Journal of Human Resource Development (2024)
Clausius Scientific Press, Canada

DOI: 10.23977/jhrd.2025.070116
ISSN 2616-3357 Vol. 7 Num. 1

Construction of Teacher Digital Competency Evaluation Model and Research on Coping Strategies

Wei Tang[1,2,a,*], Qiang Fu[3,b], Qingwei Song[1,2,c], Jing Liu[1,2,d]

[1]School of Accounting and Finance, Shaanxi Business College, Xi'an, Shaanxi, China
[2]School of Accounting and Finance, The Open University of Shaanxi, Xi'an, Shaanxi, China
[3]Business School, Xi'an International Studies University, Xi'an, China
[a]tangwei070504@126.com, [b]fuqiang2327@126.com, [c]songqingwei6512@163.com,
[d]1125523921@qq.com
[*]Corresponding author

Keywords: Teachers Digital Competence, Evaluation Model, Empirical Test, Coping Strategy

Abstract: This paper focuses on the construction of a teacher digital competency evaluation model and relevant coping strategies. Firstly, it employs the behavioral event method and grounded theory method to construct the model. University teachers from diverse majors are selected as samples and divided into target and control groups. Through in-depth interviews based on a carefully designed interview outline, 33 qualified teachers' experiences are collected. The qualitative analysis tool NVIVO10.0 is used for data processing. After three stages of rooted theory coding, a competency model for college teachers in the digital learning environment is established, consisting of 5 dimensions, 15 main categories and 31 initial conceptual categories. Subsequently, an empirical test is carried out. A reliable questionnaire with 36 competency questions is designed and distributed via the "Questionnaire Star" platform, gathering 268 responses with an effective rate of 91.04%. Sample analysis reveals characteristics such as gender, age, degree, and teaching experience. Model test results across multiple dimensions, including digital teaching concept and motivation, intelligent environment use and construction, teaching organization, and teaching improvement, show that the mean values of all 15 competency factors and 31 factor indicators exceed 3.0, and the difference coefficients are relatively small, verifying the stability of the constructed model, which provides a solid foundation for understanding and enhancing teacher digital competency in the digital age.

1. Introduction

In the contemporary era of rapid digital transformation, education has been undergoing profound changes. The integration of digital technologies into teaching and learning processes has become an irreversible trend, compelling educators to adapt and enhance their capabilities. Against this backdrop, the exploration of teacher digital competency has emerged as a crucial area of research. Teacher digital competency is not only about the ability to operate digital tools but encompasses a complex set of skills, knowledge, and attitudes that enable effective teaching in digital learning

environments. Understanding and evaluating these competencies accurately is essential for promoting educational quality and ensuring students' successful learning experiences. To address this need, this study delves into the construction of a comprehensive teacher digital competency evaluation model and investigates corresponding coping strategies. The research begins with a review of the fundamental methods commonly employed in constructing teacher competency models, such as literature analysis, job analysis, and expert evaluation. However, it places particular emphasis on two highly regarded approaches: the behavioral event interview method and the grounded theory method. The behavioral event interview method, grounded in the interviewees' job positions, allows for a deep exploration of their digital teaching experiences, uncovering achievements and regrets, and identifying the discriminative elements that set apart high-performing teachers in digital settings. Complementing this, the grounded theory method, introduced by Anselm Strauss and Barney Glaser in 1967, provides a powerful framework for inductively building theory from raw data without prior theoretical assumptions. By combining these two methods, this study aims to construct a competency model that truly reflects the demands of the digital learning environment. In the pursuit of a robust model, a diverse sample of university teachers, covering a wide range of majors including law, art, and engineering, was selected. These teachers were further divided into target and control groups to distinguish the unique competencies required in digital learning from those in traditional teaching. Rigorous data collection procedures were implemented, involving the design of a detailed interview outline based on existing references and the use of on-site and video interview [1]. The qualitative analysis tool NVIVO10.0 was then employed to transcribe and analyze the extensive interview data, leading to the identification of key themes, conceptual categories, and ultimately, the construction of a competency model consisting of 5 dimensions, 15 main categories, and 31 initial conceptual categories. To validate this model, an empirical test was carried out. A reliable questionnaire was designed, drawing on relevant competency indicators and existing scales. Through online distribution, a substantial number of responses were gathered from teachers across multiple universities, with careful attention paid to sample characteristics. The subsequent analysis of the questionnaire data across different dimensions, such as digital teaching concept and motivation, intelligent environment use and construction, teaching organization, and teaching improvement, provided valuable insights into the relative importance and stability of the identified competency factors. This research thus holds the promise of not only advancing our theoretical understanding of teacher digital competency but also offering practical guidance for teacher training, professional development, and educational policy-making in the digital age. It is expected to contribute to the transformation of teaching practices and the elevation of educational outcomes in an increasingly digital world [2].

2. Construction of evaluation system of teachers' digital competence

2.1. Research methods and objects

At present, the basic methods used in the construction of teacher competency model include literature analysis, job analysis, expert evaluation, grounded theory analysis, behavioral event interview, and so on. Among them, the behavioral event method and the grounded theory method are recognized as the most effective in the construction of teacher competency model. The behavioral event interview method is based on the interviewees' job position. Through the interview, we can deeply understand the interviewees' most achievements (successes) and regrets (failures) in digital teaching, dig out the deep causes, find out the discriminative elements of the behavioral differences between the target group and the control group, and thus extract and summarize the competency elements of the position. Grounded Theory, proposed by Anselm Strauss and Barney Glaser in 1967, is a kind of induction, generalization and abstraction of concepts and categories

based on original data without theoretical assumptions in advance [3]. Then, the bottom-up qualitative research method, which rises to the theoretical level, is very suitable for the analysis of interview data and gradually builds the corresponding theory. In this study, the behavioral event method is also used to collect the original data, and combined with the qualitative research method of grounded theory, the competency model of college teachers in the digital learning environment is constructed.

According to the theoretical sampling method in grounded theory, the selection of samples is required to be related to the research topic and research content as much as possible, and the quantity of samples should meet the demand of the research topic. The interviewees selected for this study are university teachers, whose majors cover law, art, human resource management, tourism management, accounting, management science and information engineering, mechanical automation, chemistry, etc [4]. At the same time, in order to better distinguish the changes of teachers' competency factors in digital learning environment and traditional teaching environment, the interviewees were divided into target group and control group. The teachers in the control group are those who are recognized by experts in traditional teaching, loved by students, and have the ability and quality of excellent performance in traditional teaching. The target group refers to teachers who, in addition to possessing various abilities and qualities required for excellent performance in traditional classrooms, also possess various discriminative abilities and qualities for excellent teaching performance in the digital learning environment. In other words, teachers in the digital environment can take students as the main body and cultivate students' abilities as the goal, and integrate digital teaching technologies, methods, platforms and resources into teaching. Colleges and universities provide necessary learning tools and assistance for students' personalized learning to achieve the goal of students' autonomous learning anytime and anywhere.

2.2. Data collection and collation

Interview outline is a media tool of behavioral event interview, its quality is directly related to the quality of the interview, and also has a crucial impact on the authenticity, effectiveness and objectivity of data collection. This study refers to the interview outline of Mcclelland and Ding Yuelan, and determines the interview outline of this paper according to the core issues such as digital learning environment and teacher competency. The interview form is based on on-site interview and supplemented by video interview. Before each interview, we should systematically understand the interviewees, including personal information, work information and resume collection and analysis, to ensure the depth and validity of the interview. During the interview, teachers were asked to recall their own teaching experience related to digital learning environment or digital learning, and to describe the three teaching events or teaching links that they considered the most successful (wonderful) and the most unsuccessful (regrettable). Use the STAR rule to describe the Situation in which the event occurred, the Task to be solved, the key Action to be taken,the Result of the event, and the impact it had on you. In this study, 33 qualified teachers were selected, including 23 teachers in the target group and 10 teachers in the control group. Three teachers of the target group were selected for pre-interview, and the interview scenarios were tested to verify the rationality of the interview outline, and the interview contents were coded to verify the effectiveness of the interview outline. After that, the remaining 20 teachers in the target group and 10 teachers in the control group were interviewed respectively, and the competency characteristics that could distinguish the average performance from the outstanding performance were determined by comparing the differences between the two groups [5].

In this study, the qualitative analysis tool NVIVO10.0 was used to transcode the recorded text of the interview into text. In the process of transcoding, without mixing any personal emotion, the

interview situation is truly and objectively restored, the linguistic information in the interview data is sorted out, and the non-linguistic characteristics of the interviewees are accurately noted. The transcoding of the recording text was completed, and finally 33 interviewees' text materials, nearly 210,000 words, were obtained. Among them, the text with the most words is nearly 14,000 words, and the text with the least words is more than 5,000 words [6]. After eliminating invalid words such as adverbs, pronouns, quantifiers and other words unrelated to the subject, the cloud map of high frequency words of teacher competence in digital learning environment is obtained. These transcoded interview text data will be used as the original data for rooted theory coding.

2.3. Construction of competency model of college teachers based on grounded theory

The whole process of rooted theory coding goes through three stages: openness, mainline and selective coding. In this study, two coders encode independently until theoretical saturation is reached, and by categorizing consistency (CA=2S/ (T1+T2), where S represents the same or similar number of coders, T1 and T2 represent the total number of codes for each coder) and the coding reliability coefficient (the formula is R=N*CA/[1+ (n-1) *CA]). Finally, the coding reliability coefficient (R) of teacher competency is above 0.8, indicating that the coding results of the two coders are at a good level and can be carried out for further research.

Through the analysis of 33 interview data, 73 themes were formed; After further analysis and refinement, the 73 themes are sorted out and combined into 43 initial conceptual categories. Then, by comparing the coded data of the two groups of teachers, and eliminating 12 common indicator elements with 28 or more frequency (mentioned by almost every teacher), 31 discriminative competency indicator elements of teachers in the digital learning environment are obtained [7].

The 31 initial conceptual categories of open coding are compared and 15 main categories are formed. That is, digital teaching consciousness, teaching concept that emphasizes both learning and teaching, internal driving teaching motivation, digital learning platform use ability, digital learning platform construction ability, digital teaching design ability, personalized teaching ability, digital classroom teaching ability, professional knowledge level, teaching effect evaluation ability, communication feedback and timely action ability, digital teaching gap analysis ability, digital teaching gap filling Ability, self-efficacy, self-learning ability. Therefore, the competency index and index elements of college teachers under the digital learning environment are determined.

In the process of selective coding, 31 initial conceptual categories and 15 main categories are deeply analyzed, and then the core category of "teacher competency in digital learning environment" is dug out, and the competency model of university teachers with outstanding teaching performance in digital learning environment is constructed. That is, "Digital teaching concept and motivation - digital environment use and construction - teaching organization - evaluation and feedback - teaching improvement" [8]. Among them, "professional knowledge level" is placed under the dimension of teaching organization, mainly because professional knowledge is the premise and basis for teachers to carry out teaching design. Only on the basis of mastering professional knowledge can we better use Internet technology to collect resources needed for teaching, organize and integrate resources, and design teaching activities. Develop digital classroom teaching and personalized teaching activities. The reason why "self-efficacy" is not included in the concept and motivation dimension of digital teaching or other dimensions is that it is learned from interviews that low "self-efficacy" will affect teachers' construction and use of digital teaching environment. For example, some teachers believe that they have little teaching experience, cannot control digital classrooms or are too old to keep pace with The Times. Therefore, in terms of teaching improvement, we must first change this situation of lack of confidence in order to better improve and promote in other aspects. Therefore, it is more appropriate to put "self-efficacy" in the

dimension of teaching improvement.

2.4. A competency model for college teachers in digital learning environment

Based on the above rooted coding, the competency model of college teachers in digital learning environment is constructed, which consists of 5 dimensions, 15 main categories and 31 initial conceptual categories. At the bottom of the triangular model, the concept and motivation of digital teaching, the use and construction of digital environment are easily ignored by teaching workers. However, as long as teachers realize their importance, it will be beneficial to the teaching organization level, the teaching evaluation and feedback level and the teaching promotion level. This paper will describe the competency elements of college teachers in digital learning environment from two aspects: name and definition. For example, the consciousness of digital teaching refers to the recognition of digital teaching at the level of consciousness, not only to realize the importance of digital teaching environment to their current teaching work, but also to realize the significance of digital teaching environment in promoting the development of college education [9]. The ability of student group analysis means that teachers can accurately grasp the learning situation, learning attitude and learning demands of students in their classes, so as to design corresponding learning activities and assign corresponding learning tasks for students. The ability of personalized resource recommendation means that teachers have the ability to identify data information and learning resources in digital learning environment, and share and recommend learning resources to students according to the differences of professional training objectives, students' knowledge structure, learning habits and cognitive styles. To inspire students' numerical ability means that teachers should not only impart basic knowledge to students, but also cultivate students' ability to think independently and be good at analyzing problems.

3. An empirical test of teacher digital competency evaluation system

3.1. Questionnaire establishment

The main content of the questionnaire is designed according to the elements and interpretation of competency indicators, and based on the scale designed by Guo Chuncai, Meng Fanyuan and Li Mei, 36 competency questions are formed after deletion, addition and modification. A four-point scale is used to score the problems, in which 4 means complete agreement, 3 means relatively agreement, 2 means partial agreement, and 1 means no agreement. Reliability test was performed on the questionnaire, and Cronbachα value was 0.957>0.8, indicating high reliability and good internal consistency of the scale [10].

3.2. Sample analysis

With the help of the "Questionnaire Star" platform, links are distributed to teachers in other universities through the interpersonal relationships of teachers in our school. In addition, relevant information about teachers in universities with research achievements in the field of digital education is collected through the network and the links are distributed to them to fill in the answers. A total of 268 questionnaires were completed online, and 24 invalid questionnaires were excluded which were incomplete and selected "No" in the seventh question "whether digital teaching results" or the eighth question "whether teaching evaluation is excellent" in the basic information, with an effective rate of 91.04% [11]. The proportion of men and women in the survey was similar, and the proportion of men was slightly higher, reaching 52.46%. The age group was mainly under 40 years old, accounting for 85.25% of the total. The main degree is doctor, accounting for 69.67% of the

total; The respondents were mainly lecturers, accounting for 64.34%, while professors accounted for only 9.43% of the total. The teaching experience in the 0-10 years period accounted for 85.25%, in the more than 10 years period accounted for 14.75%.

3.3. Model test

3.3.1. Digital teaching concept and motivation dimension

In terms of the concept and motivation of digital teaching, the mean value of internal-driven teaching motivation and equal attention to learning and teaching is very high. In particular, the mean value of internal-driven teaching motivation is more than 3.5, which is close to "complete agreement". This shows that a teacher's sense of achievement, sense of mission and other intrinsic teaching motivation are essential elements to make him an excellent teacher. In addition, the average value of both learning and teaching is also very high, close to 3.5, indicating that in the digital learning environment, teachers must change their teaching philosophy, not only "teaching as the center", but also pay attention to students as the main body of learning, which is the prerequisite for teachers to quickly integrate into the new teaching environment. The mean value of digital teaching consciousness is relatively low compared with the previous two, but both of them exceed the 3.0 standard. Therefore, they are also components of the teacher competency model in the digital learning environment [12].

3.3.2. Dimensions of intelligent environment use and construction

In terms of the use and construction of the smart environment, it is mainly reflected by the teachers' ability to use and build the smart learning platform, and its mean value is the lowest compared with the mean value of the competency factors in other dimensions, but it still reaches 3.09, which is considered to be "relatively consistent". As a high-end intelligent learning environment of digital learning environment, it has more abundant and intelligent information teaching technology and means [13]. In addition, various majors in the field of social science are more practical, which requires teachers to collect more extensive information and materials in teaching preparation. Therefore, the ability to use and build smart learning platforms is an indispensable competency factor for teachers to grow into excellent teachers in a smart learning environment.

3.3.3. Dimensions of teaching organization

The dimensions of teaching organization mainly include four competency elements: intelligent teaching design ability (Q7Q12), personalized teaching ability (Q13, Q14), intelligent classroom teaching ability (Q15-Q22) and professional knowledge level (Q23-Q28). The average of each factor index is more than 3.0 (more consistent), among which the average of emotion awareness is the lowest, only 3.09. The reason may be that 50.82% of the survey subjects have been teaching for five years or less. They have been engaged in teaching for a short period of time, and their ability to perceive students' emotions is less than that of teachers with rich teaching experience. However, this does not mean that emotional awareness is not important to the performance of college teachers in intelligent learning environment. The mean value of promoting the internalization of students' learning motivation is the highest, reaching 3.43, which indicates that teachers with excellent performance always implement the wisdom teaching concept in teaching, change the traditional teaching idea of "teaching as the center", actively mobilize students' learning autonomy, and help students establish correct learning motivation [14]. The average value of each competency index under professional knowledge level is higher than that under other competency factors.

3.3.4. Dimensions of teaching improvement

In the analysis of the mean value of teaching improvement dimension, the mean value of independent learning ability is the highest among the four competency elements, reaching 3.47. Independent learning ability is a very important competency for teachers, because as long as they have this competency element, no matter how the teaching environment changes, no matter how the cutting-edge theory of the subject is perfected, no matter how the teaching technology develops, teachers can quickly adapt to the changes in teaching and integrate into it. In terms of autonomous learning ability, the score of autonomous learning consciousness is higher than that of autonomous learning action, which indicates that teachers always have more ideas about autonomous learning than actions, ignoring the truth that only after putting learning ideas into action can teaching level be improved [15].

According to the above empirical analysis results, it can be found that the average values of 15 competency factors and 31 factor indicators in five dimensions of wisdom teaching concept and motivation, use and construction of wisdom environment, teaching organization, evaluation and feedback, and teaching improvement are all above 3.0 [16]. Moreover, the ratio of standard deviation (SD) to the mean of each competency factor index, that is, the coefficient of difference (CV), is between 0.18 and 0.28, which is relatively small. The smaller the value of the difference coefficient, the smaller the degree of dispersion between the samples, and the better the representation of the mean. This shows that all the elements of the competency model of college teachers in the intelligent learning environment constructed in this paper have been verified and have good stability [17].

4. Conclusion

This study aimed to construct a teacher digital competency evaluation model and explore corresponding coping strategies. Through a series of rigorous research methods and procedures, significant achievements have been made. In the construction of the evaluation system, the behavioral event method and grounded theory were combined. A sample of university teachers from diverse majors was selected and divided into target and control groups. High-quality interview data were collected using a carefully designed interview outline, and NVIVO10.0 was employed for data transcoding. Grounded theory coding led to the identification of 73 themes, which were refined into 43 initial conceptual categories. After further comparison and elimination, 31 discriminative competency indicator elements and 15 main categories were determined, ultimately constructing a competency model for college teachers in the digital learning environment, consisting of 5 dimensions, 15 main categories, and 31 initial conceptual categories. The empirical test of the teacher digital competency evaluation system was also carried out. A reliable questionnaire was designed based on the competency indicators, and 268 valid questionnaires were collected. The analysis of different dimensions showed that in the digital teaching concept and motivation dimension, internal-driven teaching motivation and equal attention to learning and teaching had high mean values, highlighting their importance. In the intelligent environment use and construction dimension, although the mean value of the ability to use and build smart learning platforms was relatively low, it still met the “relatively consistent” standard, emphasizing its indispensability. In the teaching organization dimension, most competency factor indices had averages above 3.0, with the highest average in promoting the internalization of students' learning motivation. In the teaching improvement dimension, the independent learning ability had the highest mean value, yet there was a gap between learning consciousness and action. Overall, the average values of all 15 competency factors and 31 factor indicators in the five dimensions were above 3.0, and the difference coefficients were small, verifying the stability of the constructed competency model. This research

provides a solid foundation for understanding and evaluating teacher digital competency. Future studies could focus on further refining the model, exploring more effective training strategies based on the identified competencies, and investigating how to continuously adapt to the evolving digital educational landscape to enhance teaching quality and student learning outcomes. It is hoped that this work will contribute to the professional development of teachers in the digital age and promote the innovation and progress of education.

Acknowledgements

This work was supported by Research Project on Educational and Teaching Reform of Shaanxi Open University in 2025: Exploration and Practice of Digital Competency Evaluation for Finance and Accounting Teachers in Open Education(sxkd2025zd01); Project of China Electronic Labor Society in 2024: Construction of Digital Competency Evaluation index System of higher education Teachers and research on Improvement Path (Ceal2024155); Construction of Digital Competency Evaluation Model and Coping Strategies for Open Education Teachers (2024-SJYB-074S); Xi 'an Social Science Fund in 2025: Research on the Path and Mechanism of "Dual-Chain" Integration Driving the High-Quality Development of "Specialized, Refined, Unique and Innovative" Enterprises in Xi 'an (25JX10); Xi 'an International Studies University 2024 "Professional Certification" Undergraduate Education and Teaching reform research project: Digital Competency Evaluation and Promotion Path of Business teachers in the Context of Professional Certification (24BKZYRZ15); Research on Optimization Strategy of University Budget Performance Management (JYKJ2024-007MS); The 11th Accounting scientific research Project and research project of Xi 'an Accounting Society in 2024: Research on the implementation status, problems and optimization Strategies of budget Management integration in provincial universities in Xi 'an Area (1); Project of Shaanxi Institute of Education Science in 2024: Study on the Revolutionary Classroom Model of Core Curriculum for Finance and Accounting Majors in Higher Vocational Colleges (SGH24Y3130); Research project of Shaanxi Open University (Shaanxi Industrial and Commercial Vocational College) in 2024: Research on Promoting the deep integration of "Four chains" in Shaanxi (2024KY-B04); Xi 'an Social Science Fund in 2024: Research on Xi 'an's Promotion of the Deep Integration of Innovation Chain Industrial Chain Capital Chain Talent Chain (24GL04); Research project of Data Analysis Education and Training Committee of Chinese Adult Education Association in 2024: 2024 Chinese Educational Accounting Association Project: Scientific Research Program Funded by Shaanxi Provincial Education Department (Program No.22JZ017); 2023 National Open University Key Research Project: Open University Comprehensive Budget Performance Management Research (Z23B0017); 2023 Research project of Shaanxi Open University (Shaanxi Industrial and Commercial Vocational College) : Research on Digital Learning Achievement Certification of Higher Continuing Education (2023KY-A05); 2023 China Adult Education Association 14th Five-Year Educational Research Planning project: Research on Adult Continuing Education Learning Achievement Certification based on block-chain technology (2023-019Y); Research topic of Internet Ideological and Political Work in 2024: Research on the Path and Mechanism of Internet Course Ideological and Political Construction for Higher Vocational College Students Empowered by Digital Technology (2024WS-A03); Research Project on Network Ideological and Political Work in 2024: Study on the Path of Integrating Shaanxi Red Culture into Network Course Ideological and Political Education (Project Number: 2024WS-A04); Research Project of China Vocational and Technical Education Society's 2024 Branch: Strategy Research on Empowering Enterprises with Digital Transformation through Vocational Education (Project No.: ZJ2024B072); "Integration of Industry and Education, School Enterprise Cooperation" Education Reform and Development Project of China Electronic Labor

Society in 2024: Research on the Reform of Craftsmanship Talent Training Mode under the Background of School Enterprise Cooperation (Project No.: Cea12024156); Special Project of "Teacher Research and Development" in the "14th Five Year Plan" of the China Tao Xingzhi Research Association for 2024: Research on the Path of Promoting the Integration of Industry and Education in New Business in Higher Vocational Colleges in the New Era (Project No.: ZTHJS2024146); The "Digital Empowerment Education" project of the Chinese Association for Adult Education in 2024: Research on the Path of Digital Transformation Empowering University Teaching Work (Project No. 2024-SJYB-076S); Research and Innovation Team of the Open University of Shaanxi" Study on financial Support for rural Revitalization and development in Shaanxi"(TD2021001).

References

[1] Ličen S, Prosen M. Strengthening Sustainable Higher Education with Digital Technologies: Development and Validation of a Digital Competence Scale for University Teachers (DCS-UT)[J]. Sustainability, 2024, 16(22): 9937-9938.

[2] Boyraz S, Rüzgar M. What Digital Competency Tells Us About E-Learning Satisfaction of Pre-Service Teachers[J]. European Journal of Education, 2024, 59(4): 12766-12768.

[3] Lee H. Analysis of the impact of digital literacy on life satisfaction (2019–2022) for older adults in South Korea: a national community-based panel study[J]. Scientific Reports, 2024, 14(1): 20398-20399.

[4] Hazaimeh M, Al-Ansi M A. Model of AI acceptance in higher education: arguing teaching staff and students perspectives[J]. The International Journal of Information and Learning Technology, 2024, 41(4): 371-393.

[5] Isac N, Hoinaru R, Cismasu L D I, et al. Strategic Business Performance in Digital Paradigm: Interplay Among Digital Orientation, Competence, and Team Creativity[J]. Journal of the Knowledge Economy, 2024, (8): 1-22.

[6] Mukherjee D R. Mapping of school teachers' digital competency in the context of digital infrastructure: a systematic review and empirical study of India[J]. Journal of Professional Capital and Community, 2024, 9(3): 173-195.

[7] Tang W, Song Q, Zhai X, et al. Research on the Problems and Countermeasures of online Teaching in Higher Continuing Education[J]. Adult and Higher Education, 2022, 4(1): 156-165.

[8] Tang W, Song Q, Huang X. Ideological and Political Casting Soul, Student Center, Number of Wisdom to Empower, One Lesson More Integration—Typical Case of "Classroom Revolution" in Primary Accounting[J]. Advances in Educational Technology and Psychology, 2023, 4(4): 142-151.

[9] Tang W, Song Q, Huang X. Implementation Status and Optimization Strategy of the Integration of Budget and Performance Management in Colleges and Universities[J]. Accounting and Corporate Management, 2024, 6(3): 1-10.

[10] Tang W, Song Q, Yang Y, et al. Research on Promoting the Deep Integration of Innovation Chain, Industry Chain, Capital Chain, Talent Chain in Xi'an[J]. Industrial Engineering and Innovation Management, 2024, 7(3): 11-20.

[11] Tang W, Song Q, Huang X. The Open University Comprehensive Budget Performance Management Research Integrating Quality Management Cycle and Balanced Scorecard[J]. Accounting, Auditing and Finance, 2024, 5(1): 121-130.

[12] Tang W, Wang Y, Song Q, et al. Research on the Development Path of Undergraduate Vocational Education in Ethnic Areas[J]. Advances in Vocational and Technical Education, 2023, 5(11): 147-156.

[13] Tang W, Song Q, Xiong X, et al. Study on Mechanism and Path of Steady Development of Vocational Undergraduate Education in Shaanxi Province[J]. International Journal of New Developments in Education, 2023, 5(13): 140-149.

[14] Tang W, Zhang J, Song Q, et al. Study on the Mechanism and Countermeasures of Digital Transformation Affecting Enterprise Performance in Xi'an Aerospace Manufacturing Industry[J]. Academic Journal of Business & Management, 2023, 5(14): 172-181.

[15] Tang W, Song Q, Zhang J. Research on the Ideological and Political Teaching Strategy of "Primary Accounting Practice" Course[J]. Adult and Higher Education, 2023, 5(8): 86-95.

[16] Tang W, Song Q, Xiong X, et al. Research on the Model and Implementation Mechanism of Online Learning Achievement Authentication Based on Block-Chain Technology[J]. Adult and Higher Education, 2023, 5(4): 9-18.

[17] Tang W, Song Q, Xiong X, et al. Analysis on Steady Development Strategy of Shaanxi Vocational Undergraduate Education in the New Era[J]. Advances in Vocational and Technical Education, 2023, 5(2): 18-27.