learning is a process or a set of activities by which a result is obtained. It can be obtained in different ways, in different fields, and under different conditions. In the following model, the default pattern of knowledge-based teaching is specified:

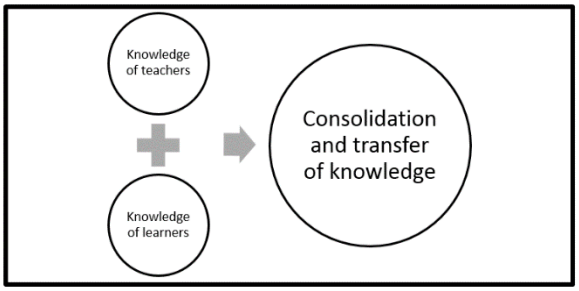

Figure 1. *The default model of educational teaching (Baddeley, 1990)*

Investigating the knowledge of teachers as ‘learning specialists' involves understanding how this knowledge functions in the teaching-learning process; more specifically, how teachers apply their knowledge in making decisions, for example, about lesson design or making on-the-spot judgements in the classroom

A set of research studies conceptualises the teaching profession as a ‘clinical practice profession' and compares it to the medical profession. Some argue that decision-making is actually a fundamental teaching skill. Teachers regularly make decisions while processing cognitively complex information about students in order to determine alternative approaches for enhancing their understanding. A review of the various models that describe teachers' decision-making reveals that there are several factors that influence their decisions. These factors include antecedent conditions such as students, the nature of the instructional task, the classroom, and the school environment. These conditions, in combination with teachers' characteristics and cognitive processes, have an impact on the pedagogical decisions that are made. Decision-making is a cyclical process, as pedagogical decisions, in turn, impact antecedent conditions. Empirical research investigating how teacher knowledge is used in decision-making suggests that teachers must be able to analyze and evaluate specific learning episodes, taking into account contextual and situational factors. They should also be able to connect this information to their specialist knowledge of the teaching-learning process in order to guide subsequent teaching actions. Thus, making good pedagogical decisions hinges on the quality of the teacher's pedagogical knowledge.

Bolger et al. (2019) conducted a study titled "Description of Four Courses of Effective Teaching as a Conceptual Framework for Increasing Self-Concept Performance Among Teachers in Educational Environments." The results of the study demonstrated that it is impossible to have effective teaching without possessing subject knowledge and educational ability. Consequently, subject knowledge is an essential prerequisite for effective teaching. David et al. (2018) conducted a research on "the impact of effective teaching strategies on achieving rapid results and promoting effective learning." The study concluded that teachers should utilize effective teaching strategies by consistently improving and updating their instructional methods. Mcdonald, Nolan, and White Nee (2015), in their comprehensive study, explore the concept of "rethinking the quality of teacher teaching." In their analysis of teaching

quality, they propose a shift towards focusing on learning quality. These researchers acknowledge that such work requires operational redesign and a triple focus on teaching quality, cognitive resources, performance and impact, intellectual action, and teacher characteristics. Cochran-Smith and Villegas (2014), in another study, seek to "explain a framework for quality teaching". In this research, it was shown that two requirements must be considered for the success of students in the 21st century. First, students must be prepared to actively participate in their own learning. Second, effective teaching practices must take into account the diverse population of students. Petrovich (2012) conducted a study on "effective learning and teaching methods" and concluded that the best teaching results are achieved when the primary sensory systems are engaged. It also states that the optimal sensory system determines the learning style because the feeling of pleasure stimulates learning. Van (2010), in a study entitled "Effective Factors on Effective Teaching," demonstrated that the characteristics of a good teacher that contribute to effective teaching include: effective communication skills, subject mastery, classroom management abilities, professional expertise, and a positive personality.

Sharifzadeh et al. (2019), in a study aimed at "identifying psychological characteristics in the selection of primary school teachers," concluded that primary school education plays a crucial role in the cognitive, emotional, and social development of children. It is evident that primary school teachers should also excel in their knowledge and technical skills, making them the best teachers for other academic subjects as well. The findings of this research can be categorized into three categories: cognitive features, emotional features, and personality features. Abdolmaleki et al. (2018) conducted a study on the "factors influencing effective teaching among fifth-grade teachers in Tehran." The results indicated that teachers' skills, expertise, and knowledge significantly contribute to the enhancement of teaching. Niknami (2017), in his research conducted to "compare the characteristics of good and effective teachers," concludes that instilling a sense of stable knowledge and purposeful learning is one of the key teaching characteristics of effective teachers. In a study entitled "Reviewing the Characteristics of Effective Teaching in Elementary Schools," Kendlousi et al. (2017) demonstrated that a student-centered classroom environment resulted in knowledge-based assessment, enhanced learning, teacher expertise in course materials and content, and teaching aimed at promoting understanding and knowledge acquisition. Not memorizing is one of the characteristics of effective teaching. Based on the investigations, no analysis was found that identified the knowledge-enhancing features of effective teaching. Therefore, this research pursues the following goals:

-Designing an effective model for teaching knowledge

-The implementation of the knowledge-enhanced model of effective teaching

3. Method

The research method was a combination of qualitative and quantitative approaches, making it both practical and comprehensive. According to the goals and nature of the research problem, and in alignment with the design and validation of a knowledge-enhanced model for effective teaching at elementary schools, this study was conducted within the framework of the interpretive paradigm and qualitative methodology.

A case study was conducted in Fars province to conduct an in-depth study and explore the design dimensions and components of an effective teaching model in elementary schools. The study also aimed to validate the knowledge-enhanced model.

The participants in the qualitative section included two library and field methods. In the library section, we reviewed upstream documents and educational materials. For the field method, we selected participants who were teachers with a minimum of 15 years of experience working in Fars province.

The sample consisted of 18 experts selected through purposive sampling, based on their teaching experience in elementary education.

The data collection tool included a semi-structured interview conducted with 18 participants in the field. It should be noted that the interview process continued until the stage of theoretical saturation, ensuring the emergence of order and avoiding excessive expansion.

In the library method, the key documents and records of the Education Ministry and Farhangian University were studied, examined, and researched. Themes related to effective teaching were extracted.

After validating the data from the qualitative section and aligning the findings with theoretical frameworks, previous studies, evidence from education ministry documents, and experts' statements, a knowledge-enhanced model for effective teaching at elementary schools was designed and validated.

Qualitative data analysis was conducted using interpretive analysis and theme analysis, specifically through the use of a theme network in ATLAS.ti software.

The second part of this research involves quantitative research, which was conducted to validate and refine the proposed model derived from the qualitative phase. Descriptive statistical indicators have been used to examine the characteristics of the respondents.

The statistical population of this research included all the teachers who were working in elementary schools in Fars province during the academic year of 2022-2023. The total number of teachers was 16,812. Sampling was conducted using the simple random method, and Cochran's sample size formula was employed to select 376 individuals. Subsequently, the questionnaire was distributed among the selected participants.

Table 1. *Demographic statistics of the quantitative part participants*

Concepts	Category	Frequency	Percent
Gender	Man	194	52
	Female	182	48
Age	< 40 years	73	19
	40 to 45 years	89	24
	46 to 50 years	113	30
	50 years and above	101	27
Education	< BA	12	3
	BA	263	70
	MA	86	23
	P.H.D	15	4

In the quantitative part, the data collection tool was a researcher-developed questionnaire that was used to validate the model proposed in the qualitative part. After conducting face validity measurements with qualitative experts, the questionnaire was administered to 20 additional experts. The content validity ratio (CVR) was then calculated using Lawshe's formula, taking into account the higher validity of the items. They were accepted with a maximum score of 0.42 on the Lawshe standard table.

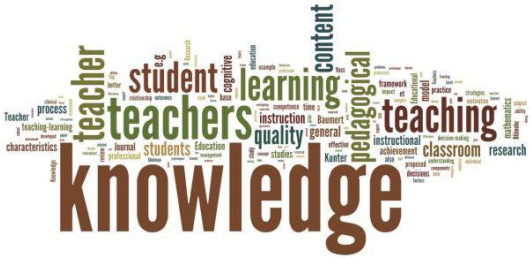

Figure 1*. Knowledge map*

After this stage, the questionnaire was distributed to the statistical sample. In order to assess reliability, composite reliability and Cronbach's alpha coefficient were utilized, yielding a value of 0.78. In the quantitative part, the structural equation modeling (SEM) method was used for data analysis using SMART PLS software.

4. Findings

Findings of the qualitative section

In the first step, 176 indicators related to effective teaching in elementary school were extracted from the participants' interview texts using a semi-structured interview approach. Additionally, the key documents from the education ministry were studied to gather relevant information. The initial coding process was then conducted. In the second step, the primary codes were sorted based on semantic similarities to categorize them into the lowest level of the theme, known as basic themes.

In the third step, the themes were categorized based on their functional similarities. The category was named the

constructive theme. Then, an overarching theme was abstracted to govern all the themes. Finally, the triple themes table was Figure 2: Cloud codes formed in the software compiled. Table No. 2 summarizes the classification of basic themes into organizing themes and inclusive themes.

Table 2. *Analysis of three themes related to effective teaching in elementary school.*

Row	Basic themes	Organizer themes	Comprehensive theme
1	Personality indicators	Individual components	effective teaching
2	Communication indicators		
3	Indicators of professional ethics		
4	Classroom management indicators	Teaching and evaluation components	
5	Teaching skill indicators		
6	Evaluation indicators		
7	Technical and professional indicators		
8	Educational and research indicators	Scientific-educational components	
9	Indicators of teacher preparation and development		
10	Indicators of teachers' scientific documents		

The Final Research Model

Based on the table above, the knowledge-enhanced model of effective teaching at the elementary level consists of a comprehensive theme, three organizing themes, and ten basic themes. After validation, the theme network was presented as follows.

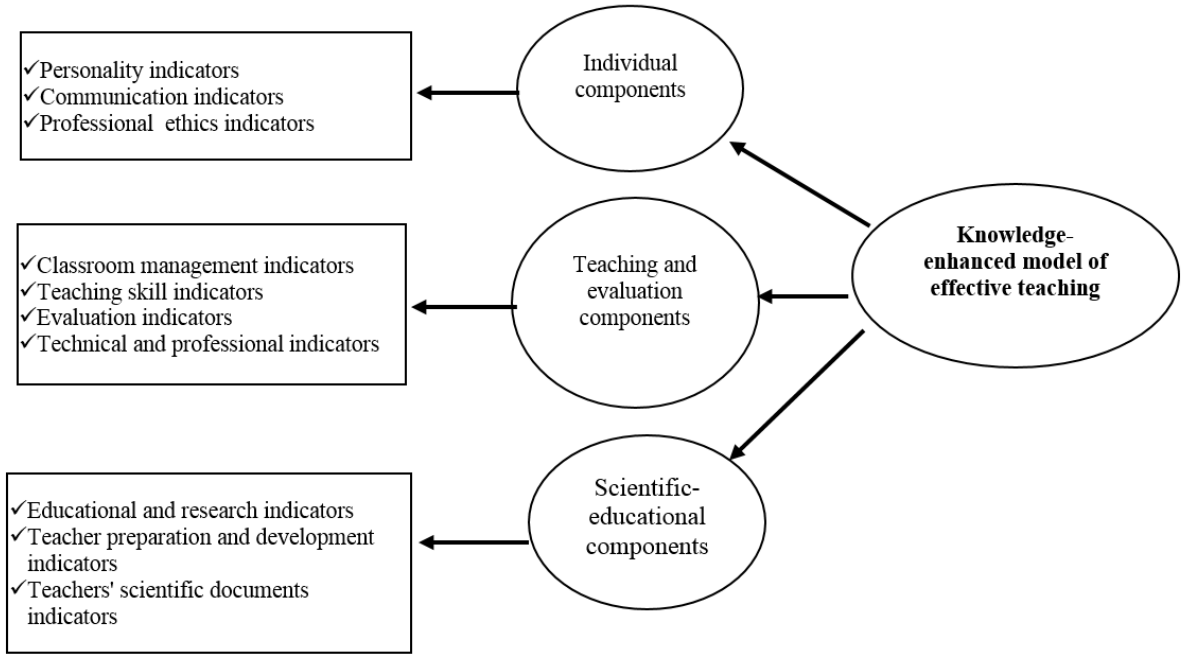

Figure 3. The network diagram of the themes of the knowledge-enhanced model of effective teaching in elementary school

Validation of data: One of the validation activities involved providing feedback to the participants. Also, frequent reviews and the researcher's perspective had an impact on validation. For the final validation, the alignment method (using three strains) was employed. By juxtaposing field and library evidence with research findings and theoretical evidence from scientific sources, the convergence of themes is justified.

Findings of the quantitative section

In the current research, structural equation modeling methods, specifically the partial

least squares (PLS) method, have been employed to assess the measurement model and research hypotheses.

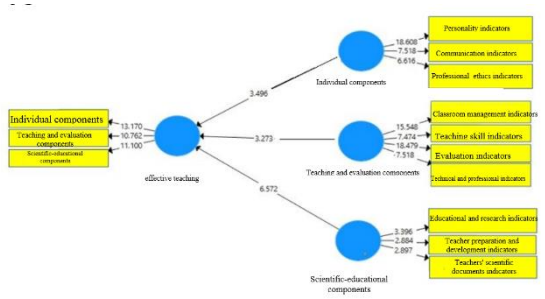

Figure 4. Path analysis factor load (external model)

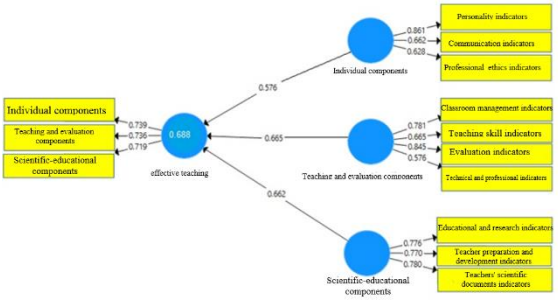

Figure 5. *Path analysis t-statistics (external model)*

Table 3. *Convergent validity and reliability of research variables*

Variable	Cronbach's alpha	AVE	CR	Rho
Individual components	0.726	0.563	0.816	0.730
Teaching and evaluation components	0.722	0.519	0.853	0.761
Scientific-educational components	0.738	0.534	0.740	0.793

According to the results of the table above, Cronbach's alpha for all variables is greater than 0.7, confirming the reliability of all variables. The average variance extracted (AVE) value is always greater than 0.5, confirming convergent validity. The value of composite reliability (CR) is also greater than the average variance extracted (AVE) and 0.7, indicating that each construct in the model exhibits good validity and reliability. The homogeneous reliability coefficient (Rho) was obtained to be above 0.7.

Table 4. Fornell and Locker method

	Individual components	Teaching and evaluation components	Scientific-educational components
Individual components	0.834		
Teaching and evaluation components	0.853	0.895	
Scientific-educational components	0.825	0.860	0.867

As shown in Table 4, the values on the main diagonal of the matrix are greater than all the values in their respective columns. This indicates that our model exhibits good divergent validity. If all the values of the numbers listed in the columns of the HTMT matrix in this method are less than 0.9, the model will have appropriate convergent validity.

Table 5. *Results of the HTMT method to check divergent validity*

	Individual components	Teaching and evaluation components	Scientific-educational components
Individual components			
Teaching and evaluation components	0.820		
Scientific-educational components	0.729	0.733	

According to Table 5, the obtained numbers have a value less than 0.9, indicating that the HTMT divergence is acceptable.

Table 6. *Effect size criterion (Cohen's index)*

Variables	Q^2	F^2
Individual components	0.628	0.537
Teaching and evaluation components	0.836	0.609
Scientific-educational components	0.825	0.634
Effective teaching	0.765	

As shown in Table 6, the value obtained from the Q2 criterion, which measures the predictive power of the model for endogenous constructs, indicates a strong estimation of the predictive power of the research constructs. In this section, the research hypotheses have been examined based on the results of partial least squares calculation using factor loading and bootstrapping.

Table 7. *Examination of research hypotheses and model path analysis*

Condition	Significance level	statistic t	Path coefficient	independent variable	The dependent variable
confirmation	0.000	3.496	0.567	Individual components	Effective teaching
confirmation	0.000	3.273	0.665	Teaching and evaluation components	
confirmation	0.000	6.572	0.662	Scientific-educational components	

The results confirm all of the hypotheses designed for the research.

5. Discussion

The main objective of the current research was to develop and implement a knowledge-enhanced model for effective teaching in elementary schools. Revised 2: In order to identify the dimensions and components of effective teaching, a study was conducted that involved reviewing upper-level documents and key education documents, as well as interviewing experts in the field of effective teaching. The first step was to extract themes from the written text of the interviews and documents. After analyzing these themes, three dimensions and ten components were identified. These included an individual dimension with three components (personality, communication, and professional ethics), a teaching and evaluation dimension with four components (classroom management, teaching skills, assessment and evaluation, and technical and professional), and a scientific-educational dimension with three components (educational and research, preparation and development, and teachers' scientific documentation). These dimensions and components were validated in the qualitative section and confirmed using factor analysis of the components and similar items. Finally, a research model was designed based on these findings. In the quantitative part, structural equation modeling was employed to assess the model's fit and analyze the connections between the observed and latent variables, as well as the relationships between the latent variables and the main structure. The results showed that all factor loadings and t-statistic values were higher than expected, indicating a favorable and significant relationship between the variables. According to the results of the standard factor load, the communication dimension has the highest influence, followed by the dimension of professional ethics, the personality dimension, the dimension of preparation and expansion, the dimension of teachers' scientific documentation, the dimension of classroom management, the dimension of teaching skills, the dimension of education and research, the dimension of assessment and evaluation, and finally, technical and professional aspects have the most influence respectively.

In the qualitative study aimed at identifying the dimensions and components of effective teaching, the theoretical foundations were examined, upstream documents and key education documents were reviewed, and interviews were conducted with 18 experts in the field of effective teaching. A total of 176 indicators were extracted, and after analyzing the data using the analytical method, the dimensions and components of effective teaching were determined. These include three dimensions and ten components as follows: 1. Individual dimension with three components: personality, communication, and professional ethics. 2. Teaching and evaluation dimension with four components: classroom management, teaching skills, evaluation and assessment, and technical and professional skills. 3. Scientific-educational dimension with three components: educational and research skills, teacher preparation and development, and scientific documentation of teachers. Muhonen et al. (2023) also showed that knowledge enhancement is determined by the educational process and the research objectives. Rawling (2020) demonstrated

that conducting research and employing new methodologies can enhance the effectiveness and understanding of teaching methods. Sha et al. (2022) suggest incorporating knowledge-centered rulemaking into the teaching method. Rata (2019) has demonstrated the significance of curricula that incorporate knowledge enhancement in promoting effective learning. Abdul Maliki et al. (2018) have demonstrated that there is a positive correlation between effective teaching and the knowledge of both the teacher and the researcher.

6. Conclusion

Students learn by connecting new knowledge with existing knowledge and concepts, thereby constructing new meanings. Research shows that students connect knowledge most effectively in socially active classrooms, where they negotiate understanding through interaction and diverse approaches. Educators must recognize that students, as novice learners, often have less developed or incomplete conceptual frameworks. Consequently, it takes time to learn how to "chunk" knowledge into similar and retrievable categories, develop broader conceptual ideas, and establish connections between ideas. They may also have misconceptions or faulty ways of thinking that can limit or weaken their ability to connect with new knowledge. Knowledge-based education emphasizes primary education focused on deep and powerful teaching and learning through shared knowledge.

Based on the findings of this research, it can be concluded that effective and knowledge-enhancing teaching is a key aspect of dynamic education. Teachers who possess effective teaching skills based on knowledge-enhancing components are able to enter the classroom with scientific and data-oriented preparation. They establish a scientific and friendly relationship with students, enabling them to create educational effectiveness based on the unique mental structure and awareness of each student. According to the obtained results, the following recommendations are proposed to develop an effective teaching knowledge model:

Considering the significance of personality traits, qualifications, and competencies in the knowledge-enhancing model of effective teaching, it is essential to adequately prepare for the selection of teachers at Farhangian University. This selection process should be based on specific criteria such as personality, scientific knowledge, psychology, beliefs, and ethics.

• It is necessary to use the highest scientific qualifications along with appropriate qualifications and employment standards for the recruitment and hiring of teachers in the education sector.

In-service courses should be held in person to train teachers on the use of new educational technologies.

Research courses, such as article writing, action research, and lesson research, should be offered to teachers.

In order to familiarize teachers with the concepts, approaches, models, components, and characteristics of effective teaching, regular in-service and retraining courses should be held.

• Regular and periodic evaluation of teachers' performance is a crucial step towards improving the education system. Based on research findings, it is evident that accurate evaluation of teachers can lead to the development of an effective system that encourages them to enhance their teaching and learning performance. This is particularly important in the context of the ongoing coronavirus epidemic and the widespread adoption of virtual education across various levels, especially at the elementary level.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Andolmaleki, S., Maleki, H., & Farjadmand, L. (2019). Factors affecting effective teaching teachers (The case of the fifth grade of primary school teachers in Tehran). *Teaching and Learning Research*, *16*(1), 123-135. [in Persian]

Abdulahi, B. Dadjovi Tavakoli, A.Yousliani, G.(2014). Identification and validation of professional competencies of effective teachers. Educational Innovations Quarterly, 49, 25-48.

Al.Hassan, O.M. (2018). Development of early childhood education in jordan. Early Years: An International Research Journal, 3:4, 351-362. https://doi.org/10.1080/09575146.2018.1512562

Baddeley, A. (1990). Human Memory: Theory and Practice. Boston : Allyn and Bacon

Bagoly-Simó, P. (2023). Geography's unkept promises of education for sustainable development (ESD) on geography's wasted potential to educate for a more sustainable future. *International Research in Geographical and Environmental Education* 32:1, pages 53-68. https://doi.org/10.1080/10382046.2023.2158631

Cevikbas M, Kaiser G. (2020). Flipped classroom as a reformoriented approach to teaching mathematics. ZDM Mathematics Education. 52: 1291–1305. https://doi.org/10.1007/s11858-020-01191-5

Cochran S. & Power C., translated by Hossein Rabbani (2011). The endless challenge of teacher training.

Cochran-Smith, M., & Villegas, A. (2014). Framing Teacher Preparation Research: An Overview of the Field, Part One. Journal of Teacher Education. (70-1). 20-7. https://doi.org/10.1177/0022487114549072

Daneshwar, A., Homayoun Far, M., Fadaei Ashkiki, M., Doshmen Ziari, E. (2020). Presenting the evaluation model of the teachers of the e-learning system using the adaptive neural fuzzy inference system (ANFIS). *A bimonthly scientific-research journal of a new approach in educational management*, 12(4), 176-190.

Dinarund, A. Golzari, Z. (2019). The effect of reverse teaching method on teachers' professional attitude and self-efficacy. Education Technology (Technology and Education), 14(1), 145-156.

Document of the strategic plan of the deputy of primary education (2012). Tehran: Advertising Saniyeh.

Ebrahimi, S. (2022). Determining teachers' competencies in online teaching. *A bimonthly scientific-research journal of a new approach in educational management*. 13(2), 108-123.

Garcia, P., Kupczynski, P., & Glenda, H. (2011). Impact of teacher personality styles on academic excellence of secondary student. *National forum of teacher education journal*, 21, 1-8.

Goodwin, A. (2016). *Classroom Management Through the Eyes of Elementary Teachers in Turkey: A Phenomenological Study*. Educational Sciences: Theory & Practice. (16).797-771.

Houshmadi, M. (2017). Curriculum planning and its role in elementary school. National conference of new achievements of the world in education, psychology, law and cultural-social studies. Khoi, Zarghan Islamic Azad University, Allameh Khoi Higher Education affiliated to the Ministry of Science, Research and Technology.

Hudson, B., Gericke, N., Olin-Scheller, C., & Stolare, M. (2023). Trajectories of powerful knowledge and epistemic quality: analysing the transformations from disciplines across school subjects. *Journal of Curriculum Studies*, *55*(2), 119-137. https://doi.org/10.1080/00220272.2023.2182164

Khoury, P. (2022). Effective teaching methods in virtual education. *Ormazd's research paper*. 58(b). 56-67.

Kim, S., Raza, M., & Seidman, E. (2019). Improving 21st-century teaching skills: The key to effective 21st-century learners. *Research in Comparative and International Education*, *14*(1), 99-117. https://doi.org/10.1177/1745499919829214

Mohammadi, M., Keshavarzi, F., & Naseri Jahormi, R. (2020). Analyzing the experiences of parents of first grade elementary school students on the challenges of virtual education with social networks during the outbreak of the Corona virus, *educational research*. 40, 101-74.

Muhonen, H., Pakarinen, E., & Lekkanen, M. (2023). Professional vision in the classroom: Teachers' knowledge-based reasoning explaining their visual focus of attention to students. Teaching and Teacher Education, 121: 1-17. https://doi.org/10.1016/j.tate.2022.103907

Muller, J. (2022). Powerful knowledge, disciplinary knowledge, curriculum knowledge: Educational knowledge in question. *International Research in Geographical and Environmental Education*, 1–15. https://doi.org/10.1080/10382046.2022.2058349

Niknami, M. (2017). Comparing the characteristics of good and effective teachers. Quarterly Journal of Psychology and Educational Sciences, 7, 7-18.

Wahlström, N. (2023). Curriculum policy, teaching, and knowledge orientations. *Teachers and Teaching*, *29*(3), 259-275.

Nordgren, K. (2021). Powerful knowledge for what? History education and 45-degree discourse. In A. Chapman (Ed.), *Knowing history in schools: Powerful knowledge and the powers of knowledge* (pp. 177–201). UCL Press. https://doi.org/10.2307/j.ctv14t477t.13

Norozvand, H., & Shafiei, S. (2020). The effect of problem solving teaching method on students' learning. New developments in psychology. *educational sciences and education*, 24, 65-56.

Pour Javaid, S., Khosravipour, B., & Ali Beigi, A. (2020). Strategic analysis of improving organizational agility in higher education, *Journal of Management and Planning in Educational Systems*, 12, 181-210. https://doi.org/10.29252/mpes.12.2.181

Rahmat Zahi, K., & Fatehi, N. (2018). The role of teaching methods in fostering the creativity of primary school students. *The first national conference of the world's new achievements in education, psychology, law and social cultural studies*, 1, 1-17.

Rata, E. (2019). Knowledge-rich teaching: A model of curriculum design coherence. *British Educational Research Journal*, 45(4), 681–697. https://doi.org/10.1002/berj.3520

Rawling, E. (2020). How and why national curriculum frameworks are failing geography. *Geography*, 105(2), 69–77. https://doi.org/10.1080/00167487.2020.12094091

Safavi, A. (2018). General teaching methods and techniques (full text). Tehran: Contemporary Publications.

Saidi, S., Bektash, M., & Zulfaqarsadeq, M. (2018). New methods in teaching with an emphasis on elementary school. *The third international conference of modern researches in the field of educational sciences, psychology and social studies of Iran. Tehran, Soroush Hekmat Razavi Center for Islamic Studies and Research.*

Saki, F. (2021). An Analysis of Teaching Methods in Social Studies Teaching. Journal of research in social studies education, 2(4).143- 158.

Samari, M. (2018). Presentation of effective teaching model of university professors based on artificial neural network analysis. Education and Evaluation, 11, 102-79.

Samari, M. (2019). Presenting an effective teaching model in the university: analysis of professors' point of view. Management in Islamic University, 7, 208-192

Sha, L. Namazifar, M. Di Jin, M. Heng Ji, Yang Liu, and Dilek Hakkani-Tur. (2022). Enhancing Knowledge Selection for Grounded Dialogues via Document Semantic Graphs. In Proceedings of the 2022 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, 2810–2823,

Shabani, H. (2018). Teaching skills, teaching methods and techniques. Tehran: Samt Publications.

Shahini, A., Ghasemi, A., & Pashaei, A. (2022). Investigating the teacher's cognitive and behavioral characteristics for classroom management in the elementary school. Conference on Management, Tourism and Technology, 4, 527-516.

Sharifzadeh, A., & Eskandari, H. (2019). Identification of psychological characteristics in the selection of primary teachers, Educational Psychology Quarterly, 16, 282-301.

Sheikh al-Islami Kandolosi, A., Kialashki, M., Dehwari, S., & Hosseini, A. (2017). Characteristics of effective teaching in primary schools. The fourth international conference on humanities and education.

Shirbaghi, N., & Nasirinia, S. (2019). Professional development is a step towards effective teaching. Case study: primary teachers of Sanandaj city, scientific teaching research quarterly, 1, 166-197.

Van J. (2010). Factors affecting effective teaching: An interview with Wilbert J. Mckeachie. Journal of Excellence in Colledge Teaching; 10(1): 77-90.

Xueliang, Z., Wei, W., & Can, X. (2020). Knowledgegrounded dialogue generation with pre-trained language models. In Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP), 3377–3390

Yazidi, S., Azizi, S., & Babaian, F. (2019). Examining the barriers to accepting and using information and communication technology in schools. Scientific-Research Quarterly of New Approach in Educational Management, 11(1), 117-134.

Zhang, H., Yinglong, W., Chao, C., Ruixia, L., Shuwang, Z., & Tianlei, G. (2022). Enhancing Knowledge of Propagation-Perception-Based Attention Recommender System. *Electronics* 11, (4): 547. https://doi.org/10.3390/electronics11040547