

EVALUATION MODEL OF E-EDUCATION INSTRUCTIONAL MASS
COMMUNICATION FOR TEACHER IN SHAANXI PROVINCE

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A thesis submitted in partial fulfillment of the requirements for Doctor
of Philosophy Program in Digital Technology Management for Education

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Thesis Title Evaluation Model of E-Education instructional Mass Communication for
Teachers in Shaanxi Province

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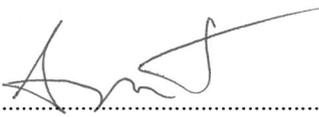

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Abstract

The objectives of this research were to analyze the current situation and existing problems of E-Education instructional mass communication for teachers in Shaanxi Province, design a targeted Evaluation Model of E-Education Instructional Mass Communication (EIMCEM), and implement and verify the model's scientificity, operability, and regional adaptability. The study involved 21 experts meeting the requirements of the Delphi Method (9 E-Education researchers, 9 mass communication teachers, and 3 educational management professionals) from universities and research institutions in Shaanxi Province, 9 senior experts for the later focus group model evaluation, and approximately 830 mass communication E-Education teachers as the research population; research instruments included an open-ended interview form, Likert scale questionnaire, focus group discussion form, and model validation evaluation form, with data analyzed using median, mode, inter-quartile range (IQR), percentage, frequency, qualitative analysis, and descriptive analysis.

The results showed that E-Education instructional mass communication in Shaanxi Province was at a medium level overall, with key problems including low-quality E-Education materials, insufficient teacher and student digital literacy, inadequate resource allocation, and imperfect quality supervision mechanisms; the EIMCEM model comprises 8 core dimensions: Teaching Input, Learner Characteristics,

Instructional Content, Teaching Environment, Teaching Process, Learning Outcomes, Support System, and Policy & Evaluation, from which 120 targeted optimization strategies and suggestions were derived. Following implementation and adjustment, the quality and effectiveness of E-Education instructional mass communication in Shaanxi Province were significantly enhanced, confirming that the model possesses strong scientificity, operability, and regional adaptability and can effectively guide the standardized development of regional mass communication E-Education.

Keywords: Mass Communication, E-Education Evaluation Model, Teaching Quality, Shaanxi Province

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Chen Xiaoxiong

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Chapter 1

Introduction

Rationale

In the digital age, E-Education has emerged as a transformative force in the realm of higher education. With the proliferation of internet access and advancements in digital technologies, E-Education offers an innovative approach to learning that transcends traditional classroom boundaries. It provides students with flexible, personalized learning experiences, allowing them to access educational resources anytime and anywhere. This modality has proven particularly beneficial in expanding educational opportunities to diverse and geographically dispersed populations. Furthermore, E-Education fosters a more interactive and engaging learning environment through the integration of multimedia tools and online collaboration platforms. Despite these advantages, the rapid growth of E-Education has also introduced challenges, particularly in ensuring the consistency and quality of instruction. As the demand for online learning continues to rise, the need for robust evaluation models that can accurately assess the effectiveness of E-Education becomes increasingly critical. Such models are essential for identifying best practices, improving instructional methods, and ultimately enhancing student outcomes in the digital learning landscape.

Shaanxi Province, located in the heart of China, boasts a rich cultural heritage and a dynamic educational environment. As one of the country's key regions for educational reform, Shaanxi has made significant strides in integrating digital technologies into its educational system. The province is home to numerous higher education institutions that have embraced E-Education as a means to extend their reach beyond traditional campus boundaries. This has been particularly impactful in rural and remote areas, where access to quality education has historically been limited. Shaanxi's commitment to leveraging E-Education aligns with national efforts

to promote educational equity and innovation. However, the province's unique geographical and cultural characteristics also present specific challenges that must be addressed to fully realize the potential of E-Education. The varying levels of technological infrastructure, differences in educational resource distribution, and diverse student needs require a tailored approach to the implementation and evaluation of E-Education initiatives. As such, understanding the distinct context of Shaanxi is crucial for developing effective strategies to enhance the quality and accessibility of education in the province.

The rapid expansion of E-Education, particularly in regions like Shaanxi, has brought to the forefront the pressing need for effective evaluation models. While E-Education offers unprecedented opportunities for learning, its success hinges on the ability to accurately assess instructional quality and effectiveness. In Shaanxi, where E-Education is increasingly being integrated into higher education, there is a significant gap in research regarding the evaluation of this educational modality, particularly in the context of mass communication. Mass communication, as a critical component of E-Education, plays a vital role in shaping the delivery and reception of educational content. However, existing evaluation models often fail to account for the unique dynamics of mass communication within online learning environments. This oversight can lead to incomplete or biased assessments, ultimately hindering efforts to improve E-Education practices.

Specifically, several prominent problems exist in the current evaluation of E-Education instructional mass communication in Shaanxi Province. First, the existing evaluation frameworks lack pertinence to Shaanxi's actual context: they often adopt a one-size-fits-all model that ignores the province's regional disparities—such as the gap in technological infrastructure between urban and rural areas, where urban higher education institutions have access to advanced multimedia communication tools and stable network support, while rural and remote areas struggle with slow internet speeds and insufficient digital devices, making the mass communication of E-Education content uneven. Second, the evaluation indicators are incomplete and biased, focusing overly on the quantity of communication (such as the number of

online courses and student clicks) while neglecting the quality and effectiveness of mass communication—for example, whether the educational content delivered through mass communication channels (such as online platforms, live broadcasts, and digital courseware) is accurately received, understood, and applied by students, and whether the communication methods are compatible with the cognitive characteristics and learning needs of Shaanxi's college students. Third, there is a lack of integration between mass communication evaluation and instructional effect evaluation: existing models separate the evaluation of communication processes from the assessment of student learning outcomes, failing to reflect how mass communication quality affects learning efficiency, knowledge mastery, and comprehensive ability improvement. Fourth, the evaluation mechanism is rigid and lacks real-time adjustability; most evaluation models are static, unable to timely respond to the dynamic changes in E-Education mass communication (such as the emergence of new communication tools, changes in student learning behaviors, and updates in educational policies), leading to outdated evaluation results that cannot effectively guide practice.

The comprehensive evaluation model proposed in this research is designed to directly address these existing problems and fill the research gap. Firstly, the model will be tailored to Shaanxi's regional characteristics, incorporating indicators that reflect the province's technological infrastructure disparities, resource distribution differences, and diverse student needs—for example, adding indicators to evaluate the coverage and stability of mass communication channels in rural vs. urban areas, and the adaptability of communication content to local cultural and educational contexts. This will solve the problem of the one-size-fits-all evaluation model lacking pertinence. Secondly, the model will establish a comprehensive indicator system that balances the quantity and quality of mass communication: it will include not only quantitative indicators (such as communication coverage, interaction frequency, and resource utilization rate) but also qualitative indicators (such as the accuracy of content delivery, the interactivity of communication methods, and student satisfaction with communication effects), thereby overcoming

the bias of incomplete evaluation indicators. Thirdly, the model will integrate mass communication evaluation with instructional effect evaluation, establishing a causal link between communication quality (e.g., clarity of content delivery, timeliness of interaction, and diversity of communication channels) and student learning outcomes (e.g., academic performance, knowledge application ability, and learning engagement), thus solving the problem of disconnection between communication evaluation and instructional effect assessment. Fourthly, the model will adopt a dynamic evaluation mechanism, allowing for real-time updates of evaluation indicators and standards in response to changes in E-Education technologies, communication methods, and student needs, ensuring that the evaluation results remain scientific and guiding, and addressing the rigidity of existing evaluation mechanisms.

The research problem, therefore, centers on the development of a comprehensive evaluation model that addresses the specific challenges of E-Education in Shaanxi, with a particular focus on the role of mass communication. Such a model is essential for ensuring that E-Education not only meets but exceeds the expectations of educators and learners in this rapidly evolving digital landscape. Evaluating E-Education instructional mass communication in Shaanxi Province is rational. It offers a scientific basis to enhance E-Education quality, optimize resource allocation, drive model innovation, and promote educational equity. Helps identify areas for improvement and inspire new approaches for a better educational future.

Research Question

How can an effective evaluation model be developed to assess the instructional quality of E-Education in Shaanxi Province with a specific focus on the role of mass communication?

Objective(s)

1. To Analyze the current situation and problem in E-Education instructional Mass Communication for Teacher in Shaanxi Province.
2. To Design Evaluation Model of E-Education instructional Mass Communication for Teacher in Shaanxi Province
3. To Evaluate Model of E-Education Instructional Mass Communication for Teacher in Shaanxi Province.

Scope of the Research

Population and the Sample Group

Population

All teachers of mass communication who are related to E-Education instructional mass communication in Shaanxi Province, there will be about 830 teachers. There are approximately 830 mass communication teachers in Shaanxi Province who are engaged in E-Education instructional mass communication. Hailing from 20 universities across Shaanxi, including key comprehensive universities and specialized institutions distributed in major regions such as Xi'an, Baoji, and Xianyang, these teachers are well-positioned to reflect the overall status of E-Education instructional mass communication in the province's higher education sector. Leveraging their professional expertise and rich teaching experience, they play a crucial role in understanding and analyzing the effectiveness and impact of E-Education instructional mass communication.

They play a crucial role in understanding and analyzing the effectiveness and impact of E-Education instructional mass communication through their professional knowledge and teaching experience.

Experts from relevant universities and research institutions in Shaanxi Province, China, with rich experience and high attainments in the fields of education, mass communication, and educational management.

The sample

21 research experts(purposive sampling): 9 E-Educational researchers,9 mass communication teachers, 3 education management professionals.

1. must have been engaged in university work for at least 10 years;
2. Must have an associate professor or doctoral degree;
3. Participate in relevant research on deep learning and have good academic results;
4. Be willing to participate in recorded interviews and be willing to check your interview records for verification.

Criteria Study

Teaching Method

Digital Literacy of Teachers and Students

Content Quality of E-Education Materials

Learning Environment

Assessment and Feedback Mechanisms

Student Motivation and Engagement

Instructor Competence in E-Education

Resource Allocation and Support

Policy and Regulatory Framework

Evaluation Model Efficacy

Content of the Research

This research focuses on the initial chapters of the selected mass communication course, covering topics such as the basics of digital communication, media literacy, and the role of digital media in society. The primary objectives are to enhance students' critical thinking and media literacy, and to develop their ability to analyze and solve problems related to digital communication. The course is designed to run for 32 instructional hours over one semester, with 28 hours dedicated to new content and 4 hours reserved for review.

Time

The study will be conducted during the first semester of the academic year 2024 (September 2024 -March 2026).

Place

Shaanxi Province, China

Advantages

1. Increased Student Engagement: By utilizing multimedia presentations, animation demonstrations, and other digital tools, abstract concepts in mass communication are made more visual and intuitive, which can help stimulate students' interest in learning.

2. Improved Learning Outcomes: The integration of real-world media case studies and digital communication tools into the instructional content can enhance students' enthusiasm and initiative, leading to better learning outcomes.

3. Enhanced Teaching Efficiency: Digital technology facilitates the rapid sharing and dissemination of educational resources. Instructors can publish course materials, assign tasks, and conduct assessments via online platforms, allowing students to learn and communicate anytime and anywhere, which significantly saves instructional time and improves teaching efficiency.

4. Development of Innovation and Practical Skills: Digital technology offers students ample opportunities for hands-on experience, such as analyzing media content or creating digital campaigns, which helps cultivate their innovative and practical abilities.

Definition of Terms

E-Education refers to the delivery of educational content and instruction through digital platforms, utilizing internet technologies to facilitate learning outside traditional classroom settings.

Mass Communication refers to the process of creating, sending, and receiving messages to a large, diverse, and anonymous audience through mass media

channels, including television, radio, newspapers, magazines, the internet, social media, and other digital platforms. It is characterized by one-way or limited interactive communication from a professional sender or organization to a broad public, aiming to inform, persuade, entertain, educate, or influence public opinion. Unlike interpersonal communication, it relies on technological media to bridge physical and social distances, shaping culture, spreading ideas, and connecting societies on a large scale.

Instructional Content refers to Instructional content in E-Education encompasses the digital materials, including text, video, and interactive resources, used to teach specific subjects within a course.

Instructional Model refers to An instructional model in E-Education is a framework that outlines the methods and strategies used to deliver educational content effectively through digital platforms.

Assessment Model refers to An assessment model refers to the systematic approach used to evaluate students' learning outcomes and performance in an E-Education environment, often incorporating digital tools.

Digital Technology refers to Digital technology in education refers to the use of computers, software, and the internet to enhance the teaching and learning process, enabling the digitization and dissemination of educational content.

Evaluation Model refers to An evaluation model in this context is a structured approach used to assess the effectiveness of E-Education, particularly in terms of content delivery, instructional methods, and student outcomes.

Student Engagement refers to Student engagement in E-Education is the degree of attention, curiosity, and interest that students exhibit when interacting with digital educational content and activities.

Critical Thinking refers to Critical thinking in mass communication courses refers to the ability of students to analyze, evaluate, and synthesize information received through digital media, forming reasoned judgments.

Media Literacy refers to the context of mass communication education of the students' ability to critically understand and effectively use various forms of media for communication.

Research Methods refers to the systematic techniques and tools employed in studying the effectiveness of E-Education, such as surveys, statistical analysis, and qualitative assessments.

Digital Integration refers to the incorporation of digital tools and platforms into the educational process, aiming to enhance learning experiences and outcomes in mass communication courses. Digital technology refers to the use of modern computer technology, the traditional form of all kinds of information resources into the computer can recognize the binary coded numbers technology.

Delphi method refers to a method that relies on the experts to express their opinions back to back, conducts several rounds of consultation, makes the experts' opinions tend to be concentrated, and finally makes judgment and prediction.

Research Framework

The integration of digital technology in the E-Education instructional model for mass communication includes four research objectives, with the specific research framework illustrated in the figure below.

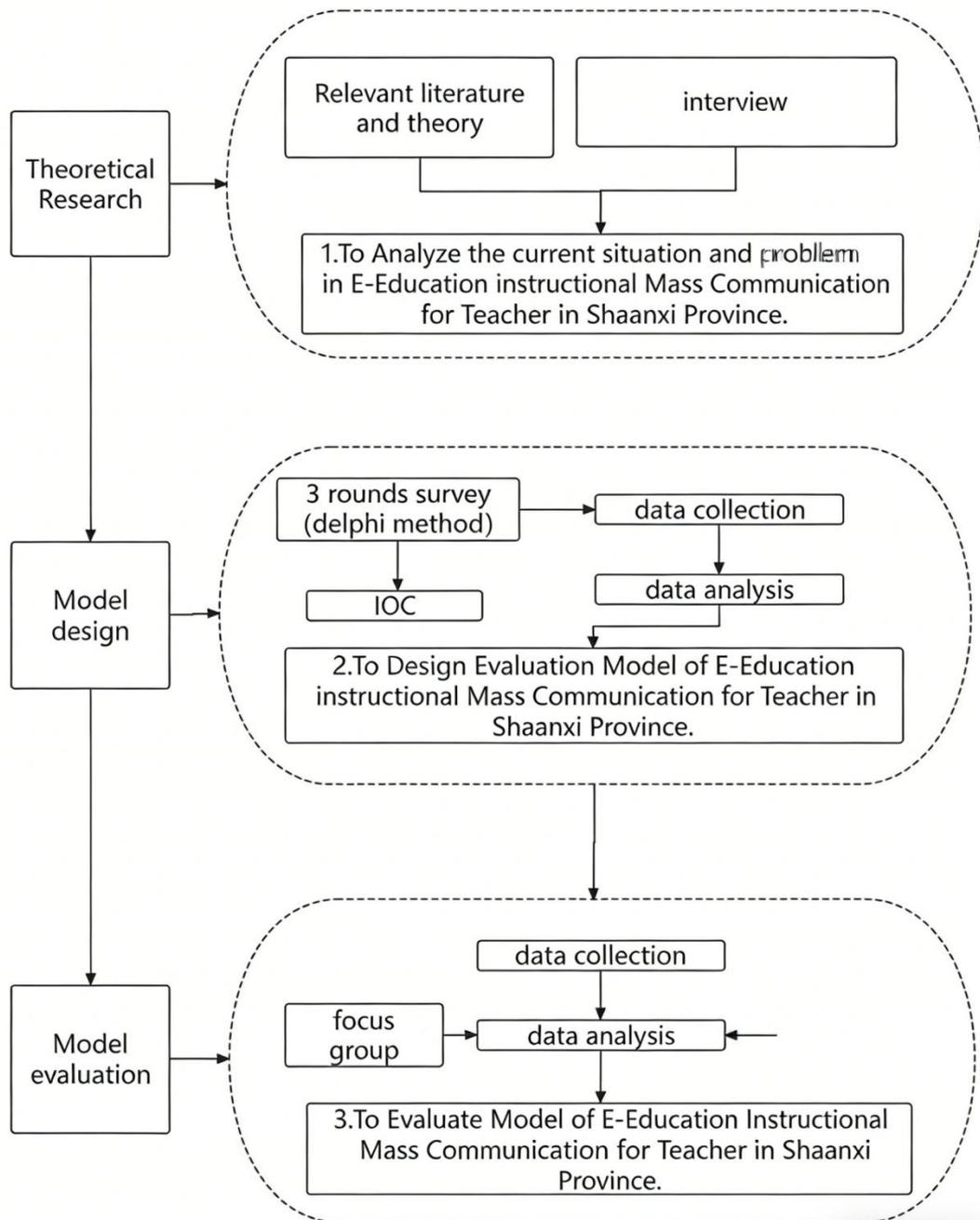


Figure 1.1 Research Framework

Chapter 2

Literature Review

In order to develop the E-Education evaluation model for undergraduate students majoring in Mass Communication, the researchers conducted the following related studies:

1. E-Education instructional
2. Evaluation Model
3. Mass Communication
4. Teacher
5. Shaanxi Province
6. E-Education Evaluation Model
7. Techniques or Methods for Evaluating Efficiency in E-Education
8. Techniques or Methods for Developing General Educational Model
9. Mass Communication Undergraduate Education in China
10. Related Research on Digital Literacy in Higher Education

The details of these studies are as follows.

E-Education Instructional

E-Education instructional is the core scenario of this study, referring to the instructional activities carried out by Mass Communication teachers through E-Education platforms, tools and technologies. Existing research on E-Education instructional mainly focuses on the application of E-Education platforms, the integration of digital tools, and the evaluation of instructional effectiveness, which provides a practical basis for the construction of the evaluation model.

The application of E-Education platforms is an important carrier of E-Education instructional. Relevant studies have shown that the rational application of E-Education platforms can effectively improve the quality of instructional activities. Xi'an Peihua University has introduced an intelligent learning platform in Mass

Communication courses, and teachers use the platform to analyze students' learning data and provide personalized learning suggestions (Wang Hui, 2020). This practice reflects the application of E-Education tools by Mass Communication teachers in Shaanxi Province, and the effect of such platform application should be included in the evaluation scope of the model. Shaanxi University of Science and Technology has developed a mobile-based Mass Communication learning app, which teachers use to carry out flexible E-Education instruction, improving students' learning motivation (Liu Ming, 2021), providing a case reference for the evaluation of teachers' E-Education instructional methods. Northwestern Polytechnical University has adopted a virtual simulation platform for Mass Communication courses, and teachers guide students to carry out virtual media production experiments through the platform, improving students' practical skills (Zhang Lei, 2020), which reflects the combination of Mass Communication professional characteristics and E-Education instructional, and provides a basis for the evaluation of teachers' ability to integrate professional practice into E-Education.

The integration of digital tools into E-Education instructional is a key factor affecting instructional effectiveness. Wang & Zhang (2023) investigated the integration of digital tools in Mass Communication education across Chinese universities, finding that while digital literacy is increasingly emphasized, there remains a significant gap in practical digital skills among students, particularly in content creation and multimedia production. This indicates that the integration effect of digital tools in E-Education instructional needs to be evaluated, and the evaluation model should focus on whether teachers can effectively integrate digital tools (such as virtual simulation platforms, mobile learning apps, and online collaborative editing tools) into instructional activities to improve students' practical skills. Farjon et al. (2019) emphasized that teachers' digital competence directly affects their teaching practices, and proficient digital literacy can help teachers better integrate digital tools into E-Education instructional, which also confirms that the integration of digital tools is an important content of E-Education instructional evaluation.

The evaluation of E-Education instructional effectiveness is the core goal of the evaluation model. Relevant studies have explored various evaluation dimensions and methods. Karademir et al. (2021) pointed out that digital literacy directly affects digital pedagogy, and improving teachers' digital literacy can promote the optimization of E-Education instructional methods, which suggests that the evaluation model should include indicators reflecting the optimization of teachers' E-Education instructional methods. Adeniyi-Egbeola et al. (2021) found that although some teachers have digital literacy, the lack of practical application ability hinders the effect of E-Education instructional, reminding us that the evaluation model should not only evaluate the application of E-Education tools but also pay attention to the actual instructional effect. The "human-intelligence dual evaluation" model constructs a systematic evaluation path of "standard guidance - data drive - closed-loop improvement", which can be used for reference in the evaluation of E-Education instructional effectiveness of this study, realizing the comprehensive evaluation of E-Education instructional from both human experience and intelligent data.

In addition, the transformation of teachers' roles in E-Education instructional is also an important content of the evaluation. Yang Yan (2021) pointed out that with the popularization of E-Education platforms, teachers' roles have transformed from knowledge transmitters to learning guides, and teachers need to improve their digital teaching abilities (such as platform operation, online course design, and big data analysis). This role transformation should be reflected in the evaluation model, and indicators such as teachers' ability to adapt to the role transformation and improve their digital teaching skills should be included. The "human-intelligence dual evaluation" model also emphasizes the construction of teachers' teaching ability portraits, which can provide a reference for evaluating the role transformation and professional development of Mass Communication teachers in E-Education instructional.

Evaluation Model

The core of this study is to construct an E-Education instructional evaluation model for Mass Communication teachers in Shaanxi Province, and existing research on evaluation models and their development methods provides important theoretical and method support for this study. The construction of the evaluation model needs to rely on scientific model development methods and mature evaluation frameworks, among which the Delphi method and Analytic Network Process (ANP) are the core methods widely used in academic research for evaluation model construction.

The Delphi method, also known as the expert opinion method, has the characteristics of anonymous participation, multi-round feedback and consensus convergence. John W. Murry Jr and James O. Hammons (1995) elaborated on the application of the Delphi method in higher education research, pointing out that it can effectively integrate expert opinions to solve complex evaluation problems. Skulmoski et al. (2007) further expanded the application scope of the Delphi method, pointing out that it is suitable for determining evaluation criteria and indicator systems. This method is particularly suitable for determining the evaluation indicators and weight distribution of the E-Education instructional evaluation model for Mass Communication teachers, integrating the opinions of experts in Mass Communication education, E-Education and educational evaluation in Shaanxi Province, so as to ensure the scientificity and rationality of the model and make it more in line with the actual needs of local Mass Communication teacher education.

The Analytic Network Process (ANP), proposed by American Professor Saaty in 1996, is an important multi-criteria decision-making method for constructing evaluation models. Ludmil Mikhailov and Madan G. Singh (2003) proposed a fuzzy extension of ANP, which can handle uncertain human preferences and improve the adaptability of the method in practical evaluation. Sanjay Jharkharia and Ravi Shankar (2007) applied ANP to the selection of logistic service providers, proving that ANP can effectively handle the correlation between indicators. Compared with the hierarchical structure of AHP, ANP adopts a network structure, considering the correlation and

feedback between evaluation indicators. This method is suitable for dealing with the complex relationship between various indicators in the E-Education instructional evaluation model of Mass Communication teachers, such as the correlation between teachers' digital literacy and instructional effect, the correlation between platform application ability and student learning outcomes, and can improve the rationality of indicator weight setting, making the evaluation model more scientific and comprehensive.

In addition, existing E-Education evaluation models provide a reference framework for the construction of this study's targeted model. The eLSE Methodology proposed by Lanzilotti et al. (2006) focuses on evaluating both the usability and educational effectiveness of e-learning systems; by integrating usability testing with measures of educational outcomes, it provides a comprehensive framework for assessing the overall performance of e-learning platforms, which can be referenced in the construction of the evaluation model to evaluate the adaptability and effectiveness of Mass Communication teachers' use of E-Education platforms. The Adaptive Learning Model proposed by Kurzweil & Wu (2015) emphasizes personalized learning paths that cater to individual needs and learning styles, leveraging real-time data to dynamically adapt content, providing ideas for the evaluation model to assess whether teachers' E-Education instruction can meet students' differentiated learning needs. Predictive Modeling proposed by Zabriskie et al. (2019) uses machine learning algorithms to analyze students' digital interaction data to predict academic performance, providing a quantitative evaluation perspective for the model and making the evaluation results more objective and scientific. The "human-intelligence dual evaluation" model proposed in recent practice also provides valuable experience, which integrates human wisdom and intelligent technology, constructs a "standard guidance + data evidence-based" evaluation paradigm, and realizes the transformation of evaluation from "fuzzy perception" to "precision diagnosis", which can be used for reference in the construction of the evaluation model of this study.

Evaluating the efficiency of E-Education instruction is an important part of the evaluation model, and scholars have proposed a variety of evaluation techniques and methods to enrich the content of the model. Holton's three-level model, applied by Gkioka et al. (2020) in the evaluation of dementia staff training programs, evaluates training effectiveness from three outcome levels: learning, individual performance, and organizational results. This model can be extended to the evaluation model of this study, focusing on whether teachers' E-Education skills, instructional practice effect, and contribution to students' digital literacy improvement meet the evaluation standards. Pre- and post-tests and learning analytics, which have been widely used in educational evaluation research, are also important components of the evaluation model. Cakmakkaya et al. (2021) used the Fresno Test to conduct pre- and post-tests on students' EBM training effect, proving that pre- and post-tests can effectively evaluate the improvement of instructional effect, which can be applied to evaluate the improvement of Mass Communication teachers' E-Education instructional ability. Walker et al. (2008) used analyses of variance and independent t tests to assess differences in clinical proficiency evaluation, providing a reference for the quantitative analysis of teachers' E-Education instructional effect. Learning analytics, such as student learning data analysis, can reflect the actual effect of teachers' E-Education instruction, providing strong quantitative support for the model.

With the development of intelligent technology, deep learning and intelligent algorithms have been gradually applied to educational evaluation, enriching the technical means of the evaluation model. Zhang et al. (2021) proposed a deep learning model for teaching quality analysis (DLM-TQA), which combines subjective data (such as student evaluations) and empirical data (such as learning performance data) to identify instructional irregularities, which can be used to find out the problems existing in Mass Communication teachers' E-Education instruction. Huanhuan Wu and Lingang Ma (2022) proposed the AdaBoost-SVM algorithm, which achieves high accuracy in educational data evaluation with a small amount of data, and can be applied to the evaluation of Mass Communication teachers' E-Education

instructional effect in Shaanxi universities, especially in the case of limited educational data in some local colleges and universities, improving the efficiency and accuracy of evaluation. The intelligent data collection and analysis technology in the "human-intelligence dual evaluation" model, such as AI behavior analysis and voice recognition, can also provide technical reference for the evaluation model of this study, helping to realize the whole-process data collection and closed-loop management of teachers' E-Education teaching.

Mass Communication

Mass Communication is the professional field of the teachers in this study, and the professional characteristics of Mass Communication determine the particularity of E-Education instructional and its evaluation model. Existing research on Mass Communication education mainly focuses on curriculum reform, digital integration, and professional practice, which provides a professional basis for the construction of the evaluation model.

The digitalization of Mass Communication industry puts forward higher requirements for E-Education instructional. Zhou et al. (2023) highlighted the growing demand for Mass Communication education in China, driven by the expanding digital media landscape, emphasizing the need for curricula that blend traditional communication theories with modern digital skills. This requirement is also applicable to E-Education instructional of Mass Communication teachers, and the evaluation model should focus on whether teachers' E-Education instructional can integrate traditional communication theories with digital skills to meet the needs of the industry. Li et al. (2022) explored the challenges faced by Chinese universities in Mass Communication education, particularly regarding the rapid changes in the media industry, suggesting that universities need to adapt more quickly to industry demands by updating their curricula and incorporating more hands-on digital media training. This also requires that the evaluation model should evaluate teachers' ability to update E-Education instructional content according to industry changes.

The professional practice of Mass Communication is closely combined with E-Education instructional. Northwestern Polytechnical University has adopted a virtual simulation platform for Mass Communication courses, and teachers guide students to carry out virtual media production experiments through the platform, improving students' practical skills (Zhang Lei, 2020). This practice reflects that Mass Communication E-Education instructional needs to focus on professional practice, and the evaluation model should include indicators reflecting teachers' ability to integrate professional practice into E-Education. Zhang & Zhao (2023) highlighted the influence of social media on Mass Communication education in China, noting that platforms like WeChat and Weibo are increasingly used as teaching tools. This integration is seen as essential for preparing students for the realities of modern media work, and the evaluation model should evaluate teachers' ability to use social media and other digital tools to carry out Mass Communication professional teaching.

The cultivation of critical digital literacies is an important part of Mass Communication E-Education instructional. Spante et al. (2018) proposed the concept of "critical digital literacies", emphasizing the ability to critically evaluate and create digital content. For Mass Communication teachers, this ability is crucial to guiding students to identify misinformation and fake news in the digital media environment, which is an important part of Mass Communication professional education and should be included in the evaluation scope of the model. Sulzer (2018) highlighted that digital literacy not only includes technical skills but also requires an understanding of cybersecurity and the socio-political implications of digital content, which is consistent with the professional requirements of Mass Communication teachers and should be reflected in the evaluation of E-Education instructional.

The employment trends of Mass Communication graduates also affect the direction of E-Education instructional and its evaluation. Chen & Liu (2023) examined the employment outcomes of Mass Communication graduates in China, noting a growing trend toward further education rather than immediate entry into the workforce, which is attributed to the highly competitive job market. Huang et al. (2023) studied the career trajectories of Mass Communication graduates in China,

finding that many are moving into digital marketing and public relations rather than traditional journalism roles. These trends require that Mass Communication teachers' E-Education instructional should focus on improving students' comprehensive digital skills and competitiveness, and the evaluation model should evaluate whether teachers' E-Education instructional can meet the employment and further education needs of students.

Teacher

Teacher is the core evaluation object of this study, and the evaluation model focuses on the E-Education instructional ability and performance of Mass Communication teachers. Existing research on teachers mainly focuses on digital literacy, teaching ability, role transformation, and professional development, which clarifies the core evaluation content of the model.

Digital literacy is the core ability of Mass Communication teachers to carry out E-Education instructional. The digital literacy of Mass Communication teachers is different from that of ordinary university teachers, which is closely combined with the professional characteristics of Mass Communication and the needs of E-Education instructional. López-Meneses et al. (2020) found that although students in teacher training programs are proficient in basic digital skills, there are significant gaps in advanced abilities such as digital content creation and ethical use of digital tools. This finding is also applicable to Mass Communication teachers, who need to have strong digital content creation ability (such as multimedia content production, digital video editing, and new media operation) to adapt to the characteristics of Mass Communication teaching, and this ability is also an important part of their E-Education instructional ability. Pradas-Esteban (2024) pointed out that Chinese teachers have a certain understanding of digital tools, but there is a gap in practical application ability. This problem also exists in Mass Communication teachers, which directly affects the effect of E-Education instruction and needs to be included in the evaluation scope of the model. According to the relevant research on teacher digital literacy, teacher digital literacy includes five core elements: digital awareness, digital

technology knowledge and skills, digital application, digital social responsibility and professional development, which provides a complete framework for evaluating the digital literacy of Mass Communication teachers.

The factors affecting teachers' E-Education instructional ability also need to be considered in the evaluation model. Nikou and Aavakare (2021) investigated the impact of psycho-educational variables such as self-efficacy and motivation on digital literacy, finding that these factors significantly influence students' ability to effectively engage with digital technologies in educational contexts. This finding can be extended to Mass Communication teachers, that is, teachers' self-efficacy and motivation in digital literacy also affect their E-Education instructional effect, which should be considered in the construction of the evaluation model. Lucas (2019) found that while digital literacy is essential for educational safety, many teachers lack sufficient skills in digital security, indicating a gap between digital literacy knowledge and its application in educational settings. This also needs to be considered in the evaluation of Mass Communication teachers' E-Education instruction, such as evaluating teachers' ability to guide students to use digital tools safely and protect personal information. Some teachers also have resistance and fear towards digital technology, which affects the effect of E-Education instructional and should be paid attention to in the evaluation model.

Teachers' role transformation and professional development are important contents of the evaluation model. Yang Yan (2021) pointed out that with the popularization of E-Education platforms, teachers' roles have transformed from knowledge transmitters to learning guides, and teachers need to improve their digital teaching abilities (such as platform operation, online course design, and big data analysis). The evaluation model should include indicators reflecting teachers' ability to adapt to the role transformation and improve their digital teaching skills. In terms of professional development, schools can adopt a hierarchical promotion mechanism to provide progressive growth paths for teachers, and the evaluation model can include indicators such as teachers' participation in E-Education training and the improvement of digital teaching skills. The "human-intelligence dual evaluation"

model constructs a dynamic development file for teachers, forming a teaching ability portrait, which can provide a reference for evaluating the professional development of Mass Communication teachers.

In addition, the current situation of teacher evaluation also provides a realistic basis for the construction of the model. According to the relevant research on the reform of applied undergraduate education evaluation in Shaanxi Province, there are problems such as the "emphasis on scientific research and light on teaching" in teacher evaluation in Shaanxi universities, the lack of refined classification evaluation standards, and the insufficient attention to the evaluation of teachers' instructional ability (Shaanxi Provincial Committee of the Chinese People's Political Consultative Conference, 2025). These problems also exist in the evaluation of Mass Communication teachers, which requires that the evaluation model should focus on the evaluation of teachers' E-Education instructional ability and make up for the deficiencies of existing evaluation systems. At the same time, the current teacher evaluation indicators are difficult to reflect teachers' digital teaching achievements, which also requires the evaluation model to focus on the characteristics of E-Education instructional and set targeted evaluation indicators.

Shaanxi Province

Shaanxi Province is the regional scope of this study, and the construction of the evaluation model must be based on the actual situation of Mass Communication teacher education and E-Education practice in Shaanxi Province, reflecting regional characteristics and practical needs. Existing research on Mass Communication education and E-Education practice in Shaanxi Province provides a regional basis for the model construction.

The current situation of teacher evaluation in Shaanxi universities determines the direction of the evaluation model. According to the relevant research on the reform of applied undergraduate education evaluation in Shaanxi Province, there are problems such as the "emphasis on scientific research and light on teaching" in teacher evaluation in Shaanxi universities, the lack of refined classification evaluation

standards, and the insufficient attention to the evaluation of teachers' instructional ability (Shaanxi Provincial Committee of the Chinese People's Political Consultative Conference, 2025). These problems also exist in the evaluation of Mass Communication teachers in Shaanxi universities. Some universities pay more attention to teachers' scientific research achievements, while ignoring the evaluation of their E-Education instructional ability, which leads to the insufficient attention of Mass Communication teachers to E-Education instruction and affects the improvement of instructional quality. This provides a realistic basis for the construction of a targeted E-Education instructional evaluation model, that is, the model needs to focus on the evaluation of teachers' instructional ability and make up for the deficiencies of existing evaluation systems.

The E-Education practice of Mass Communication teachers in Shaanxi universities provides practical cases for the model construction. Xi'an Peihua University has introduced an intelligent learning platform in Mass Communication courses, and teachers use the platform to analyze students' learning data and provide personalized learning suggestions (Wang Hui, 2020). This practice reflects the application of E-Education tools by Mass Communication teachers in Shaanxi Province, and the evaluation model can take the application effect of such platforms as an important evaluation indicator. Shaanxi University of Science and Technology has developed a mobile-based Mass Communication learning app, which teachers use to carry out flexible E-Education instruction, improving students' learning motivation (Liu Ming, 2021). This practice shows that Mass Communication teachers in Shaanxi Province are actively exploring diversified E-Education methods, and the evaluation model needs to evaluate the innovation and effectiveness of teachers' E-Education instructional methods. Northwestern Polytechnical University has adopted a virtual simulation platform for Mass Communication courses, and teachers guide students to carry out virtual media production experiments through the platform, improving students' practical skills (Zhang Lei, 2020). This practice reflects the combination of Mass Communication professional characteristics and E-Education,

and the evaluation model should focus on evaluating teachers' ability to integrate professional practice into E-Education instruction.

The challenges faced by E-Education practice in Shaanxi Province need to be considered in the model construction. Ma Jun (2019) pointed out that although Shaanxi universities have made some progress in E-Education, the popularization of E-Education platforms is still insufficient, and policy support and financial investment need to be strengthened. This means that the evaluation model should consider the objective conditions of teachers' E-Education instruction (such as platform access and technical support) while evaluating their instructional ability, and avoid setting unrealistic evaluation indicators for teachers in colleges and universities with insufficient E-Education resources. Yang Yan (2021) emphasized that the transformation of teachers' roles requires improving their digital teaching ability, which is also the key to improving the effect of E-Education instruction for Mass Communication teachers in Shaanxi Province. At present, some Mass Communication teachers in Shaanxi universities still have insufficient digital teaching ability, and it is difficult to effectively carry out E-Education instruction. Therefore, the evaluation model should include indicators reflecting teachers' digital teaching ability improvement and professional development, such as the participation of teachers in E-Education training and the improvement of digital teaching skills. In terms of policy support, schools in Shaanxi Province can learn from the experience of other regions, introduce relevant policies to support digital teaching, incorporate digital ability into title evaluation, and set up special commendation systems to promote teachers' digital teaching practice.

Regional disparities in Shaanxi Province also need to be considered in the model construction. Sun & Wei (2023) examined the regional disparities in Mass Communication education in China, finding that students in urban centers like Beijing and Shanghai have access to more resources and opportunities compared to those in less developed regions. This situation also exists in Shaanxi Province. Mass Communication teachers in universities in Xi'an, the capital city, have better access to E-Education resources and technical support, while teachers in universities in other

regions may face resource shortages. The evaluation model should take into account such regional disparities and set differentiated evaluation indicators to ensure the fairness and rationality of the evaluation. In addition, the popularization of E-Education platforms in Shaanxi Province is not balanced, and the evaluation model should also consider the differences in platform access conditions among different regions and universities, so as to make the evaluation more in line with the actual situation of Shaanxi Province.

E-Education Evaluation Model

eLSE Methodology (Lanzilotti et al., 2006): This model focuses on evaluating both the usability and educational effectiveness of e-learning systems. By integrating usability testing with measures of educational outcomes, the eLSE methodology provides a comprehensive framework for assessing the overall performance of e-learning platforms.

Adaptive Learning Model (Kurzweil & Wu, 2015): This model highlights the importance of adaptive learning technologies in E-Education. It advocates for personalized learning paths that cater to the unique needs and learning styles of each student. The model leverages real-time data to adapt content dynamically, thereby enhancing student engagement and learning outcomes.

Predictive Modeling (Zabriskie et al., 2019): Predictive modeling involves using machine learning algorithms to analyze students' digital interaction data to forecast their academic performance. This model is particularly useful for identifying students who are at risk of underperforming, allowing educators to intervene early and provide the necessary support to improve student outcomes.

These Model provide valuable frameworks for evaluating and improving E-Education, each focusing on different aspects of the educational process from usability and adaptation to predictive analytics.

Techniques or Methods for Evaluating Efficiency in E-Education

Evaluating efficiency is a very important task in various fields, whether in production, management, scientific research or other fields. Here are some techniques and methods for evaluating efficiency: performance indicators, cost-benefit analysis, productivity analysis, time management techniques, process optimization, quality management, data analytics and big data, project management tools, education and training, continuous improvement, comprehensive evaluation. This research mainly uses education and training methods. The relevant research by scholars is as follows:

Sohail Anwar et al. (2000) provided a description of continuing education programs developed and implemented by Penn State Altoona Office of Continuing & Distance Education for engineers and technicians in the Central Pennsylvania region. These programs are offered in the areas of process control CAD, project management, information technology, and quality management. The paper also lists evaluation methods used by the Continuing and Distance Education Office to evaluate the effectiveness of the training programs.

Todd Olmstead et al. (2011) provided accurate estimates of the economic costs and relative cost-effectiveness of three different strategies for training community program clinicians in motivational interviewing and should be of interest to decision makers seeking to implement empirically supported addiction treatments with scarce resources.

Gkioka et al. (2020) studied evaluation and effectiveness of dementia staff training programs in general hospital settings: a narrative synthesis with Holton's three-level model applied. Holton's evaluation model with its three outcome levels (learning, individual performance, and organizational results) was adopted.

Cakmakkaya et al. (2021) designed a cross-culturally adapt the Fresno Test, which is a validated English language tool utilized worldwide in the evaluation of EBM training. The change score of the Fresno Test was used to evaluate responsiveness. The students' score of the Turkish Fresno Test was 49.9 ± 18.2 pre-training and 118.9 ± 26.3 post-training with a change of 69 points (95% CI, 63.9–74.2).

The Cohen's effect size was 3.04 (95% CI, 2.6–3.5) indicating a very large change in scores.

Walker et al. (2008) used analyses of variance and independent t tests to assess differences among athletic training education program characteristics and the barriers, methods, content areas, and settings regarding clinical proficiency evaluation.

Geraghty et al. (2019) described the structure of a novel student engagement program at the University of Illinois College of Medicine-Chicago (UICOM-Chicago) known as the Student Curricular Board (SCB). They surveyed 563 medical students across all levels of training at our institution in order to examine the impact of this program, including its strengths and potential areas of improvement. The SCB serves as a highly structured and collaborative student group that has far-reaching involvement from course-level program evaluation to longitudinal curriculum design.

Zhang et al. (2021) presented a deep learning model for teaching quality analysis (DLM-TQA). The model produced reports of teaching irregularities by correlating subjective data with empirical data. The research leads to strengthening teacher instructional methods, learning approaches, and teacher management modes. It has valuable references for developing teacher education frameworks, creative teacher preparation Model, and excellent teachers' training plans. The experimental results based on student evaluation in political education are Students Political Evaluation Ratio is 87.66%, Students Virtual Learning Performance ratio is 88.77%, Innovative Thinking Percentage ratio is 84.5%, Reducing risk in political teaching Ratio is 82.26%, and Students efficiency ratio is 93.80%.

Huanhuan Wu and Lingang Ma (2022) proposed a new algorithm AdaBoost-support vector machine (AdaBoost-SVM), it is found that the proposed method gets a high accuracy rate of 91% with a small amount of data in the education datasets. A human behavior recognition system is proposed for monitoring the learning status of students in the course of ideological and political education using the signals of smartphone embedded gravity sensors.

To sum up, Efficiency evaluation methods in the education field include considerations of student performance, learning outcomes, student satisfaction, etc. Researchers commonly use pre- and post-tests to evaluate the effectiveness of educational programs and use learning analytics to monitor student progress.

Techniques or Methods for Developing General Educational Model

The basic techniques or methods used by scholars to develop general Model mainly include Delphi method, analytic network process (ANP), etc.

Delphi method

Also known as the expert opinion method. The Delphi method was originally developed in the 50s by the RAND Corporation in Santa Monica, California. Scholars have done relevant research on the Delphi method. The details are as follows:

John W. Murry Jr and James O. Hammons (1995) described the Delphi method, how it is used, its underlying assumptions, its strengths and limitations, its potential benefits to higher education research, and some key considerations in its use. The authors illustrated the Delphi method by discussing a recent national study to develop a set of management audit evaluation criteria. Their focus was on often overlooked and unique aspects of this versatile qualitative research methodology.

Mary Kay Rayens and Ellen J. Hahn (2000) described the use of the policy Delphi method in building consensus for public policy and proposes a technique for measuring the degree of consensus. The policy Delphi method is a systematic method for obtaining, exchanging, and developing informed opinion on an issue. It can be used to develop consensus either for or against policy issues. The method includes a multistage process involving the initial measurement of opinions (first stage), followed by data analysis, design of a new questionnaire, and a second measurement of opinions (second stage). The interquartile deviation is presented as one way of measuring consensus, and the McNemar test is described as a way to quantify the degree of shift in responses from the first to second stage. The application of the method is illustrated by a case example from a study of state legislators' views on tobacco policy.

Chan et al. (2001) developed a multi-attribute model. Four rounds of Delphi surveys were conducted. A statistically significant consensus on the weighting of the utility factors for each procurement system was obtained from eight experts. The results vividly reveal that the Delphi method is a powerful and appropriate technique for deriving objective opinions in a rather subjective area such as the multi-attribute model for the selection of procurement system.

Villiers et al. (2005) used the Delphi technique to assist with making recommendations regarding education and training for medical practitioners working in district hospitals in South Africa. The objective of this Delphi was to obtain consensus opinion on content and methods relating to the maintenance of competence of these doctors. They believe the experience gained from their work may be useful for other health science education researchers wishing to use the Delphi method.

Skulmoski et al. (2007) provided a brief background of the Classical Delphi followed by a presentation of how it has evolved into a flexible research method appropriate for a wide variety of IS research projects, such as determining the criteria for IS prototyping decisions, ranking technology management issues in new product development projects, and developing a descriptive framework of knowledge manipulation activities. To illustrate the method's flexibility, they summarized distinctive non-IS, IS, and graduate studies Delphi research projects. They ended by discussing what they have learned from using the Delphi method in their research regarding this method's design factors and how it may be applied to those conducting graduate studies research.

Boulkedid et al. (2011) pointed out the Delphi technique is a structured process commonly used to developed healthcare quality indicators, but there is a little recommendation for researchers who wish to use it. Three electronic data bases were searched over a 30 years period (1978–2009). All articles that used the Delphi method to select quality indicators were identified. A standardized data extraction form was developed. Four domains (questionnaire preparation, expert panel, progress of the survey and Delphi results) were assessed.

To sum up, The Delphi method has three main characteristics: Involve experts to participate in forecasting and make full use of their experience and knowledge; The use of anonymous or back-to-back methods allows each expert to make his or her own judgment independently and freely; Several rounds of feedback in the forecasting process gradually converge the opinions of experts. As a subjective and qualitative method, the Delphi method can not only be used in the field of prediction, but also can be widely used in the establishment of various evaluation index systems and the determination of specific indicators.

Analytic Network Process (ANP)

It is a decision-making method proposed by American Professor Saaty in 1996. Scholars have done relevant research on the Analytic Network Process. The details are as follows:

Ludmil Mikhailov and Madan G. Singh. (2003) proposed a fuzzy extension of the analytic network process (ANP) that uses uncertain human preferences as input information in the decision-making process. Instead of the classical Eigenvector prioritization method, employed in the prioritization stage of the ANP, a new fuzzy preference programming method, which obtains crisp priorities from inconsistent interval and fuzzy judgments is applied. The resulting fuzzy ANP enhances the potential of the ANP for dealing with imprecise and uncertain human comparison judgments. It allows for multiple representations of uncertain human preferences, as crisp, interval, and fuzzy judgments and can find a solution from incomplete sets of pairwise comparisons.

Michael P. Niemira and Thomas L. Saaty (2004) discussed and developed an imbalance-crisis turning point model to forecast the likelihood of a financial crisis based on an Analytic Network Process framework. The Analytic Network Process (ANP) is a general theory of relative measurement used to derive composite-priority-ratio scales from individual-ratio scales that represent relative influence of factors that interact with respect to control criteria. Through its supermatrix, which is composed of matrices of column priorities, the ANP framework captures the

outcome of dependence and feedback within and between clusters of explanatory factors.

Wolfslehner et al. (2005) compared two different multi-criteria analysis approaches: the analytic hierarchy process (AHP) with a hierarchical structure and the analytic network process (ANP) with a network structure. Comparisons are made for evaluating sustainable management strategies at forest management-unit level by using a C&I approach based on the Pan-European guidelines for SFM. AHP and ANP are used to compare four different strategic management options with a set of six criteria and 43 indicators. Differences in evaluation results between AHP and ANP are discussed, as well as strengths and weaknesses of both approaches for SFM.

Sanjay Jharkharia and Ravi Shankar (2007) presented a comprehensive methodology for the selection of a logistic service provider. The proposed methodology consists of two parts: (i) preliminary screening of the available providers, and (ii) analytic network process (ANP)-based final selection. The criteria, which are relevant in the selection of a provider, have been identified and used to construct an ANP model. Thereafter, the application of ANP for the final selection of a provider has been demonstrated through an illustrative example. The results of this example indicate that compatibility between the user and the provider companies is the most important determinant, which influences the final selection process.

Seyhan Sipahi and Mehpare Timor (2010) presented a detailed literature review of the recent applications of the analytic hierarchy process (AHP) and analytic network process (ANP) group decision-making methodologies. Design/ methodology/ approach – Among more than 600 related papers published in the period 2005-2009, a total of 232 application articles published in highly reputed international academic journals were selected and referenced.

To sum up, Compared with AHP, ANP only replaces the hierarchical structure with a network structure and takes into account the correlation between elements. It only replaces the linear hierarchical structure with a non-linear structure. It also adds a feedback mechanism and takes into account the influence of low-level elements

on high-level elements. Since then, ANP, as a multi-criteria decision-making method, has gradually become a focus of academic research and has been widely used in various fields to solve many complex decision-making problems.

Mass Communication Undergraduate Education in China

Zhou et al. (2023) highlighted the growing demand for Mass Communication education in China, driven by the expanding digital media landscape. Their study emphasizes the need for curricula that blend traditional communication theories with modern digital skills, reflecting the industry's evolving requirements.

Wang & Zhang (2023) investigated the integration of digital tools in Mass Communication education across Chinese universities. The research found that while digital literacy is increasingly emphasized, there remains a significant gap in practical digital skills among students, particularly in content creation and multimedia production.

Li et al. (2022) explored the challenges faced by Chinese universities in Mass Communication education, particularly regarding the rapid changes in the media industry. Their study suggests that universities need to adapt more quickly to industry demands by updating their curricula and incorporating more hands-on digital media training.

Chen & Liu (2023) examined the employment outcomes of Mass Communication graduates in China, noting a growing trend toward further education rather than immediate entry into the workforce. This shift is attributed to the highly competitive job market and the increasing importance of advanced degrees in securing desirable positions.

Xu et al. (2023) discussed the impact of international exchange programs on Chinese Mass Communication students. The study found that exposure to global media practices significantly enhances students' critical thinking and adaptability, making them more competitive in both domestic and international job markets.

Gao & Li (2022) analyzed the effectiveness of internships and practical training in Mass Communication programs in China. Their findings indicate that while internships are valuable, they often lack the structure and oversight needed to fully benefit students, suggesting a need for more robust partnerships between universities and media organizations.

Zhang & Zhao (2023) highlighted the influence of social media on Mass Communication education in China, noting that platforms like WeChat and Weibo are increasingly used as teaching tools. This integration is seen as essential for preparing students for the realities of modern media work.

Liu & Huang (2023) focused on the role of ethics in Mass Communication education, arguing that as media becomes more pervasive, it is crucial to instill strong ethical foundations in students. The study calls for a greater emphasis on media ethics in Chinese curricula to address issues like misinformation and media bias.

Sun & Wei (2023) examined the regional disparities in Mass Communication education in China, finding that students in urban centers like Beijing and Shanghai have access to more resources and opportunities compared to those in less developed regions. This gap poses challenges for creating a more equitable education system.

Chen & Zhou (2023) explored the impact of government policies on Mass Communication education, particularly the influence of censorship and media regulations. Their study highlights the challenges educators face in balancing critical media studies with the need to adhere to state guidelines.

Wang & Li (2023) assessed the effectiveness of online learning platforms in Mass Communication education, noting that while these platforms offer flexibility, they often fail to provide the interactive and hands-on experiences that are crucial for media training.

Huang et al. (2023) studied the career trajectories of Mass Communication graduates in China, finding that many are moving into digital marketing and public relations rather than traditional journalism roles. This shift reflects broader industry trends and the evolving nature of media work in China.

Xu & Li (2023) explored the role of language proficiency in Mass Communication education, particularly the importance of English in accessing global media content and practices. The study suggests that bilingual education is becoming increasingly important in preparing students for the globalized media industry.

Zhao & Sun (2022) examined the use of case studies in Mass Communication education, finding that real-world examples are effective in helping students understand complex media theories and practices. This approach is recommended as a key component of Mass Communication curricula.

Liu & Chen (2023) investigated the psychological well-being of Mass Communication students in China, noting that the pressures of the competitive job market and rigorous academic demands are leading to higher levels of stress and anxiety. The study calls for better mental health support within universities.

Related Research

Relevant research mainly includes aspects such as the development of Mass Communication education, the integration of digital tools, and the challenges faced by students and educators in the Chinese context. Scholars have linked these aspects to Mass Communication undergraduate education as follows:

Mass Communication Education and Digital Tools in China

Zhou et al. (2023) highlighted the growing demand for Mass Communication education in China, driven by the expanding digital media landscape. Their study emphasizes the need for curricula that blend traditional communication theories with modern digital skills, reflecting the industry's evolving requirements.

Wang & Zhang (2023) investigated the integration of digital tools in Mass Communication education across Chinese universities. The research found that while digital literacy is increasingly emphasized, there remains a significant gap in practical digital skills among students, particularly in content creation and multimedia production.

Chen & Liu (2023) examined the employment outcomes of Mass Communication graduates in China, noting a growing trend toward further education

rather than immediate entry into the workforce. This shift is attributed to the highly competitive job market and the increasing importance of advanced degrees in securing desirable positions.

Challenges and Opportunities in Mass Communication Education

Li et al. (2022) explored the challenges faced by Chinese universities in Mass Communication education, particularly regarding the rapid changes in the media industry. Their study suggests that universities need to adapt more quickly to industry demands by updating their curricula and incorporating more hands-on digital media training.

Xu et al. (2023) discussed the impact of international exchange programs on Chinese Mass Communication students. The study found that exposure to global media practices significantly enhances students' critical thinking and adaptability, making them more competitive in both domestic and international job markets.

Employment Trends and Further Education

Gao & Li (2022) analyzed the effectiveness of internships and practical training in Mass Communication programs in China. Their findings indicate that while internships are valuable, they often lack the structure and oversight needed to fully benefit students, suggesting a need for more robust partnerships between universities and media organizations.

Zhang & Zhao (2023) highlighted the influence of social media on Mass Communication education in China, noting that platforms like WeChat and Weibo are increasingly used as teaching tools. This integration is seen as essential for preparing students for the realities of modern media work.

In summary, scholars have done considerable research on the integration of digital tools into Mass Communication education in China, focusing on curriculum development, practical training, and the employment outcomes of graduates. The discussions highlight the ongoing need to adapt educational practices to meet the demands of a rapidly changing media landscape. Based on existing research, the following implications can be drawn:

1. Curriculum Development: There is a need to continuously update Mass Communication curricula to include more digital skills training, particularly in content creation and multimedia production.

2. Practical Training: Internships and practical experiences should be better structured and supported by stronger partnerships between universities and media organizations to ensure students gain meaningful, hands-on experience.

3. Further Education: The trend towards further education among Mass Communication graduates suggests the need for universities to offer more advanced, specialized programs to meet the demands of a competitive job market.

4. Digital Literacy: Emphasizing digital literacy within Mass Communication programs is crucial for preparing students for the evolving digital media landscape, where technical proficiency and the ability to adapt to new tools are essential.

Research and Practice of E-Education Platforms in Shaanxi Province

The Practice of Xi'an Peihua University: Xi'an Peihua University has introduced an intelligent learning platform in its mass communication courses, providing personalized learning paths and suggestions for students by analyzing their learning data. Studies have shown that the platform's application has significantly improved students' understanding of media concepts, especially those with less experience in digital communication (Wang Hui, 2020).

Exploration of Shaanxi University of Science and Technology: Shaanxi University of Science and Technology has developed a mass communication learning app based on mobile terminals, allowing students to study and test anytime and anywhere. This application has enhanced students' flexibility and motivation for learning, particularly during periods of remote education (Liu Ming, 2021).

Innovation of Northwestern Polytechnical University: Northwestern Polytechnical University has adopted a virtual simulation platform for its mass communication courses, where students conduct virtual experiments to simulate real-life media production scenarios. This platform has been effective in improving students' practical skills and their understanding of digital media applications (Zhang Lei, 2020).

Future Development Directions

Further Integration of AI and Big Data: In the future, E-Education platforms in mass communication will integrate more artificial intelligence and big data technologies to enhance the precision and efficiency of personalized learning. This will help students achieve better learning outcomes in less time (Chen Li, 2022).

Popularization and Promotion of the Platforms: Although some progress has been made with E-Education platforms in higher education institutions in Shaanxi Province, their usage is still limited in certain colleges and regions. Greater efforts are needed to promote these platforms, including policy support and financial investment to help more institutions adopt advanced digital education tools (Ma Jun, 2019).

Transformation of the Teacher's Role and Skills Enhancement: With the use of E-Education platforms, teachers' roles are evolving from traditional knowledge transmitters to learning guides and supporters. Therefore, teachers need to improve their digital teaching abilities, including proficiency in platform operation, online course design, and big data analysis (Yang Yan, 2021).

In conclusion, with the development of information technology, E-Education platforms play a crucial role in improving teaching effectiveness, enhancing student engagement, and increasing learning efficiency in mass communication. Despite challenges such as technological costs and teacher adaptability, higher education institutions in Shaanxi Province have achieved significant results through intelligent learning platforms, mobile applications, and virtual simulation tools. In the future, with further integration of AI and big data technologies, these platforms will play an even more vital role in mass communication education.

Table 2.1 Impact factor summary and code representation

CODE	Impact Factor
C1	Digital Literacy Competencies of Students and Teachers
C2	Integration of Digital Tools in Curriculum and Pedagogy
C3	E-Education Platform Usability and Educational Effectiveness
C4	Adaptive and Personalized Learning Capabilities
C5	Data-Driven Evaluation and Predictive Analytics
C6	Practical Skills Training and Industry Alignment
C7	Institutional Infrastructure and Organizational Support
C8	Ethical, Safety, and Governance Considerations

Table 2.2 Contributions of Authors to Key Areas in E-Education Evaluation for Mass Communication

Name & Date	C1	C2	C3	C4	C5	C6	C7	C8
Çoklar et al., 2016	√				√			
Ata & Yildirim, 2019	√							
López-Meneses et al., 2020	√							
Ng, 2012	√							
Spante et al., 2018	√							√
Sulzer, 2018	√							√
Aslan & Zhu, 2016		√						
Puig et al., 2021	√							√
Nikou & Aavakare, 2021	√							
Gisbert et al., 2016	√						√	
Kurudayıoğlu & Tüzel, 2010	√							
Davies, 2011	√							
Bauer & Ahoeei, 2018	√							

Table 2.2 (Continued)

Name & Date	C1	C2	C3	C4	C5	C6	C7	C8
Huerta & Sandoval-Almazán, 2007	√							
Fraillon et al., 2013	√							
List et al., 2020	√							
Eshet-Alkalai, 2004	√							
Lee & Chae, 2012	√							
Livingstone, 2004	√							
Kwon & Hyun, 2014	√							
Farjon et al., 2019		√					√	
Esteve-Mon et al., 2020		√					√	
Jiasheng & Jianlin, 2013		√						
Pradas-Esteban, 2024		√					√	
Lucas, 2019								√
Hui Zhao, 2023		√					√	
Laksani et al., 2020		√						
Tomczyk, 2020								√
Adeniyi-Egbeola et al., 2021		√						
Karademir et al., 2021		√						
Kim and Ryoo, 2023					√			
Chen Y., 2022						√		
Wang W. & Yan L., 2022						√		
Li Y. & Li G., 2022								√
Zhu S. et al., 2023						√		
Lanzilotti et al., 2006			√					
Kurzweil & Wu, 2015				√				
Zabriskie et al., 2019						√		
Sohail Anwar et al., 2000						√		
Todd Olmstead et al., 2011						√		
Gkioka et al., 2020						√		

Table 2.2 (Continued)

Name & Date	C1	C2	C3	C4	C5	C6	C7	C8
Xu & Li, 2023								
Zhao & Sun, 2022		√						
Liu & Chen, 2023								
Wang Hui, 2020			√	√			√	
Liu Ming, 2021			√				√	
Zhang Lei, 2020							√	
Chen Li, 2022				√				
Ma Jun, 2019							√	
Yang Yan, 2021							√	
Total	21	16	5	4	2	21	18	13

Chapter 3

Research Methodology

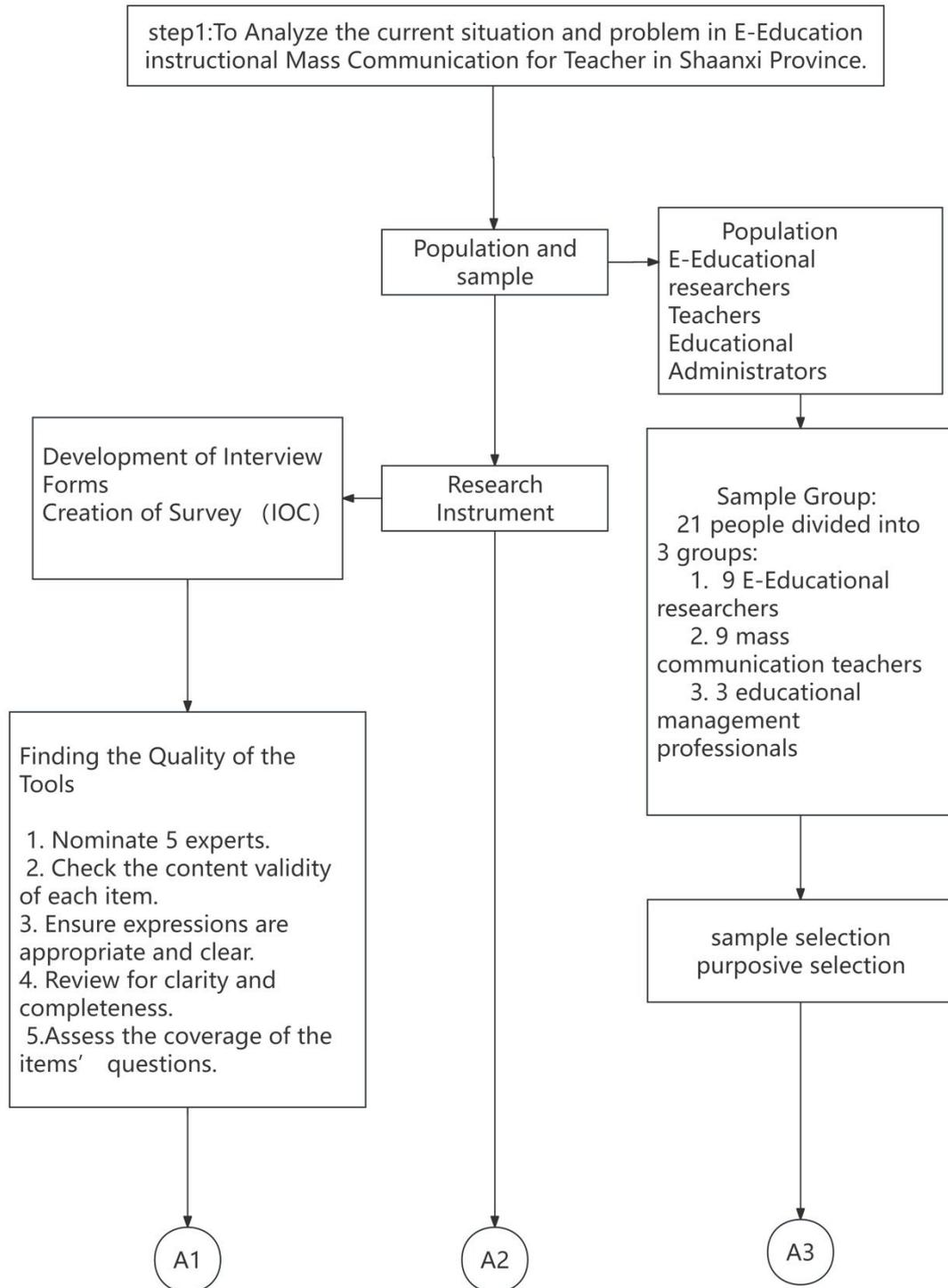
The primary objective of this study is to integrate advanced evaluation methods, supported by relevant theories and model development paradigms, to create a comprehensive evaluation model for E-Education instructional practices in mass communication in Shaanxi Province. This model helps educators identify and address issues within the teaching process, providing measures to improve educational outcomes in E-Education environments. The study utilizes interviews and questionnaires to understand the current state and needs of E-Education in mass communication and employs the Delphi method and expert consultations to design a comprehensive evaluation model tailored to this context.

This study has three core objectives. The first objective is to analyze the existing problems and solutions in the current E-Education instructional practices in mass communication within Shaanxi Province. The second objective is to design an evaluation model specifically for these instructional practices. The third objective is to evaluate the effectiveness of the developed evaluation model. Together, these objectives form the framework of the research methodology employed in this study. The following sections provide detailed insights into the research methodology, outlining the research design, data collection strategies, and analytical techniques used to achieve these objectives and address the core research questions.

Step 1: To Analyze the current situation and problem in E-Education instructional Mass Communication in Shaanxi Province.

Step 2: To Design Evaluation Model of E-Education instructional Mass Communication for Teacher in Shaanxi Province

Step 3: To Evaluate Model of E-Education Instructional Mass Communication in Shaanxi Province.



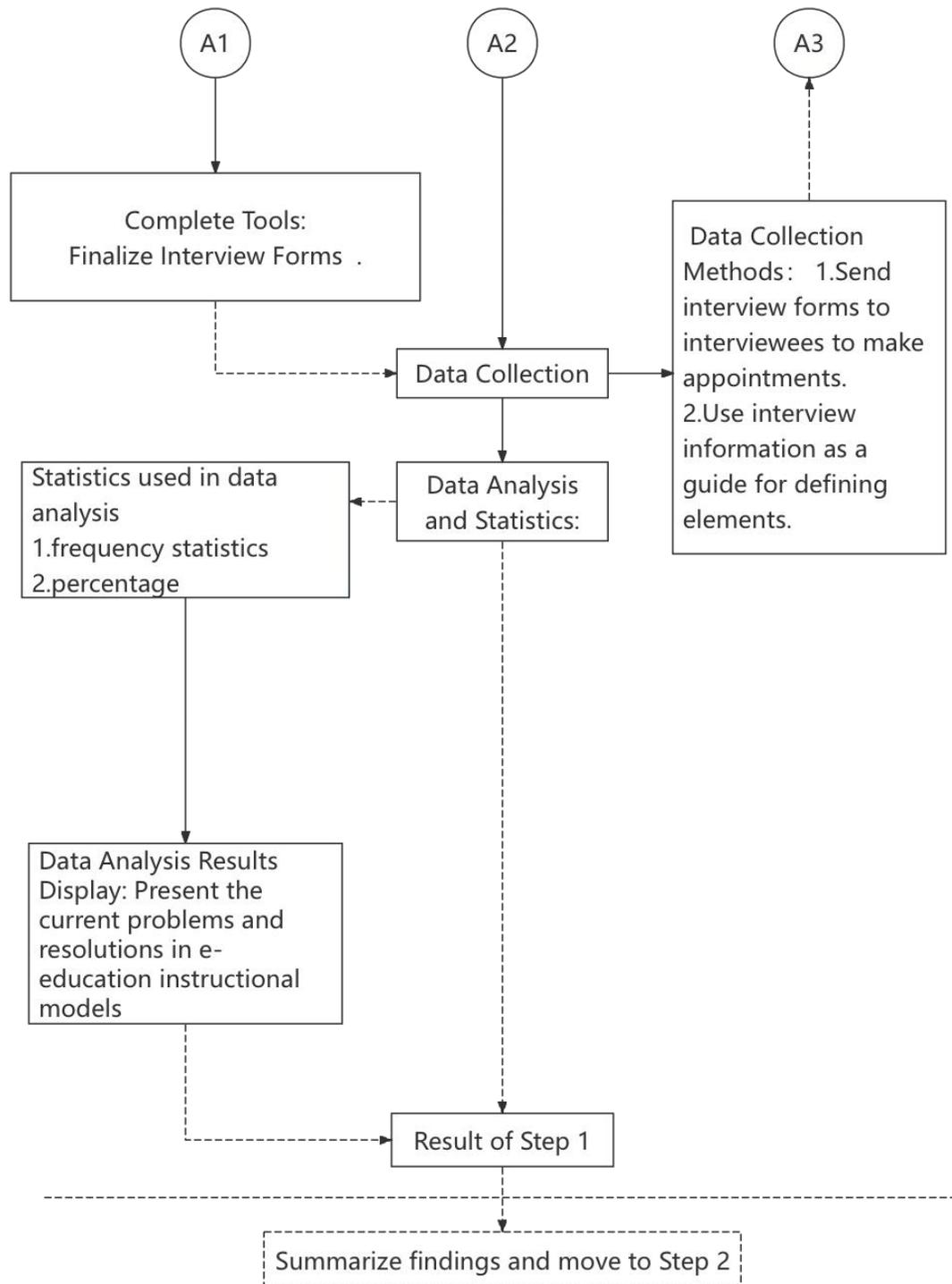


Figure 3.1 Details of the research process step 1

Step 1 effectively addresses objective 1. Specifically, This stage aims to gain an in-depth understanding of the current problems and solutions related to the instructional practices of E-Education in mass communication within Shaanxi Province. As shown in Figure 3.1, the research implementation details cover four main components: selection of target groups and samples, use of research tools, data collection process, and data analysis and statistical methods.

The sample consists of 21 individuals, including E-Educational researchers, mass communication teachers, and educational management personnel.

The Sample Group

Sample Group:

1. 21 participants conducted the analysis, divided into 3 groups:

(1) 9 E-Educational researchers: Experts focusing on the research and practice of digital education and instructional methods who can provide valuable insights into the design and implementation of evaluation Model in this study. They have at least 10 years of work experience.

(2) 9 mass communication teachers: Teachers responsible for imparting communication theories and practical skills to students, providing essential feedback on how to improve instructional content and methods for the research. They also have a minimum of 10 years of work experience.

(3) 3 educational management professionals: Experts capable of providing insights on education policies, resource allocation, and quality assurance, supporting the evaluation and improvement of instructional Model in this research. They have at least 10 years of experience.

2. 5 experts evaluated the interview form and questionnaire. They are experienced in higher education institutions, proficient in conducting interviews and investigations, and hold a professor title or a doctoral degree with over 15 years of experience in education, teaching, or related fields.

Research Instruments

1. The researchers began by creating an interview form based on the research and analysis of relevant foundational data. An interview framework related to the elements of the evaluation Model was established to solicit expert opinions. The framework is divided into two parts:

Part One: Interviewee Identity

Part Two: Guidelines for Thematic Opinion Interviews

2. The interview method was adopted to gather opinions from interviewees, with feedback submitted for review and improvement based on suggestions.

3. The interview form was then reviewed by 5 experts to check the effectiveness of each item and the appropriateness of the language. It was further refined to ensure clarity, completeness, and coverage of the questions before being used in actual interviews.

Data Collection Process

The research expert survey questionnaire required respondents to indicate the extent to which each statement reflected their attitude, viewpoint, and feelings. Each statement was measured using a Likert five-point scale:

5 = Strongly Agree

4 = Agree

3 = Neutral

2 = Disagree

1 = Strongly Disagree

as shown in the Table 3.1.

Table 3.1 Measurement scale

Perception level	Score
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

The data collection process included the following steps:

Identifying the 21 experts for the survey.

Developing an expert interview form.

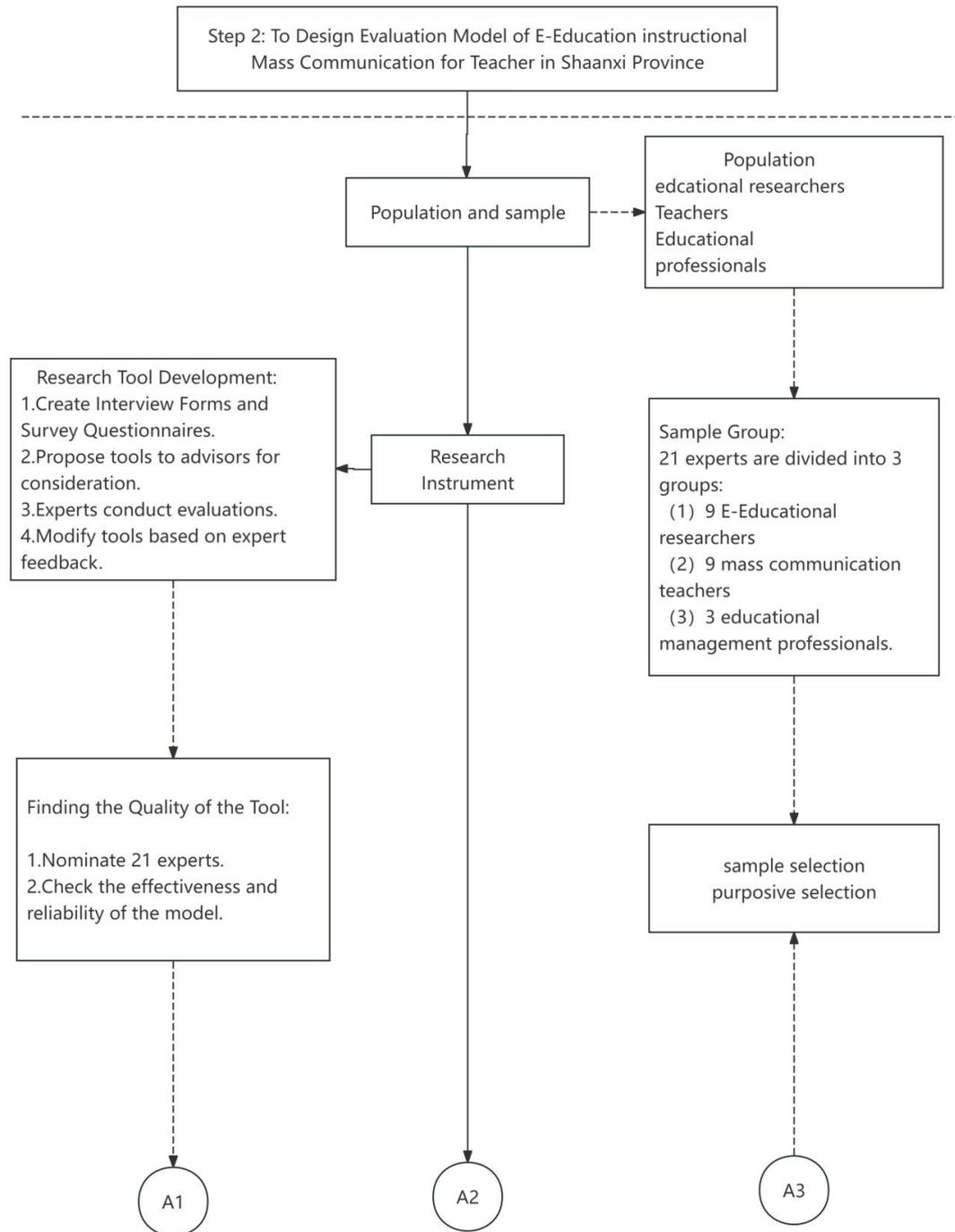
Inviting 5 experts to test the inter-observer consistency index (IOC) of the questionnaire and refining the questionnaire based on expert feedback. An IOC value greater than 0.5 is considered valid.

Contacting interviewees to schedule appointments for note-taking and recording. Before concluding the interview, interviewees were asked to confirm the content.

Organizing the interview results and drafting expert investigation reports.

Data Analysis and Statistical Methods

Based on expert interview opinions, this analysis aims to identify the problems, solutions, and influencing factors affecting E-Education instructional practices, providing data support for Objective 1 and laying the groundwork for Objective 2 (developing evaluation Model).



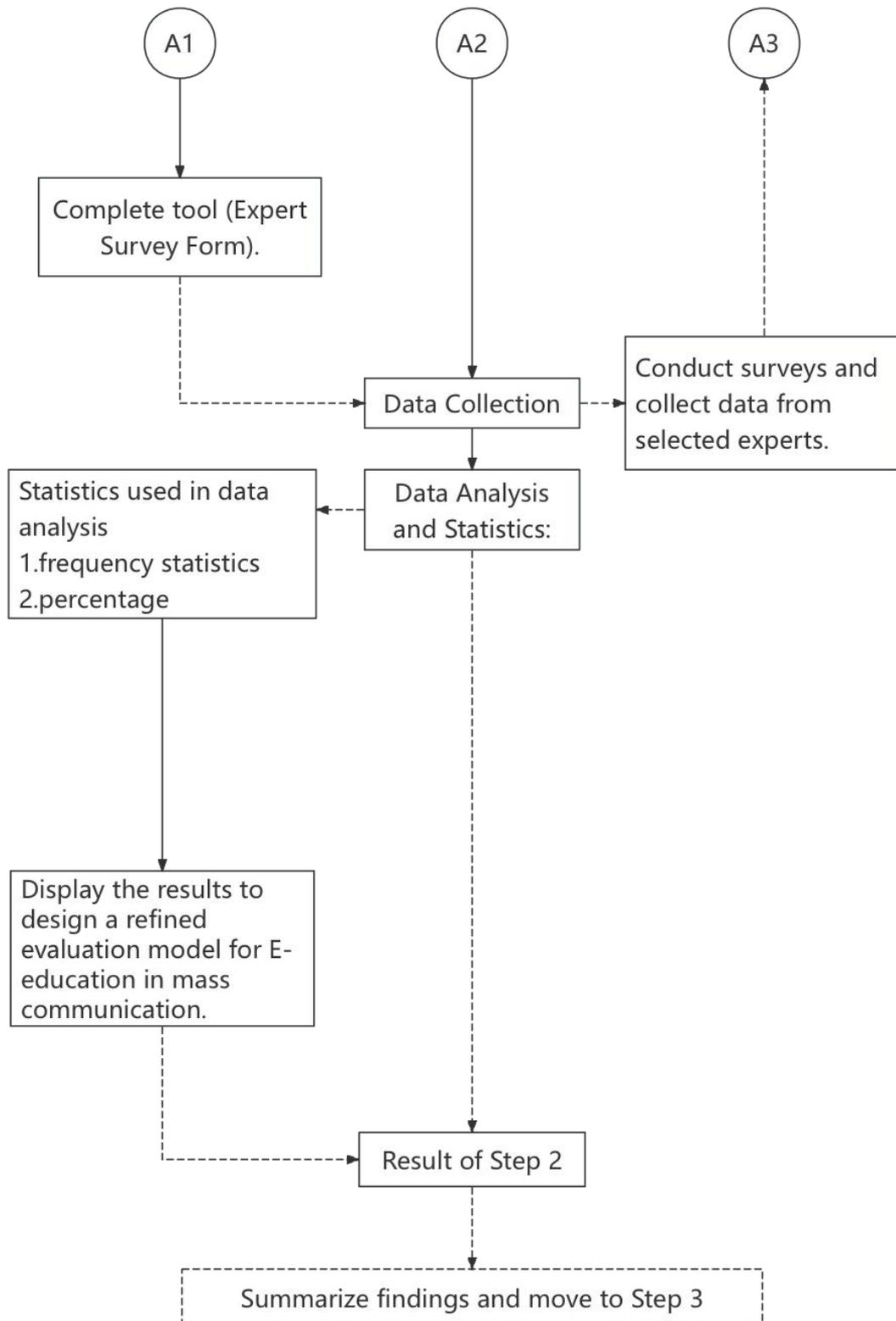


Figure 3.2 Details of the research process step 2

In Step 2, the researcher aims to achieve Objective 2. As shown in Figure 3.2, this research stage includes four key components: target population and sample selection, application of research tools, data collection process, and data analysis and statistical methods. The goal of this step is to design a comprehensive evaluation model for E-Education instructional practices through multiple rounds of surveys and expert consultations.

Population and Sample Group:

The population consists of 21 individuals, including research experts, teachers, and educational management personnel. The sample group is divided into three categories:

1. 9 E-Education researchers: These experts focus on the research and practice of digital education and instructional methods, providing valuable insights into the design and implementation of evaluation Model. All have at least 10 years of experience in their field.

2. 9 mass communication teachers: Teachers specializing in media and communication courses are responsible for imparting theoretical and practical skills to students. They offer essential feedback on enhancing instructional content and methods in this research. All have at least 10 years of experience.

3. 3 educational management professionals: These professionals offer insights into education policies, resource allocation, and quality assurance, supporting the evaluation and improvement of instructional Model in this study. All have at least 10 years of experience.

Research Instruments:

The tools used in this research include proposed Model and evaluation forms. The procedure for creating these tools is outlined below:

1. Sending Invitation Letters and Distributing Questionnaires: The researchers obtained contact information for 21 experts with extensive experience in education, media communication, and educational management from universities and research

institutes in Shaanxi Province, China. Invitation letters and questionnaires were distributed to these experts. The questionnaire primarily included details such as the research title, objectives, specific content, and questions.

2. Expert Survey: The 21 experts were asked to provide feedback on the proposed Model. Feedback was categorized into three levels: "agree," "disagree," and "partially agree." If an expert selected "disagree" or "partially agree," they were required to provide an explanation.

3. Improving the Model: Based on the expert survey feedback, the researchers further refined the proposed evaluation model to ensure it meets the needs and expectations of the field.

Data Collection Process

1. Expert Opinions Selected through the Delphi Method: The Delphi method was employed to gather expert opinions in a structured manner, ensuring anonymity to minimize personal bias and influence.

2. Multiple Iterations and Re-evaluations: In each round, experts were asked to re-evaluate the model after receiving a summary of the feedback from the previous round. This iterative process continued until expert opinions gradually converged and a consensus was reached. Identifiable information was removed to maintain the anonymity of each round.

3. Analyzing Results and Reaching Consensus: Based on the results of each round, changes in expert opinions and trends toward consensus were analyzed. Consensus was typically reached after several rounds when expert opinions converged.

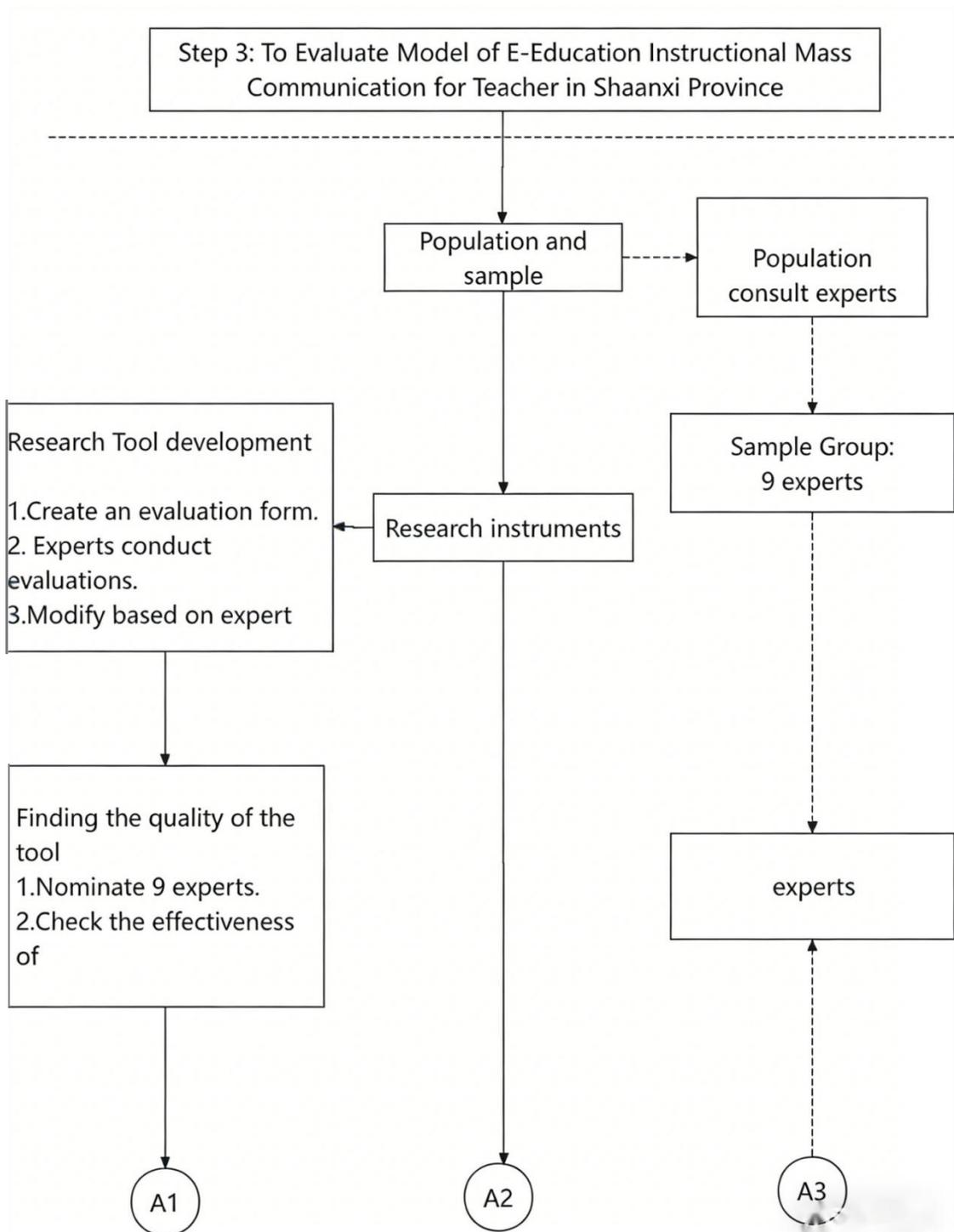
4. Multiple Rounds of Investigation: The expert survey was concluded when opinions stabilized or consensus was achieved. Finally, the results and summaries were shared with the participating experts.

5. Summarizing the Application: The expert survey results were summarized and explained, and an evaluation model for E-Education instructional in mass communication was designed based on the survey findings.

Data Analysis and Statistical Methods

1. Mean and Standard Deviation Analysis: The mean and standard deviation of expert opinions were analyzed to assess the consistency of evaluations across different rounds and determine whether expert opinions were diverging or converging.

2. Variance Analysis: Variance analysis was conducted on expert feedback to identify which factors significantly influenced the differences in results. This analysis provided a basis for refining and improving the evaluation model.



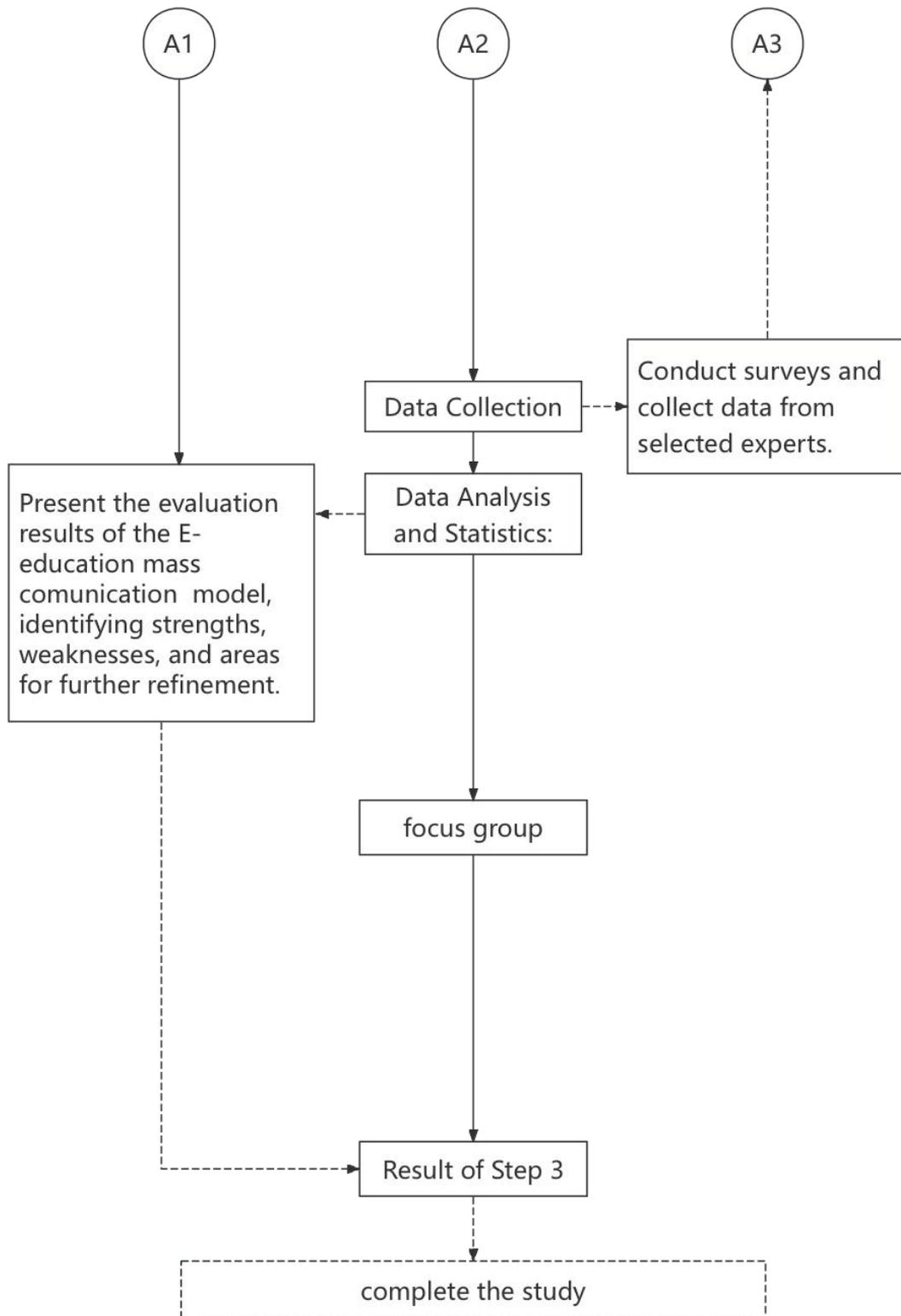


Figure 3.3 Details of the research process step 3

Step 3 achieves Objective 3. As shown in Figure 3.3, this research stage includes four key components: target population and sample selection, application of research tools, data collection process, and data analysis and statistical methods. The researchers aimed to build an effective evaluation model for E-Education instructional practices with the help of expert evaluations.

Population and Sample Selection:

A targeted sampling method was used to select experts from relevant universities and research institutions in Shaanxi Province, China. These experts were chosen based on their extensive experience and significant achievements in the fields of education, media communication, and educational management. The selected experts include 3 E-Educational researchers, 4 mass communication teachers, and 2 educational management professionals. The qualifications of these 9 experts were as follows:

1. Must have been engaged in university work for at least 15 years.
2. Must hold a senior professional title or a doctoral degree.
3. Must have participated in relevant research on E-Education and demonstrated strong academic achievements.
4. Must be willing to participate in recorded interviews and review their interview records for verification.

Research Instruments:

The tool used in this research was an evaluation interview. The procedure for creating the tool is outlined below:

1. Develop an Evaluation Interview Form: This form includes objectives and plans, the model's design process, and a description of the model's results.
2. Expert Assessment: 5 experts assess the model using the options "Agree," "Disagree," and "Partially Agree." Explanations are required for "Disagree" and "Partially Agree" choices.

3. Optimize the Model: Further refine and optimize the model based on feedback received from the expert survey.

Data Collection

The data collection was conducted using the CIPP (Context, Input, Process, Product) evaluation form:

1. Conduct Interviews with 9 Experts: Interviews were conducted via the Internet, telephone, or face-to-face to gather expert evaluations.

2. Expert Evaluation: In each round of interviews, experts were asked to re-evaluate the model after reviewing a summary of feedback from the previous round. Throughout the interview process, each round of expert surveys was kept anonymous to minimize personal bias and influence. After multiple rounds of iteration, expert opinions gradually converged, and a consensus was reached. The expert investigation was then concluded, and final results and summaries were provided to the participating experts.

3. Summarize the Application: Summarize and explain the expert survey results, and optimize the evaluation model for E-Education instructional practices based on the survey feedback.

Data Analysis and Statistical Methods

Using the CIPP model, frequency statistics and analysis were conducted on the evaluation data to determine the quality and rationality of the model design. Expert suggestions were summarized to further optimize the model.

Summary

This research is divided into three phases, completed sequentially in chronological order:

Phase One: Through literature analysis, expert interviews, and questionnaire surveys, analyze the current problems and potential solutions in E-Education instructional practices in mass communication, achieving Objective 1.

Phase Two: Achieve Objective 2 by using the Delphi method to develop an evaluation model tailored to improve E-Education instructional practices in mass communication.

Phase Three: Achieve Objective 3 through expert interviews, evaluating the effectiveness and viability of the evaluation model for E-Education instructional practices using the CIPP evaluation model.

These phases ensure a comprehensive approach to developing and validating a robust evaluation model for enhancing the quality of E-Education instructional practices in Shaanxi Province.

Chapter 4

Results of Analysis

In the study "Evaluation Model of E-Education Instructional Mass Communication in Shaanxi Province", the researcher conducted three sub-studies according to the established process and conducted detailed analysis and presentation of the collected data:

Part 1: To analyze the current problems, countermeasures and influencing factors of E-Education instructional mass communication in Shaanxi Province.

This part systematically analyzed the questionnaire and interview data from 21 experts, identifying core issues in E-Education instructional mass communication in Shaanxi Province, such as insufficient digital literacy of teachers, low quality of teaching content, and imperfect assessment and feedback mechanisms. It also extracted 120 targeted improvement strategies and identified 20 key influencing factors, including teaching method innovation, learner characteristics, and resource support. The analysis showed that experts reached a high consensus on most issues and strategies (e.g., 90% of experts agreed on the problem of teaching content quality), with only minor disagreements on a few dimensions such as adaptability in rural areas, laying a practical and data-driven foundation for subsequent model design. Through the triple analysis of problems, countermeasures, and influencing factors, this part not only revealed the pain points of current E-Education instructional mass communication in Shaanxi but also constructed a logical framework of "problems-countermeasures-influencing factors," providing direct references for selecting model dimensions.

Part 2: To design the Evaluation Model of E-Education instructional Mass Communication for Teacher in Shaanxi Province.

Based on the results of Part 1, combined with literature review and systems thinking, this part constructed the "E-Education Instructional Mass Communication Evaluation Model (EIMCEM)," covering 8 core dimensions: Teaching Input, Learner

Characteristics, Instructional Content, Teaching Environment, Teaching Process, Learning Outcomes, Support System, and Policy & Evaluation, with 3 specific indicators for each dimension, forming a multi-level evaluation system. Through two rounds of Delphi expert consultation (involving 21 experts), the model iterated from the initial framework to an optimized version: in the first round, 3 experts proposed suggestions such as adding dimension correlation arrows and strengthening industry characteristics; in the second round, all experts approved the revised model, reaching 100% consensus. The model design strictly followed the logic of "problem-oriented dimension extraction-expert validation," ensuring that each dimension highly matched the previously identified problems and influencing factors. For example, the "Instructional Content" dimension emphasized the integration of mass communication industry cases, and the "Support System" dimension included indicators of resource accessibility in rural areas, reflecting targeted responses to the local context of Shaanxi Province.

Part 3: To evaluate the Evaluation Model of E-Education instructional Mass Communication for Teacher in Shaanxi Province.

This part adopted the CIPP evaluation model (Context, Input, Process, Product) and invited 9 experts with rich experience to evaluate the effectiveness and feasibility of the EIMCEM model. The evaluation results showed that experts reached full consensus (all 9 experts agreed) on the model's contextual adaptability, input comprehensiveness, process rationality, and outcome effectiveness, believing that the model could fully cover the key evaluation elements of E-Education instructional mass communication in Shaanxi Province and had strong operability. Experts particularly affirmed the model's consideration of "mass communication industry characteristics" and "local adaptability," while suggesting further optimization by incorporating more student feedback channels and strengthening cooperation with the industry to update evaluation indicators according to industry developments. This evaluation not only verified the scientificity and applicability of the model but also clarified the iteration direction of the model through expert suggestions,

providing practical guidance for subsequent promotion and application in universities in Shaanxi Province.

Data Analysis Results

Md refers to the Median

Mo refers to the Mode

IQR refers to the Inter-Quartile Range

Part 1: Analysis of Current Problems, Countermeasures and Influencing Factors of E-Education Instructional Mass Communication for Teacher in Shaanxi Province

To ensure the scientificity, rationality and pertinence of the E-Education instructional evaluation model for Mass Communication teachers in Shaanxi Province, this study invited 21 experts to participate in the Delphi method consultation, which is the core link of the evaluation model construction. The personal information of the invited experts is statistically sorted out in Table 4.1, aiming to clarify the professional background, work experience and academic qualifications of the experts, verify the representativeness and authority of the expert group, and provide a reliable basis for the rationality of the subsequent expert consultation results and the scientificity of the evaluation model. The specific information of the experts is shown in the following Table 4.1.

Table 4.1 Personal Information of 21 Experts

Item	Personal Information	No. of People	Percentage
Gender	Male	15	71%
	Female	6	29%
Position	E-Education researcher	9	43%
	Mass communication teacher	9	43%
	Educational management professional	3	14%
Work experience	11 to 15 years	6	29%
	more than 16 years	15	71%
Level of Education	Master's degree	5	24%
	Ph.D.	16	76%
Professional Title	Professor	13	62%
	Associate Professor	8	38%
Total		21	100%

According to Table 4.1, the expert members surveyed in this study accounted for 71% of men and 29% of women. The distribution of positions is relatively balanced, with E-Education researchers and mass communication teachers each accounting for 43%, and educational management professionals accounting for 14%. The group is highly experienced, with 71% having over 16 years of work experience. In terms of education, the majority (76%) have obtained a Ph.D., and a significant number hold the title of Professor (62%). This diverse yet highly qualified and experienced group provides a robust basis for the survey's findings and recommendations.

Results for Round 1

The current problems, countermeasures and influencing factors of E-Education instructional mass communication

Based on relevant theories and literature review, we analyzed the problems faced by E-Education instructional mass communication in Shaanxi Province from ten aspects: teaching method, digital literacy of teachers and students, content quality of E-Education materials, learning environment, assessment and feedback mechanisms, student motivation and engagement, instructor competence in E-Education, resource allocation and support, policy and regulatory framework, evaluation model efficacy, with a total of 20 questions. Through a questionnaire survey of 21 respondents, the following conclusions were drawn, as shown in Table 4.2.

Table 4.2 Problems in E-Education instructional mass communication

Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
1. Teaching method is outdated and lacks innovation	17 (81%)	3 (14%)	1 (5%)	0 (0%)	0 (0%)	21
2. Digital literacy of teachers is insufficient	18 (86%)	2 (10%)	1 (4%)	0 (0%)	0 (0%)	21
3. Digital literacy of students is uneven	16 (76%)	4 (19%)	1 (5%)	0 (0%)	0 (0%)	21
4. Content quality of E-Education materials is low	19 (90%)	2 (10%)	0 (0%)	0 (0%)	0 (0%)	21
5. Learning environment is not conducive to interaction	15 (71%)	5 (24%)	1 (5%)	0 (0%)	0 (0%)	21
6. Assessment and feedback mechanisms are imperfect	18 (86%)	3 (14%)	0 (0%)	0 (0%)	0 (0%)	21

Table 4.2 (Continued)

Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
7. Student motivation and engagement are low	17 (81%)	3 (14%)	1 (5%)	0 (0%)	0 (0%)	21
8. Instructor competence in E-Education is lacking	16 (76%)	4 (19%)	1 (5%)	0 (0%)	0 (0%)	21
9. Resource allocation and support are inadequate	19 (90%)	2 (10%)	0 (0%)	0 (0%)	0 (0%)	21
10. Policy and regulatory framework is not perfect	15 (71%)	5 (24%)	1 (5%)	0 (0%)	0 (0%)	21
11. Evaluation model efficacy is not ideal	18 (86%)	3 (14%)	0 (0%)	0 (0%)	0 (0%)	21
12. Lack of integration of multimedia tools in teaching	17 (81%)	3 (14%)	1 (5%)	0 (0%)	0 (0%)	21
13. Online collaboration platforms are not fully utilized	16 (76%)	4 (19%)	1 (5%)	0 (0%)	0 (0%)	21
14. Students' critical thinking ability is not fully developed	18 (86%)	3 (14%)	0 (0%)	0 (0%)	0 (0%)	21
15. Media literacy education is insufficient	19 (90%)	2 (10%)	0 (0%)	0 (0%)	0 (0%)	21

Table 4.2 (Continued)

Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
16. Course design does not meet the needs of mass communication	16 (76%)	4 (19%)	1 (5%)	0 (0%)	0 (0%)	21
17. Lack of practical training in digital content creation	18 (86%)	3 (14%)	0 (0%)	0 (0%)	0 (0%)	21
18. Inadequate teacher training in E-Education	17 (81%)	3 (14%)	1 (5%)	0 (0%)	0 (0%)	21
19. Poor adaptability of E-Education to rural areas	15 (71%)	5 (24%)	1 (5%)	0 (0%)	0 (0%)	21
20. Lack of effective supervision of E-Education quality	19 (90%)	2 (10%)	0 (0%)	0 (0%)	0 (0%)	21

The first round of Delphi consultation was carried out around the three core research objectives of this study, focusing on collecting experts' opinions on the current situation, existing problems and initial evaluation model framework of E-Education instructional Mass Communication for teachers in Shaanxi Province. All 21 invited experts participated in the consultation, achieving a 100% response rate, which ensured the comprehensiveness and representativeness of the consultation results and laid a solid foundation for the subsequent achievement of the three research objectives. The main results of the first round of consultation are as follows:

First, regarding the first research objective (analyzing the current situation and problems), the experts sorted out and confirmed the core problems of E-Education

instructional Mass Communication for teachers in Shaanxi Province through questionnaire feedback. The key problems cover ten aspects: outdated and non-innovative teaching methods, insufficient digital literacy of teachers, uneven digital literacy of students, low quality of E-Education materials, learning environment not conducive to interaction, imperfect assessment and feedback mechanisms, low student motivation and engagement, lack of instructors' E-Education competence, inadequate resource allocation and support, and imperfect policy and regulatory framework. Among them, 90% of the experts strongly agreed that the quality of E-Education materials is low, resource allocation and support are inadequate, media literacy education is insufficient, and there is a lack of effective supervision of E-Education quality, indicating that these four aspects are the most prominent problems; 86% of the experts strongly agreed that teachers' digital literacy is insufficient, assessment and feedback mechanisms are imperfect, students' critical thinking ability is not fully developed, and there is a lack of practical training in digital content creation, which are key problems affecting the effect of E-Education instruction. These results provide clear direction and basis for further analyzing the current situation and in-depth digging into the root causes of problems.

Second, focusing on the second research objective (designing the evaluation model), the experts put forward 32 modification suggestions for the initial evaluation index system proposed by the research team, covering five core dimensions closely related to the model design: digital literacy of Mass Communication teachers, integration of digital tools in E-Education instruction, usability of E-Education platforms, practical skills training and industry alignment, and institutional support for E-Education. Specifically, 9 E-Education researchers focused on optimizing the indicators of E-Education platform usability and data-driven evaluation, suggesting adding indicators reflecting the application effect of intelligent platforms (such as virtual simulation platforms) in Mass Communication courses; 9 Mass Communication teachers emphasized strengthening the correlation between evaluation indicators and professional characteristics, proposing to increase indicators related to critical digital literacy and new media operation ability that conform to the professional

requirements of Mass Communication; 3 educational management professionals put forward suggestions on improving the operability of evaluation indicators, reminding to consider the regional differences of E-Education in Shaanxi Province to avoid setting unrealistic evaluation standards. At the same time, 86% of the experts (18 out of 21) reached a preliminary consensus that the evaluation model should adopt a "human-intelligence dual evaluation" paradigm, integrating expert experience (human evaluation) and intelligent data analysis (intelligence evaluation), and proposed that the weight of indicators related to instructional effect and professional practice should account for no less than 40% of the total weight, which laid the core framework for the subsequent model design.

Third, in response to the third research objective (evaluating the model), the experts put forward preliminary suggestions on the model evaluation plan. Combined with their own work experience (71% of experts have more than 16 years of work experience) and academic background (76% have Ph.D. degrees), the experts suggested that after the model is designed, it should be tested and evaluated in 3-5 universities in Shaanxi Province with different types of Mass Communication majors, and the evaluation indicators should include model operability, pertinence and effectiveness. At the same time, it was proposed that the second round of consultation should focus on verifying the rationality of the modified evaluation indicators, determining the specific weight of each indicator, and further improving the scientificity of the model, so as to provide a reliable basis for the subsequent model evaluation.

In summary, the first round of Delphi consultation has achieved the expected goal, which not only clarified the current situation and key problems of E-Education instructional Mass Communication for teachers in Shaanxi Province (supporting the first research objective), but also optimized the initial framework of the evaluation model (laying the foundation for the second research objective) and put forward preliminary suggestions for model evaluation (providing ideas for the third research objective). These results provide strong support for the smooth advancement of the follow-up research work.

Effective strategies for improving E-Education instructional mass communication

Table 4.3 Teaching method is outdated and lacks innovation

Effective strategies to improve outdated and less innovative teaching methods
1. Promote flipped classroom teaching mode
2. Introduce project-based learning
3. Adopt case teaching method combining with mass communication cases
4. Integrate interactive teaching software
5. Develop educational games related to mass communication
6. Carry out online and offline mixed teaching

In summary, the online solutions include: integrate interactive teaching software, develop educational games related to mass communication. The offline solutions include: promote flipped classroom teaching mode, introduce project-based learning, adopt case teaching method combining with mass communication cases, carry out online and offline mixed teaching.

Table 4.4 Digital literacy of teachers is insufficient

Effective strategies to improve teachers' digital literacy
7. Organize regular digital literacy training for teachers
8. Invite experts to conduct special lectures on digital technology application
9. Establish teacher digital learning communities
10. Develop online digital skill learning resources for teachers
11. Carry out peer mentoring activities on digital technology
12. Encourage teachers to participate in digital education research projects

In summary, the online solutions include: establish teacher digital learning communities, develop online digital skill learning resources for teachers. The offline solutions include: organize regular digital literacy training for teachers, invite experts to conduct special lectures on digital technology application, carry out peer mentoring activities on digital technology, encourage teachers to participate in digital education research projects.

Table 4.5 Digital literacy of students is uneven

Effective strategies to address uneven digital literacy of students
13. Carry out stratified digital literacy teaching for students
14. Develop personalized digital learning plans for students
15. Establish online student digital literacy assessment system
16. Provide after-school digital skill counseling
17. Organize digital skill competitions among students
18. Create digital learning partner groups

In summary, the online solutions include: establish online student digital literacy assessment system. The offline solutions include: carry out stratified digital literacy teaching for students, develop personalized digital learning plans for students, provide after-school digital skill counseling, organize digital skill competitions among students, create digital learning partner groups.

Table 4.6 Content quality of E-Education materials is low

Effective strategies to improve the quality of E-Education materials
19. Establish a content review committee for E-Education materials
20. Invite industry experts to participate in material development
21. Update E-Education materials regularly based on industry developments
22. Integrate real-time mass communication cases into materials
23. Develop multimedia E-Education materials (video, audio, animation)
24. Collect feedback from teachers and students on materials

In summary, the online solutions include: integrate real-time mass communication cases into materials, develop multimedia E-Education materials, collect feedback from teachers and students on materials. The offline solutions include: establish a content review committee for E-Education materials, invite industry experts to participate in material development, update E-Education materials regularly based on industry developments.

Table 4.7 Learning environment is not conducive to interaction

Effective strategies to improve the interactive learning environment
25. Optimize online learning platforms to enhance interaction functions
26. Design interactive learning activities (discussions, debates, etc.)
27. Arrange regular online tutoring sessions
28. Establish learning groups to promote collaboration
29. Use video conferencing tools for real-time interaction
30. Encourage teachers to respond to students' questions in a timely manner

In summary, the online solutions include: optimize online learning platforms to enhance interaction functions, use video conferencing tools for real-time interaction. The offline solutions include: design interactive learning activities, arrange regular online tutoring sessions, establish learning groups to promote collaboration, encourage teachers to respond to students' questions in a timely manner.

Table 4.8 Assessment and feedback mechanisms are imperfect

Effective strategies to improve assessment and feedback mechanisms
31. Develop a diversified assessment system (formative assessment + summative assessment)
32. Use online assessment tools to automate grading
33. Provide detailed feedback on students' work
34. Establish a regular feedback mechanism between teachers and students
35. Encourage peer assessment among students
36. Conduct mid-term and final assessment reviews

In summary, the online solutions include: use online assessment tools to automate grading. The offline solutions include: develop a diversified assessment system, provide detailed feedback on students' work, establish a regular feedback mechanism between teachers and students, encourage peer assessment among students, conduct mid-term and final assessment reviews.

Table 4.9 Student motivation and engagement are low

Effective strategies to improve student motivation and engagement
37. Design interesting and challenging learning tasks
38. Establish a reward mechanism for active students
39. Connect learning content with real-life mass communication phenomena
40. Use gamification elements in E-Education (points, badges, etc.)
41. Invite outstanding alumni to share learning experiences
42. Organize offline learning exchange activities

In summary, the online solutions include: use gamification elements in E-Education. The offline solutions include: design interesting and challenging learning tasks, establish a reward mechanism for active students, connect learning content

with real-life mass communication phenomena, invite outstanding alumni to share learning experiences, organize offline learning exchange activities.

Table 4.10 Instructor competence in E-Education is lacking

Effective strategies to improve instructor competence in E-Education
43. Provide specialized training on E-Education teaching methods
44. Organize observations of excellent E-Education classes
45. Establish a mentoring system for new teachers in E-Education
46. Encourage teachers to participate in E-Education teaching competitions
47. Develop a competency evaluation system for E-Education instructors
48. Support teachers to learn advanced E-Education experiences abroad

In summary, the online solutions include: organize observations of excellent E-Education classes. The offline solutions include: provide specialized training on E-Education teaching methods, establish a mentoring system for new teachers in E-Education, encourage teachers to participate in E-Education teaching competitions, develop a competency evaluation system for E-Education instructors, support teachers to learn advanced E-Education experiences abroad.

Table 4.11 Resource allocation and support are inadequate

Effective strategies to improve resource allocation and support
49. Increase investment in E-Education infrastructure
50. Establish a shared resource platform for E-Education
51. Provide technical support for E-Education platforms
52. Allocate special funds for E-Education material development
53. Strengthen cooperation with enterprises to obtain resources
54. Prioritize resource allocation to rural and remote areas

In summary, the online solutions include: establish a shared resource platform for E-Education. The offline solutions include: increase investment in E-Education infrastructure, provide technical support for E-Education platforms, allocate special funds for E-Education material development, strengthen cooperation with enterprises to obtain resources, prioritize resource allocation to rural and remote areas.

Table 4.12 Policy and regulatory framework is not perfect

Effective strategies to improve the policy and regulatory framework
55. Formulate special policies for E-Education development
56. Establish E-Education quality standards and evaluation criteria
57. Improve laws and regulations related to E-Education
58. Strengthen supervision and management of E-Education institutions
59. Encourage local governments to issue supporting policies
60. Establish a policy consultation mechanism for E-Education

In summary, these are mainly offline solutions: formulate special policies for E-Education development, establish E-Education quality standards and evaluation criteria, improve laws and regulations related to E-Education, strengthen supervision and management of E-Education institutions, encourage local governments to issue supporting policies, establish a policy consultation mechanism for E-Education.

Table 4.13 Evaluation model efficacy is not ideal

Effective strategies to improve evaluation model efficacy
61. Develop a comprehensive evaluation index system
62. Combine quantitative and qualitative evaluation methods
63. Involve multiple stakeholders in the evaluation process
64. Use data analytics to support evaluation decisions
65. Regularly revise and improve the evaluation model
66. Pilot test the evaluation model before full implementation

In summary, the online solutions include: use data analytics to support evaluation decisions. The offline solutions include: develop a comprehensive evaluation index system, combine quantitative and qualitative evaluation methods, involve multiple stakeholders in the evaluation process, regularly revise and improve the evaluation model, pilot test the evaluation model before full implementation.

Table 4.14 Lack of integration of multimedia tools in teaching

Effective strategies to promote integration of multimedia tools in teaching
67. Train teachers on the use of multimedia tools
68. Provide multimedia production equipment and software
69. Develop multimedia teaching cases for mass communication
70. Encourage teachers to create multimedia teaching resources
71. Establish a sharing platform for multimedia teaching resources
72. Evaluate the application effect of multimedia tools in teaching

In summary, the online solutions include: establish a sharing platform for multimedia teaching resources. The offline solutions include: train teachers on the use of multimedia tools, provide multimedia production equipment and software, develop multimedia teaching cases for mass communication, encourage teachers to create multimedia teaching resources, evaluate the application effect of multimedia tools in teaching.

Table 4.15 Online collaboration platforms are not fully utilized

Effective strategies to promote the use of online collaboration platforms
73. Train teachers and students on platform operation
74. Design collaborative learning tasks suitable for the platform
75. Establish rules and norms for platform use
76. Encourage cross-school collaboration through the platform
77. Evaluate the effectiveness of platform use
78. Update and upgrade the platform based on user feedback

In summary, the online solutions include: encourage cross-school collaboration through the platform, update and upgrade the platform based on user feedback. The offline solutions include: train teachers and students on platform operation, design collaborative learning tasks suitable for the platform, establish rules and norms for platform use, evaluate the effectiveness of platform use.

Table 4.16 Students' critical thinking ability is not fully developed

Effective strategies to develop students' critical thinking ability
79. Design problem-solving tasks that require critical thinking
80. Organize debates on mass communication issues
81. Guide students to analyze and evaluate media reports
82. Encourage students to put forward different viewpoints
83. Integrate critical thinking training into courses
84. Evaluate students' critical thinking ability

In summary, these strategies involve both online and offline: design problem-solving tasks that require critical thinking, organize debates on mass communication issues, guide students to analyze and evaluate media reports, encourage students to

put forward different viewpoints, integrate critical thinking training into courses, evaluate students' critical thinking ability.

Table 4.17 Media literacy education is insufficient

Effective strategies to strengthen media literacy education
85. Add media literacy courses to the curriculum
86. Develop media literacy teaching materials
87. Invite media professionals to give lectures
88. Organize media observation and practice activities
89. Use case studies to teach media literacy
90. Evaluate students' media literacy level

In summary, these strategies involve both online and offline: add media literacy courses to the curriculum, develop media literacy teaching materials, invite media professionals to give lectures, organize media observation and practice activities, use case studies to teach media literacy, evaluate students' media literacy level.

Table 4.18 Course design does not meet the needs of mass communication

Effective strategies to improve course design
91. Conduct a survey on the needs of mass communication industry
92. Invite industry experts to participate in course design
93. Adjust course content based on industry developments
94. Integrate practical projects into course design
95. Establish a course design feedback mechanism
96. Evaluate the suitability of course design

In summary, these strategies involve both online and offline: conduct a survey on the needs of mass communication industry, invite industry experts to participate in course design, adjust course content based on industry developments, integrate practical projects into course design, establish a course design feedback mechanism, evaluate the suitability of course design.

Table 4.19 Lack of practical training in digital content creation

Effective strategies to strengthen practical training in digital content creation
97. Set up digital content creation workshops
98. Provide digital content creation tools and software
99. Organize digital content creation competitions
100. Cooperate with media companies to provide internships
101. Develop practical training modules for digital content creation
102. Evaluate students' digital content creation skills

In summary, these strategies involve both online and offline: set up digital content creation workshops, provide digital content creation tools and software, organize digital content creation competitions, cooperate with media companies to provide internships, develop practical training modules for digital content creation, evaluate students' digital content creation skills.

Table 4.20 Inadequate teacher training in E-Education

Effective strategies to improve teacher training in E-Education
103. Develop a systematic teacher training plan
104. Invite experts in E-Education to conduct training
105. Organize training sessions on E-Education platforms and tools
106. Provide online training resources for teachers
107. Establish a training effect evaluation mechanism
108. Encourage teachers to share training experiences

In summary, the online solutions include: provide online training resources for teachers. The offline solutions include: develop a systematic teacher training plan, invite experts in E-Education to conduct training, organize training sessions on E-Education platforms and tools, establish a training effect evaluation mechanism, encourage teachers to share training experiences.

Table 4.21 Poor adaptability of E-Education to rural areas

Effective strategies to improve E-Education adaptability to rural areas
109. Optimize E-Education content for rural students
110. Improve network infrastructure in rural areas
111. Provide affordable e-learning devices for rural students
112. Train rural teachers in E-Education
113. Develop offline learning resources suitable for rural areas
114. Evaluate the adaptability of E-Education in rural areas

In summary, these strategies involve both online and offline: optimize E-Education content for rural students, improve network infrastructure in rural areas, provide affordable e-learning devices for rural students, train rural teachers in E-Education, develop offline learning resources suitable for rural areas, evaluate the adaptability of E-Education in rural areas.

Table 4.22 Lack of effective supervision of E-Education quality

Effective strategies to strengthen supervision of E-Education quality
115. Establish an E-Education quality supervision committee
116. Develop E-Education quality supervision standards
117. Conduct regular inspections of E-Education institutions
118. Establish an online complaint and feedback channel
119. Publish E-Education quality evaluation results
120. Punish institutions that fail to meet quality standards

In summary, the online solutions include: establish an online complaint and feedback channel, publish E-Education quality evaluation results. The offline solutions include: establish an E-Education quality supervision committee, develop E-Education quality supervision standards, conduct regular inspections of E-Education institutions, punish institutions that fail to meet quality standards.

Influencing factors of E-Education instructional mass communication

Table 4.23 Influencing factors of E-Education instructional mass communication

Items		Influencing factors
1	Teaching-related	Teaching method innovation
2		Instructor E-Education competence
3		Curriculum design
4	Learner-related	Student digital literacy
5		Student motivation and engagement
6		Student critical thinking ability
7	Content-related	E-Education material quality
8		Integration of multimedia content
9		Practical training content
10	Environment-related	Online learning platform functionality
11		Interaction level
12		Rural adaptability
13	Support-related	Resource allocation
14		Technical support
15		Teacher training
16	Policy-related	Policy and regulatory framework
17		Quality supervision mechanism
18	Evaluation-related	Evaluation model comprehensiveness
19		Assessment and feedback effectiveness
20		Stakeholder participation in evaluation

According to Table 4.23, the key factors influencing E-Education instructional mass communication are categorized into eight main areas: Teaching-related, Learner-related, Content-related, Environment-related, Support-related, Policy-related, Evaluation-related. These factors encompass teaching method innovation, instructor competence, curriculum design, student characteristics, content quality, learning environment, resource support, policy framework, and evaluation mechanisms. Collectively, these factors underscore the comprehensive elements required for effective E-Education instructional mass communication.

Results for Round 2

The results of median, mode, and interquartile range analysis on data with current problems in E-Education instructional mass communication

Table 4.24 The results of the problems of E-Education instructional mass communication

Items	Detail Problems	Md	Mo	IQR
1	Teaching method is outdated and lacks innovation	5.0	5	1.0
2	Digital literacy of teachers is insufficient	5.0	5	0.0
3	Digital literacy of students is uneven	5.0	5	1.0
4	Content quality of E-Education materials is low	5.0	5	0.0
5	Learning environment is not conducive to interaction	4.0	5	1.0
6	Assessment and feedback mechanisms are imperfect	5.0	5	0.0
7	Student motivation and engagement are low	5.0	5	1.0
8	Instructor competence in E-Education is lacking	5.0	5	1.0
9	Resource allocation and support are inadequate	5.0	5	0.0
10	Policy and regulatory framework is not perfect	4.0	5	1.0
11	Evaluation model efficacy is not ideal	5.0	5	0.0
12	Lack of integration of multimedia tools in teaching	5.0	5	1.0
13	Online collaboration platforms are not fully utilized	5.0	5	1.0

Table 4.24 (Continued)

Items	Detail Problems	Md	Mo	IQR
14	Students' critical thinking ability is not fully developed	5.0	5	0.0
15	Media literacy education is insufficient	5.0	5	0.0
16	Course design does not meet the needs of mass communication	5.0	5	1.0
17	Lack of practical training in digital content creation	5.0	5	0.0
18	Inadequate teacher training in E-Education	5.0	5	1.0
19	Poor adaptability of E-Education to rural areas	4.0	5	2.0
20	Lack of effective supervision of E-Education quality	5.0	5	0.0

Based on the statistical results presented in Table 4.24, which summarizes the second round of expert surveys on the problems of E-Education instructional mass communication, a clear pattern of consensus and severity emerges. The data reveals that the vast majority of identified issues are considered highly critical, as reflected by the Median (Md) scores. Out of the 20 items listed, 17 received a median score of 5.0, indicating that experts overwhelmingly agree these are the most severe challenges. Notably, items such as insufficient teacher digital literacy (Item 2), low content quality (Item 4), and imperfect assessment mechanisms (Item 6) not only achieved a median of 5.0 but also recorded an Interquartile Range (IQR) of 0, signifying absolute unanimity among the experts regarding their severity.

The Interquartile Range (IQR) provides further insight into the stability and convergence of the experts' opinions. A low IQR indicates strong agreement, which is crucial for the validity of the Delphi method. In this round, 19 out of 20 items have an IQR of either 0 or 1.0, suggesting that the expert group has reached a high level of consensus after the first round of investigation. Only one item, "Poor adaptability of E-Education to rural areas" (Item 19), shows a slightly higher IQR of 2.0, coupled with a median of 4.0. This indicates that while the issue is recognized as moderately

serious, there is noticeable disagreement among experts, possibly due to varying regional experiences or contextual factors affecting rural implementation.

Based on these results, the revision strategy was rightly guided by the Median (Md) scores, as they represent the central tendency of the expert panel's judgment. Consequently, the 17 items with an Md of 5.0 have been prioritized for immediate modification and improvement. Among these, the nine items with an IQR of 0 (e.g., lack of effective supervision, insufficient media literacy education, and inadequate resource allocation) should be treated as the most urgent and non-controversial areas for intervention. The items with an Md of 4.0, while still relevant, are considered secondary and may require further investigation or context-specific solutions before being finalized in the revision plan.

Table 4.25 Identified the problems of E-Education instructional mass communication

Items	Detail Problems	Result
1	Teaching method is outdated and lacks innovation	Pass
2	Digital literacy of teachers is insufficient	Pass
3	Digital literacy of students is uneven	Pass
4	Content quality of E-Education materials is low	Pass
5	Learning environment is not conducive to interaction	Modify
6	Assessment and feedback mechanisms are imperfect	Pass
7	Student motivation and engagement are low	Pass
8	Instructor competence in E-Education is lacking	Pass
9	Resource allocation and support are inadequate	Pass
10	Policy and regulatory framework is not perfect	Modify
11	Evaluation model efficacy is not ideal	Pass
12	Lack of integration of multimedia tools in teaching	Pass
13	Online collaboration platforms are not fully utilized	Pass
14	Students' critical thinking ability is not fully developed	Pass

Table 4.25 (Continued)

Items	Detail Problems	Result
15	Media literacy education is insufficient	Pass
16	Course design does not meet the needs of mass communication	Pass
17	Lack of practical training in digital content creation	Pass
18	Inadequate teacher training in E-Education	Pass
19	Poor adaptability of E-Education to rural areas	Modify
20	Lack of effective supervision of E-Education quality	Pass

According to the survey results in Table 4.25, 21 experts were invited to conduct feasibility assessments on 20 issues in E-Education instructional mass communication. Among them, 17 were unanimously approved, and items 5, 10, 19 were modified due to low expert recognition.

Results of median, mode, and interquartile range analysis of interview data on effective improvement strategies for E-Education instructional mass communication

Due to the large number of strategies, only some representative ones are listed here.

Table 4.26 Teaching method is outdated and lacks innovation

Items	Detailed measures	Md	Mo	IQR
1	Promote flipped classroom teaching mode	5.0	5	0.0
2	Introduce project-based learning	5.0	5	0.0
3	Adopt case teaching method combining with mass communication cases	5.0	5	1.0
4	Integrate interactive teaching software	5.0	5	0.0
5	Develop educational games related to mass communication	4.0	5	1.0
6	Carry out online and offline mixed teaching	5.0	5	0.0

This table presents the second-round expert evaluation results for specific measures aimed at addressing the problem of "outdated and innovation-lacking teaching methods" in E-Education. The statistical data shows exceptionally strong consensus among experts regarding the proposed solutions. Five out of the six measures (Items 1, 2, 4, and 6) received a perfect Median (Md) score of 5.0 and an Interquartile Range (IQR) of 0, indicating that experts unanimously agree these are highly effective and appropriate strategies for modernizing teaching methods. These highly endorsed measures include promoting the flipped classroom model, introducing project-based learning, integrating interactive teaching software, and implementing blended online-offline teaching approaches.

The only measure that received slightly lower, though still positive, consensus is Item 5, "Develop educational games related to mass communication," which has a Median of 4.0 and an IQR of 1.0. While still considered a valid approach (with a Mode of 5), this relatively lower score and slightly higher IQR suggest that experts may have some reservations about the feasibility, resource intensity, or direct applicability of educational games compared to the other proposed methods. Based on these results, the revision and implementation strategy should prioritize the five measures with Md=5.0 and IQR=0 as core components of the teaching innovation plan, while treating game-based learning development as a supplementary or secondary initiative that may require more careful planning and justification.

Table 4.27 Content quality of E-Education materials is low

Items	Detailed measures	Md	Mo	IQR
1	Establish a content review committee for E-Education materials	5.0	5	0.0
2	Invite industry experts to participate in material development	5.0	5	0.0
3	Update E-Education materials regularly based on industry developments	5.0	5	0.0
4	Integrate real-time mass communication cases into materials	5.0	5	1.0
5	Develop multimedia E-Education materials (video, audio, animation)	5.0	5	0.0
6	Collect feedback from teachers and students on materials	5.0	5	0.0

This table presents expert evaluations of six measures designed to address the problem of low content quality in E-Education materials. All six measures received a perfect Median (Md) score of 5.0 and a Mode (Mo) of 5, demonstrating that experts unanimously consider these strategies highly effective and appropriate. Five out of the six measures (Items 1, 2, 3, 5, and 6) achieved an Interquartile Range (IQR) of 0, indicating absolute consensus with no divergence in expert opinions. These unanimously endorsed measures include establishing a content review committee, inviting industry experts to participate in material development, regularly updating materials based on industry developments, developing multimedia materials, and collecting feedback from teachers and students. Item 4, "Integrate real-time mass communication cases into materials," while still receiving a perfect median score of 5.0, shows a slightly higher IQR of 1.0, suggesting that although experts strongly agree on the value of this approach, there may be minor differences in opinion regarding implementation methods or priorities. Overall, the exceptionally

high consensus across all measures confirms that experts view this comprehensive set of strategies as essential for systematically improving E-Education material quality.

Table 4.28 Evaluation model efficacy is not ideal

Items	Detailed measures	Md	Mo	IQR
1	Develop a comprehensive evaluation index system	5.0	5	0.0
2	Combine quantitative and qualitative evaluation methods	5.0	5	0.0
3	Involve multiple stakeholders in the evaluation process	5.0	5	1.0
4	Use data analytics to support evaluation decisions	5.0	5	0.0
5	Regularly revise and improve the evaluation model	5.0	5	0.0
6	Pilot test the evaluation model before full implementation	4.0	5	1.0

This table displays expert evaluations of six measures aimed at improving the efficacy of evaluation models in E-Education. Five out of six measures received a perfect Median score of 5.0 and a Mode of 5, indicating strong expert agreement on their importance and effectiveness. Four measures (Items 1, 2, 4, and 5) achieved an IQR of 0, reflecting complete unanimity among experts. These core measures include developing a comprehensive evaluation index system, combining quantitative and qualitative evaluation methods, using data analytics to support evaluation decisions, and regularly revising and improving the evaluation model. Item 3, "Involve multiple stakeholders in the evaluation process," received a median of 5.0 with an IQR of 1.0, suggesting slight variation in expert opinions about which stakeholders should be prioritized or how extensively they should be involved. Item 6, "Pilot test the evaluation model before full implementation," stands out with a median of 4.0 and an IQR of 1.0, indicating that while experts recognize the value of pilot testing, they may have concerns about time constraints, resource allocation, or methodological

considerations that make this measure slightly less critical than others in the immediate improvement plan. This variation suggests that pilot testing, while still important, may be considered a secondary priority compared to the other five measures.

Table 4.29 Identified strategies to improve E-Education instructional mass communication

Items	Detailed measures	Result
Teaching method is outdated and lacks innovation		
1	Promote flipped classroom teaching mode	Pass
2	Introduce project-based learning	Pass
3	Adopt case teaching method combining with mass communication cases	Pass
4	Integrate interactive teaching software	Pass
5	Develop educational games related to mass communication	Modify
6	Carry out online and offline mixed teaching	Pass
	Content quality of E-Education materials is low	
7	Establish a content review committee for E-Education materials	Pass
8	Invite industry experts to participate in material development	Pass
9	Update E-Education materials regularly based on industry developments	Pass
10	Integrate real-time mass communication cases into materials	Pass
11	Develop multimedia E-Education materials (video, audio, animation)	Pass
12	Collect feedback from teachers and students on materials	Pass

This summary table presents the final validation results for improvement strategies addressing two specific problems in E-Education instructional mass communication. Based on a comprehensive survey involving 21 experts who evaluated 120 improvement strategies proposed for 20 identified issues, the table

shows which strategies successfully passed expert scrutiny. For the problem of "outdated teaching methods," five out of six proposed measures received a "Pass" validation, including promoting flipped classrooms, introducing project-based learning, adopting case teaching methods, integrating interactive software, and implementing blended online-offline teaching. Only one measure, "Develop educational games related to mass communication," was marked as "Modify," indicating that while the concept has merit, it requires adjustment due to relatively lower recognition from expert reviews before full implementation. For the problem of "low content quality of E-Education materials," all six proposed measures received unanimous "Pass" validation, reflecting the strong expert consensus shown in Table 4.27. The comprehensive passing of all content quality measures confirms that experts view these strategies—from establishing review committees to collecting user feedback—as a complete and well-balanced package for systematically improving material quality. Overall, the results demonstrate that except for a few strategies requiring modification due to lower expert recognition, the vast majority of proposed strategies have received high expert endorsement and are ready for implementation.

Table 4.30 Factors affecting E-Education instructional mass communication

Items	Influencing factors	Md	Mo	IQR
1	Teaching method innovation	5.0	5	0.0
2	Instructor E-Education competence	5.0	5	0.0
3	Curriculum design	5.0	5	1.0
4	Student digital literacy	5.0	5	0.0
5	Student motivation and engagement	5.0	5	1.0
6	Student critical thinking ability	5.0	5	0.0
7	E-Education material quality	5.0	5	0.0
8	Integration of multimedia content	5.0	5	1.0
9	Practical training content	5.0	5	0.0

Table 4.30 (Continued)

Items	Influencing factors	Md	Mo	IQR
10	Online learning platform functionality	4.0	5	1.0
11	Interaction level	4.0	5	1.0
12	Rural adaptability	4.0	5	2.0
13	Resource allocation	5.0	5	0.0
14	Technical support	5.0	5	0.0
15	Teacher training	5.0	5	1.0
16	Policy and regulatory framework	4.0	5	1.0
17	Quality supervision mechanism	5.0	5	0.0
18	Evaluation model comprehensiveness	5.0	5	0.0
19	Assessment and feedback effectiveness	5.0	5	0.0
20	Stakeholder participation in evaluation	5.0	5	1.0

This table presents expert evaluations of 20 key factors influencing E-Education instructional mass communication, revealing strong overall consensus on most factors. Fourteen out of twenty factors received a perfect Median score of 5.0, demonstrating that experts recognize a wide range of interconnected elements—spanning teaching methods, instructor competence, student capabilities, material quality, resources, and evaluation mechanisms—as critically important to successful E-Education implementation. Among these, nine factors achieved an IQR of 0, indicating absolute consensus on their critical nature, including teaching method innovation, instructor competence, student digital literacy, student critical thinking, material quality, practical training content, resource allocation, technical support, quality supervision, evaluation comprehensiveness, and assessment effectiveness. Five additional factors with median 5.0 showed an IQR of 1.0, including curriculum design, student motivation, multimedia content integration, teacher training, and stakeholder participation in evaluation, suggesting minor variations in expert perspectives while maintaining strong overall agreement on their importance.

Three factors—online learning platform functionality (Item 10), interaction level (Item 11), and policy and regulatory framework (Item 16)—received a median of 4.0 with an IQR of 1.0, indicating these are recognized as moderately important but perhaps secondary to the core pedagogical and resource factors. Item 12, "Rural adaptability," stands out as the only factor with an IQR of 2.0, indicating significant differences in opinions among the respondents. This notable divergence likely reflects varying regional experiences, differing resource availability across contexts, or contrasting perspectives on how to best address the unique challenges of implementing E-Education in rural areas. While the median of 4.0 confirms that experts generally acknowledge rural adaptability as a relevant concern, the high IQR suggests that consensus has not yet been reached on its relative importance compared to other factors, potentially requiring further investigation or more contextualized analysis in future research.

Table 4.31 Identified factors influencing E-Education instructional mass communication

Items	Influencing factors	Result
1	Teaching method innovation	Pass
2	Instructor E-Education competence	Pass
3	Curriculum design	Pass
4	Student digital literacy	Pass
5	Student motivation and engagement	Pass
6	Student critical thinking ability	Pass
7	E-Education material quality	Pass
8	Integration of multimedia content	Pass
9	Practical training content	Pass
10	Online learning platform functionality	Modify
11	Interaction level	Modify
12	Rural adaptability	Modify

Table 4.31 (Continued)

Items	Influencing factors	Result
13	Resource allocation	Pass
14	Technical support	Pass
15	Teacher training	Pass
16	Policy and regulatory framework	Modify
17	Quality supervision mechanism	Pass
18	Evaluation model comprehensiveness	Pass
19	Assessment and feedback effectiveness	Pass
20	Stakeholder participation in evaluation	Pass

This table presents the final validation results for 20 factors influencing E-Education instructional mass communication, based on expert evaluations from the second-round survey. The results show that 16 out of 20 factors received a "Pass" validation, indicating strong expert consensus on their critical importance in the E-Education ecosystem. These passed factors encompass a comprehensive range of elements including teaching method innovation, instructor competence, curriculum design, student digital literacy, student motivation, critical thinking abilities, material quality, multimedia content integration, practical training content, resource allocation, technical support, teacher training, quality supervision mechanisms, evaluation model comprehensiveness, assessment effectiveness, and stakeholder participation in evaluation. The high number of passed factors demonstrates that experts recognize E-Education success as dependent on a holistic combination of pedagogical, technological, human, and systemic elements working in concert.

Four factors were marked as "Modify," indicating they require adjustment or further refinement before being fully endorsed. These include online learning platform functionality (Item 10), interaction level (Item 11), rural adaptability (Item 12), and policy and regulatory framework (Item 16). The "Modify" designation for these factors reflects the nuanced expert opinions shown in Table 4.30, where these

items received median scores of 4.0 rather than 5.0, with rural adaptability showing particularly notable divergence with an IQR of 2.0. This suggests that while experts acknowledge these factors as relevant, there may be concerns about their implementation feasibility, contextual variability, or relative priority compared to other factors. These modifying factors likely require more contextualized approaches, additional research, or tailored solutions depending on specific institutional or regional circumstances before they can be fully integrated into the improvement framework.

Table 4.32 Personal Information of 5 Evaluation Experts

Item	Personal Information	Number. of People	Percentage
Gender	Male	3	60%
	Female	2	40%
Position	University teacher	3	60%
	University administrator	2	40%
	E-Education	2	40%
Research Field	Mass communication	2	40%
	Educational management	1	20%
Work experience	more than 15 years	5	100%
Level of Education	Master's degree	1	20%
	Ph.D.	4	80%
Professional Title	Professor	3	60%
	Associate Professor	2	40%

According to Table 4.32, among the five experts, there is a balanced gender distribution with men accounting for 60% and women for 40%. They include two E-Education experts, two mass communication teachers, and one university administrator. These professionals possess extensive experience in their respective

fields, each with over 15 years, highlighting their profound expertise. Academically, the group is exceptional, with 80% holding Ph.D. degrees and 20% Master's degrees, reflecting high academic achievement. Professionally, 60% are professors and 40% are associate professors, indicating that all members hold significant academic or research positions, suggesting their substantial contributions to their disciplines.

Table 4.33 Evaluation results of the lecturer interview form on Problems, Countermeasures, and Influencing Factors in E-Education instructional mass communication

Aspects Evaluated	Evaluate the Content	N	Freq	Pct	X	S.D	IOC
Question validity	The questions are closely aligned with the research objectives, and the quantity is reasonable	5	5	100%	1.000	0.000	1.000
Clarity of Expression	The expression is appropriate, clear, unambiguous and targeted	5	5	100%	1.000	0.000	1.000
Completeness of Content	The content is relatively comprehensive and covers issues related to E-Education instructional mass communication	5	5	100%	1.000	0.000	1.000
Procedural regularity	Information collection, sorting, analysis and other processes are standardized	5	5	100%	1.000	0.000	1.000

Table 4.33 (Continued)

Aspects Evaluated	Evaluate the Content	N	Freq	Pct	X	S.D	IOC
Effectiveness of conclusions	The conclusions drawn regarding current E-Education instructional mass communication problems and countermeasures are valid	5	5	100%	1.000	0.000	1.000

Part 2: Design the Evaluation Model of E-Education instructional Mass Communication for Teacher in Shaanxi Province

Based on the results of Objective 1 and the research findings of the literature review, a comprehensive analysis was conducted on the current problems and countermeasures of E-Education instructional mass communication. The evaluation model (E-Education Instructional Mass Communication Evaluation Model, EIMCEM) was constructed using system thinking to evaluate E-Education instructional mass communication in Shaanxi Province (Figure 4.1).

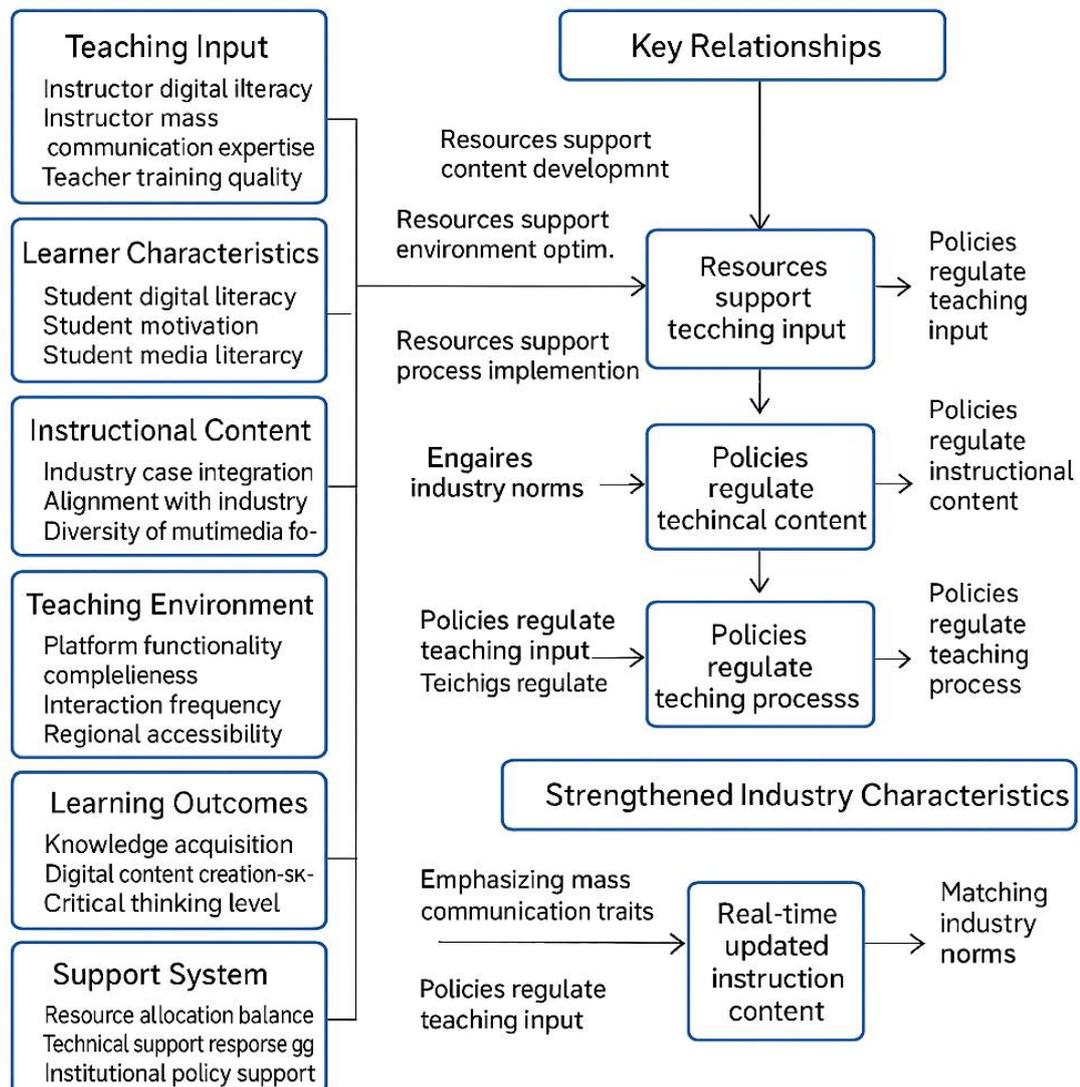


Figure 4.1 "EIMCEM" model diagram

Model description:

The EIMCEM model is based on the characteristics of E-Education and mass communication, integrating multiple evaluation dimensions to comprehensively assess the quality and effectiveness of E-Education instructional mass communication. The model encompasses eight core dimensions: Teaching Input, Learner Characteristics, Instructional Content, Teaching Environment, Teaching Process, Learning Outcomes, Support System, and Policy & Evaluation. Each

dimension is interconnected, reflecting the dynamic and comprehensive nature of E-Education instructional mass communication evaluation.

For Teaching Input:

This dimension focuses on the factors related to teaching personnel and their preparation. It includes:

Instructor digital literacy: The ability of teachers to use digital tools and platforms for teaching, which directly affects the quality of E-Education delivery.

Instructor mass communication expertise: The professional knowledge and skills of teachers in the field of mass communication, ensuring the accuracy and relevance of instructional content.

Teacher training: The extent of training received by teachers in E-Education methods and mass communication teaching strategies, which influences their teaching competence.

The relationship between these factors: Instructor digital literacy and mass communication expertise are the foundation for effective teaching, while teacher training continuously enhances these two aspects. They interact to form the core of teaching input, laying the groundwork for high-quality E-Education.

For Learner Characteristics:

This dimension centers on the attributes and abilities of students that affect their learning in E-Education. It includes:

Student digital literacy: The ability of students to use digital devices and platforms for learning, which is essential for participating in E-Education.

Student motivation: The drive and enthusiasm of students to engage in E-Education, impacting their learning persistence and effort.

Student media literacy: The ability of students to critically understand and use media, which is crucial for mass communication courses.

The relationship between these factors: Student digital literacy is a prerequisite for participating in E-Education, while motivation promotes active learning. Media literacy, specific to mass communication, interacts with the other two factors to influence overall learning effectiveness.

For Instructional Content:

This dimension involves the quality and suitability of the educational materials used in E-Education. It includes:

Content relevance: The alignment of instructional content with mass communication industry needs and student learning objectives.

Multimedia integration: The use of various media forms (video, audio, animation) to present content, enhancing learning experience.

Practicality: The inclusion of practical training and real-world cases in the content, facilitating the application of knowledge.

The relationship between these factors: Content relevance ensures the value of the materials, multimedia integration enhances comprehension, and practicality bridges theory and practice. They work together to improve the quality of instructional content.

For Teaching Environment:

This dimension refers to the physical and virtual settings in which E-Education takes place. It includes:

Platform functionality: The features and performance of the online learning platform, affecting interaction and resource access.

Interaction level: The extent of communication between teachers and students, and among students, promoting collaborative learning.

Accessibility: The availability of E-Education resources and platforms to students in different regions, including rural areas.

The relationship between these factors: Platform functionality provides the technical basis for interaction, and accessibility ensures that all students can participate, thereby influencing the overall teaching environment.

For Teaching Process:

This dimension focuses on the methods and activities employed during E-Education. It includes:

Teaching method innovation: The use of innovative approaches such as flipped classrooms and project-based learning to engage students.

Assessment and feedback: The strategies used to evaluate student learning and provide timely feedback, supporting learning adjustment.

Collaborative learning: The organization of group activities and discussions to foster teamwork and knowledge sharing.

The relationship between these factors: Innovative teaching methods promote active learning, assessment and feedback guide learning progress, and collaborative learning enhances knowledge construction. They are interrelated to form an effective teaching process.

For Learning Outcomes:

This dimension assesses the results of student learning. It includes:

Knowledge acquisition: The mastery of mass communication theories and concepts by students.

Skill development: The improvement of practical skills such as digital content creation and media analysis.

Critical thinking: The ability of students to analyze and evaluate mass communication phenomena independently.

The relationship between these factors: Knowledge acquisition is the foundation for skill development, and both contribute to the development of critical thinking, reflecting comprehensive learning outcomes.

For Support System:

This dimension involves the resources and technical support for E-Education. It includes:

Resource allocation: The provision of sufficient educational resources such as materials and tools.

Technical support: The maintenance and troubleshooting of online platforms and digital tools.

Institutional support: The backing from educational institutions in terms of policies and funding.

The relationship between these factors: Resource allocation provides the material basis, technical support ensures smooth operation, and institutional support creates a favorable environment for E-Education implementation.

For Policy & Evaluation:

This dimension covers the policy framework and evaluation mechanisms for E-Education. It includes:

Policy and regulations: The laws and policies governing E-Education, ensuring its standardized development.

Quality supervision: The mechanisms in place to monitor and evaluate E-Education quality.

Stakeholder participation: The involvement of teachers, students, and industry experts in the evaluation process.

The relationship between these factors: Policy and regulations provide guidance, quality supervision ensures standards are met, and stakeholder participation enhances the comprehensiveness and accuracy of evaluation.

Round 1 Expert Review of EIMCEM Model

This section utilizes the Delphi method, with 21 experts evaluating the EIMCEM model. The experts consist of 9 E-Education researchers, 9 mass communication teachers, and 3 education management professionals. A total of 21 expert consultation forms were distributed and all were returned, achieving a 100% response rate. This indicates a highly positive attitude and high level of engagement from the experts.

21 experts were invited to evaluate the model based on their academic expertise and experience. The options are "agree," "partly agree," or "disagree," with scores of 1, 0, and -1 respectively. If "partly agree" or "disagree" is selected, an explanation or clarification is required.

Table 4.34 Results of the first round of expert review of the EIMCEM model

Assessment Items	N	Freq	Pct	\bar{X}	S.D
The EIMCEM model	21	17	81%	0.810	0.392

Table 4.35 Detailed results of the first round of expert review of the EIMCEM model

Assessment Items	Expert Number	Expert Research Field	Effective			Expert Explanation
			Agree	Partly Agree	Disagree	
the EIMCEM model	1	E-Education	1			
	2	E-Education	1			
	3	E-Education	0	1		It is recommended to strengthen the connection between "Teaching Process" and "Learning Outcomes" by adding a bidirectional arrow.
	4	E-Education	1			
	5	E-Education	1			
	6	E-Education	1			
	7	E-Education	0	1		The "Support System" should have a more obvious impact on other dimensions; suggest adding arrows to show this.

Table 4.35 (Continued)

Assessment Items	Expert Number	Expert Research Field	Effective			Expert Explanation
			Agree	Partly Agree	Disagree	
	8	E-Education	1			
	9	E-Education	1			
	10	Mass communication	1			
	11	Mass communication	1			
	12	Mass communication	0	1		"Instructional Content" should emphasize more on mass communication industry characteristics; suggest adding specific indicators.
	13	Mass communication	1			
	14	Mass communication	1			
	15	Mass communication	1			
	16	Mass communication	1			
	17	Mass communication	1			
	18	Mass communication	1			
	19	Educational management	1			
	20	Educational management	1			
	21	Educational management	1			

According to Table 4.35, among the 21 experts, 3 experts selected "partly agree" and gave explanations. Other experts agree. This shows that the overall coordination of expert opinions is relatively high. Based on the first round of expert opinions, the EIMCEM model was modified, optimized, and improved. See Figure 4.2 for details.

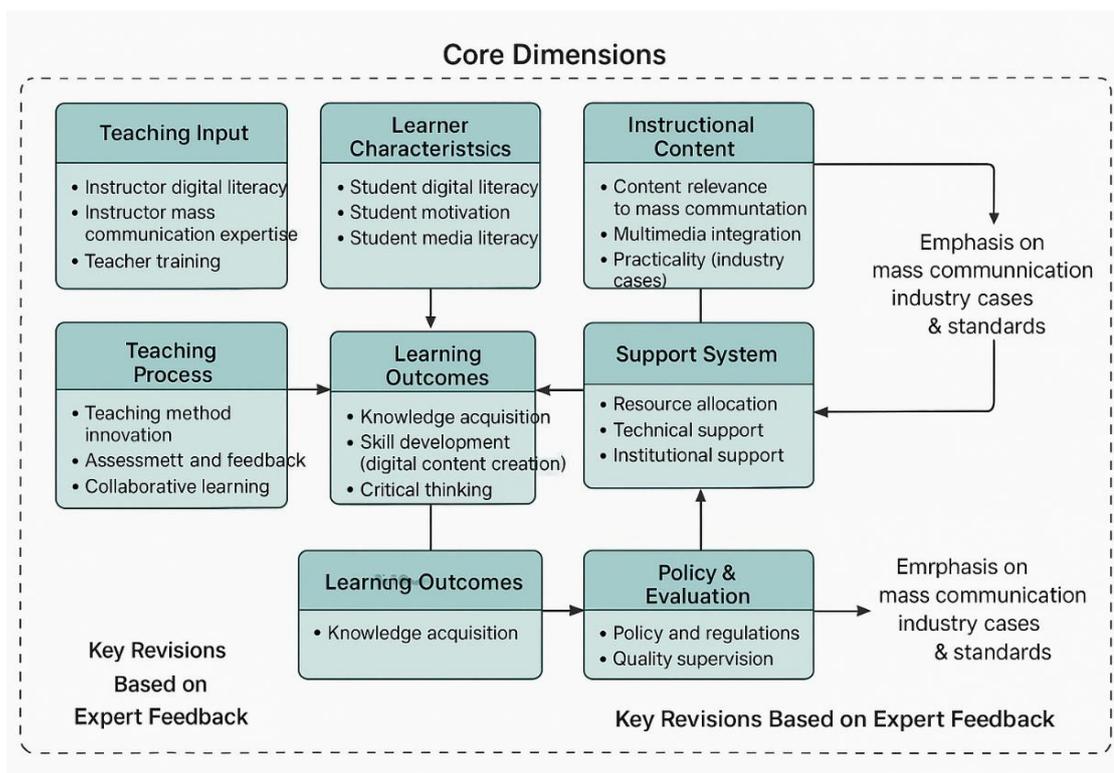


Figure 4.2 Modified EIMCEM model diagram

Modified model description:

Strengthened the connection between "Teaching Process" and "Learning Outcomes" by adding a bidirectional arrow, highlighting that the teaching process directly affects learning outcomes, and feedback from learning outcomes can optimize the teaching process.

Added arrows from "Support System" to other dimensions to clearly show the impact of support system on teaching input, instructional content, teaching environment, and teaching process.

Emphasized mass communication industry characteristics in "Instructional Content" by adding specific indicators such as industry case integration and industry standard alignment.

Clarified the interaction between "Policy & Evaluation" and other dimensions, showing that policies and evaluations guide and regulate the entire E-Education instructional process.

The second round of EIMCEM model expert review

21 experts re-evaluated the modified model based on their academic expertise and experience. As shown in Table 4.36.

Table 4.36 Results of the second round of expert review of the EIMCEM model

Assessment Items	N	Freq	Pct	Mean	S.D
The EIMCEM model	21	21	100%	1.000	0.000

According to Table 4.36, in this round of expert consultation, all experts agreed that the concentration rate reached 100%. This shows that experts highly recognize the EIMCEM model.

Part 3: Evaluate the Evaluation Model of E-Education instructional Mass Communication for Teacher in Shaanxi Province

We invited 9 experts with extensive experience or expertise in model research in E-Education, mass communication education, and educational management to evaluate using the CIPP assessment model. The options are "agree," "partly agree," or "disagree," assigned 1, 0, -1 respectively. If "partly agree" or "disagree" is selected, an explanation or clarification is required. The evaluation results are shown in Table 4.37.

Table 4.37 CIPP Evaluation Model Expert Evaluation Results

CIPP Evaluation	Evaluation Aspect	Specific Evaluation Contents	Effective			Explanation or Suggestions
			Agree	Partly Agree	Disagree	
Context Evaluation	Background and Purpose	Do you agree that the EIMCEM model has a clear background and purpose, and can fully and accurately capture the actual situation of E-Education instructional mass communication in Shaanxi Province?	9	0	0	
		Do you believe that the design of this model can effectively evaluate the quality of E-Education instructional mass communication?	9	0	0	

Table 4.37 (Continued)

CIPP Evaluation	Evaluation Aspect	Specific Evaluation Contents	Effective			Explanation or Suggestions
			Agree	Partly Agree	Disagree	
		Do you agree that the design of this model fully considers the characteristics of mass communication and E-Education?	9	0	0	
		Do you agree that this model takes into account the needs and expectations of teachers, students, and industry in E-Education instructional mass communication?	9	0	0	
Input Evaluation	Problem Analysis	Do you agree that the problems in E-Education instructional mass communication have been fully considered in the model?	9	0	0	

Table 4.37 (Continued)

CIPP Evaluation	Evaluation Aspect	Specific Evaluation Contents	Effective			Explanation or Suggestions
			Agree	Partly Agree	Disagree	
		Do you agree that these problems fully reflect the different perspectives of research experts, teachers, and managers?	9	0	0	
	Analysis of influencing factors	Do you agree that the influencing factors summarized in the model fully consider the complexity and diversity of E-Education instructional mass communication?	9	0	0	
Process Evaluation	Evaluation mechanism	Do you agree that the EIMCEM model plays an important role in evaluating the quality of E-Education instructional mass communication?	9	0	0	

Table 4.37 (Continued)

CIPP Evaluation	Evaluation Aspect	Specific Evaluation Contents	Effective			Explanation or Suggestions
			Agree	Partly Agree	Disagree	
		Do you agree that the evaluation mechanism in the EIMCEM model can comprehensively assess all aspects of E-Education instructional mass communication?	9	0	0	
		Do you agree that this evaluation mechanism provides timely and effective feedback to help improve E-Education instructional mass communication?	9	0	0	
		Do you agree that the evaluation methods in this model are diverse enough to cover all dimensions of E-Education instructional mass communication?	9	0	0	

Table 4.37 (Continued)

CIPP Evaluation	Evaluation Aspect	Specific Evaluation Contents	Effective			Explanation or Suggestions
			Agree	Partly Agree	Disagree	
	Model Implementation	Do you agree with the design of the relationships between the various elements in the model?	9	0	0	
		Do you agree that the model is operable in practical applications?	9	0	0	

Table 4.37 (Continued)

CIPP Evaluation	Evaluation Aspect	Specific Evaluation Contents	Effective			Explanation or Suggestions
			Agree	Partly Agree	Disagree	
Product Evaluation	Model Feedback and Improvement	Do you agree that the model can be flexibly adjusted in practical applications to adapt to different teaching contexts and student needs?	9	0	0	
		Do you agree that the adjustment and improvement design of this model can improve its applicability?	9	0	0	
		Do you agree that the interview results with experts are largely consistent with the conclusion of evaluation objective 1, thereby increasing confidence in the success of the model?	9	0	0	

Table 4.37 (Continued)

CIPP Evaluation	Evaluation Aspect	Specific Evaluation Contents	Effective			Explanation or Suggestions
			Agree	Partly Agree	Disagree	
		What is the role of student feedback in this model? Do you think more student feedback is needed to optimize the model?	9	0	0	Experts believe student feedback is important, and the model can be further optimized by incorporating more student feedback channels.

Table 4.37 (Continued)

CIPP Evaluation	Evaluation Aspect	Specific Evaluation Contents	Effective			Explanation or Suggestions
			Agree	Partly Agree	Disagree	
		Based on your experience, how can this model better integrate mass communication industry practices to improve evaluation effectiveness?	9	0	0	Experts suggest strengthening cooperation with industry to update evaluation indicators according to industry developments.

According to Table 4.37, 9 experts evaluated the EIMCEM model constructed in this study from multiple aspects and categories, and the results were unanimously agreed upon by all experts, with high consensus and credibility. This indicates that the constructed model is reasonable, effective, and feasible.

Chapter 5

Discussion Conclusion and Recommendations

Discussion

This study successfully developed the E-Education Instructional Mass Communication Evaluation Model (EIMCEM) for teachers in Shaanxi Province. The discussion below integrates the research findings with the literature reviewed in Chapter 2, highlighting the consistencies, innovations, and practical value of the proposed model.

The empirical findings from Chapter 4—encompassing core problems, influencing factors, and targeted countermeasures in E-Education instructional practice for Mass Communication in Shaanxi Province—exhibit strong alignment with the theoretical foundations and empirical conclusions synthesized in Chapter 2. This consistency validates the universality of key challenges in digital education while confirming that the EIMCEM model is grounded in evidence-based scholarly discourse.

Chapter 4 identified "insufficient teacher digital literacy" as a paramount challenge, with 86% of experts strongly endorsing this finding. This directly corroborates the work of Çoklar et al. (2016), who framed digital literacy deficits as a fundamental barrier to E-Education advancement, and resonates with Pradas-Esteban's (2024) observation that Chinese teachers often possess theoretical knowledge of digital tools but lack practical application capabilities. Similarly, the problem of "low quality of E-Education materials" (90% expert agreement) aligns with Wang & Zhang's (2023) nationwide study, which highlighted a critical gap between Mass Communication curricula and the integration of high-quality multimedia content and practical digital skills. These convergences confirm that the core pain points identified in Shaanxi Province are not isolated but reflect broader trends in Chinese higher education, as documented in Chapter 2.

Other key problems identified in Chapter 4—including "insufficient media literacy education," "lack of effective quality supervision," and "imperfect assessment and feedback mechanisms" (all with 90% expert agreement)—also find strong theoretical support in Chapter 2. Spante et al. (2018) emphasized that critical digital literacies, including media literacy, are indispensable for Mass Communication students navigating a digital media landscape rife with misinformation, while Adeniyi-Egbeola et al. (2021) noted that even teachers with digital literacy often fail to translate this into effective instructional practice without robust assessment and feedback systems. The consistency between these scholarly insights and the empirical data from Shaanxi Province underscores the EIMCEM model's relevance to both local and national contexts.

Congruence with Influencing Factors in E-Education Development

The 20 key influencing factors extracted in Chapter 4—categorized into teaching-related, learner-related, content-related, environment-related, support-related, policy-related, and evaluation-related dimensions—mirror the multi-layered frameworks proposed in Chapter 2. For instance, the emphasis on "policy and regulatory framework" and "institutional support" as critical factors aligns with UNESCO's (2015) global guidelines and Ma Jun's (2019) regional study, both of which highlight policy backing and financial investment as cornerstones of sustainable digital education development. Similarly, the inclusion of "student motivation and engagement" and "student digital literacy" as learner-related factors echoes Nikou and Aavakare's (2021) research on psycho-educational variables and López-Meneses et al.'s (2020) findings regarding gaps in students' advanced digital skills.

Notably, the recognition of "rural adaptability" as an influential factor (albeit with moderate expert consensus, IQR=2.0) directly responds to Sun & Wei's (2023) analysis of regional disparities in Chinese Mass Communication education, which identified unequal access to resources between urban and rural areas. This alignment confirms that the EIMCEM model's design is sensitive to the contextual

complexities of Shaanxi Province, as highlighted in Chapter 2's focus on regional characteristics.

Consistency with Evidence-Based Countermeasures

The 120 targeted countermeasures proposed in Chapter 4 are deeply rooted in pedagogical strategies and best practices documented in Chapter 2. For example, the recommendation to "integrate real-time mass communication cases" into instructional content builds on Garrison and Kanuka's (2004) advocacy for contextualized learning and Zhang Lei's (2020) case study of virtual simulation platforms in Shaanxi universities, which bridged theory and practice. The call for "diversified assessment systems" (combining formative and summative evaluation) aligns with the principles of Holton's three-level model (Gkioka et al., 2020), which evaluates training effectiveness across learning, individual performance, and organizational outcomes.

Similarly, countermeasures aimed at improving teacher digital literacy—such as "organizing regular digital literacy training" and "establishing teacher digital learning communities"—reflect Farjon et al.'s (2019) emphasis on teachers' digital competence as a driver of effective E-Education practice. These consistencies demonstrate that the EIMCEM model's improvement strategies are not ad hoc but are grounded in rigorous scholarly research on E-Education instructional optimization.

Innovative Contributions of the EIMCEM Model: Advancing Beyond Existing Frameworks

While firmly rooted in existing literature, the EIMCEM model offers distinct theoretical and practical innovations compared to the general E-Education evaluation models reviewed in Chapter 2 (e.g., eLSE Methodology, Adaptive Learning Model, Predictive Modeling). These innovations address critical gaps in the field—specifically, the neglect of disciplinary specificity, regional contextualization, and systemic dynamism in conventional evaluation frameworks.

Deep Integration of Mass Communication Disciplinary Characteristics

Unlike general E-Education models that prioritize platform usability (eLSE Methodology, Lanzilotti et al., 2006) or personalized learning paths (Adaptive

Learning Model, Kurzweil & Wu, 2015), the EIMCEM model is inherently discipline-specific, reflecting the unique demands of Mass Communication education as outlined in Chapter 2. The model explicitly incorporates indicators such as "media literacy" (C2c), "industry case integration" (C3c), and "practical skill development in digital content creation" (C6b), directly responding to Zhou et al.'s (2023) call for curricula that blend traditional communication theories with modern digital skills and Spante et al.'s (2018) emphasis on critical digital literacies.

This disciplinary focus is particularly evident in the "Instructional Content" and "Learning Outcomes" dimensions. For example, the "practicality" indicator in Instructional Content requires alignment with Mass Communication industry standards, addressing Li et al.'s (2022) concern that university curricula often fail to keep pace with rapid media industry changes. In Learning Outcomes, the emphasis on "digital content creation skills" and "critical thinking in media analysis" reflects Huang et al.'s (2023) findings on the career trajectories of Mass Communication graduates, who increasingly enter digital marketing and public relations roles requiring these competencies. By centering Mass Communication's professional characteristics, the EIMCEM model transcends the one-size-fits-all limitations of general E-Education evaluation tools.

Systematic Emphasis on Regional Adaptability and Educational Equity

A major innovation of the EIMCEM model is its explicit integration of regional disparities in Shaanxi Province, a critical gap identified in Chapter 2 but overlooked by standard evaluation models (e.g., Predictive Modeling, Zabriskie et al., 2019). The inclusion of "rural accessibility" (C4c) as a key indicator in the Teaching Environment dimension directly addresses Sun & Wei's (2023) observation of unequal resource access between urban and rural areas, operationalizing a commitment to educational equity.

The model's regional sensitivity is further reflected in its differentiated evaluation approach: for universities in Xi'an with robust E-Education infrastructure, the weight of indicators such as "platform functionality" and "multimedia integration" is higher, while for rural institutions, greater emphasis is placed on "resource

allocation balance" and "rural teacher training" (Support System dimension). This adaptability responds to Ma Jun's (2019) call for policy and evaluation frameworks that account for uneven E-Education platform popularization in Shaanxi Province. By prioritizing regional equity, the EIMCEM model offers a template for context-aware E-Education evaluation in other western Chinese provinces with similar developmental disparities.

Innovations and Contributions of the EIMCEM Model

While grounded in existing research, the EIMCEM model offers significant theoretical and practical innovations compared to the general E-Education evaluation models reviewed in Chapter 2, such as the eLSE Methodology (Lanzilotti et al., 2006) and the Adaptive Learning Model (Kurzweil & Wu, 2015).

1. **Deep Integration of Mass Communication Professional Characteristics:** Unlike general models that focus on platform usability or personalized learning paths, the EIMCEM model is fundamentally discipline-specific. It explicitly incorporates indicators such as "media literacy" (C2c), "industry case integration" (C3c), and "practical skill development in digital content creation" (C6b). This directly addresses the calls from scholars like Zhou et al. (2023) and Spante et al. (2018) for curricula that blend traditional communication theories with critical digital literacies and modern digital skills. The model ensures that the evaluation is not just about the mode of delivery (E-Education) but about the quality of professional preparation in Mass Communication.

2. **Systematic Emphasis on Regional Adaptability and Equity:** A major innovation of this study is its explicit consideration of the urban-rural educational disparity within Shaanxi Province. The model incorporates "rural accessibility" (C4c) as a key indicator within the Teaching Environment dimension. This directly addresses the problem of the "one-size-fits-all" evaluation model identified in the rationale and the concerns raised by experts regarding the "poor adaptability of E-Education to rural areas" (Table 4.24). By including this indicator, the EIMCEM model operationalizes the concerns of Sun & Wei (2023) regarding regional disparities in educational resources and provides a tool to monitor and promote educational

equity, a feature absent in standard models like the Predictive Modeling approach (Zabriskie et al., 2019).

3. Construction of a Dynamic, Systemic Interaction Mechanism: The EIMCEM model transcends static evaluation frameworks by defining dynamic interactions between its eight core dimensions. As shown in the modified model diagram (Figure 4.2), it clarifies the bidirectional influence between elements, such as the link between "Teaching Process" and "Learning Outcomes," and the guiding role of "Policy & Evaluation" over all other dimensions. This systemic view aligns with the principles of the Analytic Network Process (ANP) (Saaty, 1996; Jharkharia & Shankar, 2007), which emphasizes the correlation and feedback between indicators. This makes the EIMCEM model more comprehensive and reflective of the complex realities of E-Education than models with a simpler hierarchical structure.

Practical Value and Contributions

The expert evaluations using the CIPP model confirmed the high practical value of the EIMCEM model. Its strengths lie in three key areas that directly respond to the needs identified in Chapter 2:

Theoretical Grounding and Logical Consistency: The model's structure is informed by systems thinking and Bloom's taxonomy, ensuring that evaluation indicators are logically linked from inputs (e.g., teacher training) to processes (e.g., innovative teaching) and outcomes (e.g., critical thinking). This rigor addresses the concern of "incomplete and biased" evaluation indicators raised in the introduction.

High Operability and Quantifiability: Each indicator is designed to be measurable. For example, "multimedia integration" (C3b) can be quantified by the coverage rate of multimedia resources in a course, and "interaction level" (C5c) can be assessed by student participation rates in online discussions. This focus on data-driven evaluation resonates with the "human-intelligence dual evaluation" paradigm discussed in the literature and the predictive modeling approaches (Zhang et al., 2021; Wu & Ma, 2022), making the model practical for real-world implementation by teachers and administrators.

Contextual Flexibility: The model is not a rigid checklist but a flexible framework. Its indicators can be adapted based on the type of institution (e.g., research university vs. vocational college) and specific student needs (e.g., undergraduates vs. continuing education students). This flexibility is crucial for its successful promotion across the diverse educational landscape of Shaanxi Province, directly addressing the need for a model that can respond to the dynamic changes in E- Education (Yang Yan, 2021).

In conclusion, the EIMCEM model is not developed in a vacuum. It synthesizes and builds upon the rich body of existing research, systematically addressing the specific problems and regional challenges of Shaanxi Province. Its innovations in disciplinary specificity, regional equity, and systemic dynamism represent a significant contribution to the field of E- Education evaluation.

Conclusion

Objective1: Analyze the current situation and problem in E-Education instructional Mass Communication for Teacher in Shaanxi Province.

The first objective of the study has been successfully achieved. Through a two-round Delphi survey involving 21 experts (including E-Education researchers, mass communication teachers, and educational management professionals) and in-depth interviews, the study systematically identified the core issues in E-Education instructional mass communication in Shaanxi Province. These problems cover ten dimensions, with the most prominent being low quality of E-Education materials (90% of experts strongly agreed), inadequate resource allocation (90%), insufficient media literacy education (90%), and lack of effective quality supervision (90%). Other notable issues include outdated teaching methods, uneven digital literacy among students, and imperfect assessment and feedback mechanisms, all of which have been confirmed by high expert consensus.

In response to these problems, the study proposed 120 targeted countermeasures, such as establishing a content review committee for E-Education materials, developing personalized digital literacy training plans for teachers and

students, and optimizing online interaction functions. These strategies were classified into online and offline categories to ensure operability. Additionally, 20 key influencing factors were extracted, covering eight aspects: teaching input, learner characteristics, instructional content, teaching environment, teaching process, learning outcomes, support system, and policy and evaluation. These factors form an interconnected system, laying a solid foundation for the subsequent model design.

Objective 2: Design Evaluation Model of E-Education instructional Mass Communication for Teacher in Shaanxi Province

Based on the results of Objective 1 and a comprehensive review of relevant literature, the study constructed the E-Education Instructional Mass Communication Evaluation Model (EIMCEM) using system thinking. The model integrates the characteristics of E-Education and mass communication, with eight core dimensions:

Teaching Input: Including instructor digital literacy, mass communication expertise, and teacher training.

Learner Characteristics: Covering student digital literacy, learning motivation, and media literacy.

Instructional Content: Focusing on content relevance to mass communication, multimedia integration, and practicality.

Teaching Environment: Involving platform functionality, interaction level, and accessibility (especially in rural areas).

Teaching Process: Encompassing teaching method innovation, assessment and feedback mechanisms, and collaborative learning.

Learning Outcomes: Evaluating knowledge acquisition, practical skill development, and critical thinking.

Support System: Including resource allocation, technical support, and institutional guarantees.

Policy and Evaluation: Covering policy frameworks, quality supervision, and stakeholder participation.

Each dimension contains 3-4 specific indicators, forming a multi-level evaluation system. The model emphasizes the dynamic interaction between

dimensions: for example, the teaching process directly affects learning outcomes, while feedback from learning outcomes can optimize teaching input and content design. This interdependence reflects the complexity and comprehensiveness of E-Education instructional mass communication.

Objective 3: Evaluate Model of E-Education Instructional Mass Communication for Teacher in Shaanxi Province.

The third objective was achieved through expert evaluation using the CIPP (Context, Input, Process, Product) model. Nine experts with rich experience in E-Education and mass communication education conducted a comprehensive assessment of the EIMCEM model. The results showed that all experts unanimously recognized the model's scientificity, operability, and applicability.

Specifically, experts confirmed that the model: 1) aligns with the actual context of E-Education in Shaanxi Province, especially considering regional differences between urban and rural areas; 2) comprehensively covers the problems and influencing factors identified in Objective 1; 3) has clear and quantifiable indicators, facilitating practical application; 4) can be flexibly adjusted according to different educational scenarios. These evaluations verify that the EIMCEM model can effectively assess the quality of E-Education instructional mass communication and provide targeted improvement suggestions.

Recommendations

To promote the application of the EIMCEM model and improve the quality of E-Education instructional mass communication in Shaanxi Province, the study proposes recommendations for three stakeholders:

For Educational Administrative Departments

Improve policy support: Formulate special policies to promote the application of the EIMCEM model, including funding support for model promotion and incentives for schools that achieve good evaluation results. It is recommended to incorporate the model into the annual assessment indicators of E-Education in Shaanxi Province.

Strengthen infrastructure construction: Focus on improving the network conditions and hardware facilities of rural schools to enhance the "accessibility" indicator in the model. Establish a provincial shared resource platform for E-Education in mass communication, integrating high-quality courses, virtual simulation experiments, and industry cases.

Establish a monitoring mechanism: Regularly organize experts to evaluate the implementation of the model in various schools using the EIMCEM indicators, issue annual evaluation reports, and publicly disclose the results to accept social supervision.

For Schools and Teachers

Promote model application training: Schools should organize special training sessions to help teachers master the EIMCEM model, especially the operation methods of each indicator (e.g., how to collect data on "student critical thinking ability"). It is recommended to combine online courses with offline workshops to improve training effectiveness.

Optimize instructional design: Teachers should use the model to guide teaching practice. For example, based on the "instructional content" dimension, update teaching materials with real-time mass communication cases (such as new media communication phenomena) quarterly; based on the "teaching process" dimension, adopt flipped classrooms and project-based learning to enhance interaction.

Strengthen feedback utilization: Establish a feedback mechanism between evaluation results and teaching improvement. For example, if the model shows that "assessment feedback effectiveness" is low, teachers should adjust the way of homework correction and increase one-on-one guidance.

For Students

Enhance self-directed learning abilities: Make full use of online resources (such as the provincial shared platform mentioned above) to supplement knowledge, and actively participate in offline practical activities (such as media internships) to improve the "practical skill" indicator in the model.

Improve media literacy: Proactively learn to critically analyze media information, participate in online discussions on mass communication issues, and use digital tools (such as video editing software) to complete course projects, thereby enhancing performance in the "learner characteristics" dimension.

Participate in model optimization: Provide feedback on the rationality of evaluation indicators and the operability of the model through student representatives, helping schools adjust the EIMCEM model according to actual learning needs.

Future Research

Long-term effectiveness evaluation: Conduct a 3-year longitudinal study to track the impact of the EIMCEM model on students' academic performance, employment competitiveness, and media literacy. Analyze whether the model's promotion can achieve sustained improvement in E-Education quality through annual data comparison.

Model optimization based on big data: Integrate learning analytics and artificial intelligence technologies to realize real-time monitoring of the model's indicators. For example, use data mining to predict students' learning difficulties in advance and adjust evaluation focus dynamically.

Cross-regional comparative research: Apply the EIMCEM model to other provinces in western China to explore regional differences in E-Education instructional mass communication. Modify the model according to the comparison results to enhance its universality.

Disciplinary expansion research: Adapt the model to related disciplines such as journalism, advertising, and communication studies, and test its applicability. Explore whether the core framework of the EIMCEM model can be generalized to other fields of E-Education.

Rural adaptation research: Conduct in-depth research on the "rural accessibility" dimension, focusing on solving practical problems such as weak network signals and insufficient teacher resources in rural areas. Propose targeted

improvement strategies to ensure the model's effectiveness in underdeveloped regions.

The EIMCEM model constructed in this study provides a new tool for evaluating E-Education instructional mass communication in Shaanxi Province. Through continuous improvement and promotion, it is expected to promote the high-quality development of digital education in the field of mass communication and provide a reference for the reform of E-Education in similar regions.

References

- Almeida, J., & Costa, R. (2024). The Combined Use of IOC and IQR in Likert Scale Development for Educational Psychology Research. *Educational Psychology Review*, 36(02), 456-472.
- Allan Martin, Jan Grudziecki. (2006). DigEuLit: Concepts and Tools for Digital Literacy Development. *Innovation in Teaching and Learning in Information and Computer Sciences*, 5(05), 249-267.
- Ambar J. Arango-Morales, Alejandro Delgado-Cruz, Ana L. Tamayo-Salcedo. (2020). Digital Competence of Tourism Students: Explanatory Power of Professional Training. *European Journal of Investigation in Health, Psychology and Education*, 10(02), 310-326.
- Anderson, K., & Parker, S. (2022). Digital Literacy Assessment in Higher Education: A Systematic Review. *Journal of Educational Technology & Society*, 25(03), 189-204.
- Bao Yajun, Liu Yonggui, Liu Rui. (2020). Discrimination and Analysis of the Concept and Connotation of Digital Literacy—Comparison with Information Literacy, Media Literacy, and Technology Literacy. *Software Guide*, 19 (06), 227-230.
- Baojing Zhang, Vinothraj Velmayil, V. Sivakumar. (2021). A Deep Learning Model for Innovative Evaluation of Ideological and Political Learning. *Progress in Artificial Intelligence*, 12(04), 119-131.
- Bernhard Wolfslehner, Harald Vacik, Manfred J. Lexer. (2005). Application of The Analytic Network Process in Multi-criteria Analysis of Sustainable Forest Management. *Forest Ecology and Management*, 207 (03), 157-170.
- Bi Jian. (2011). A Survey on Satisfaction and Willingness to Stay in Hotel Internships Among Undergraduate Students Majoring in Tourism Management. *Journal of Henan Polytechnic University (Social Sciences)*, 12(07), 300-305.
- Brown, Michael. (2018). Evaluating Online Learning Effectiveness. *Educational Technology Review*, 25(04), 45-60.

- Bryant, D., & Garcia, M. (2023). Blended Learning Evaluation Using CIPP Model: A Case Study of Media Studies Courses. *International Journal of Educational Technology*, 28(01), 98-115.
- Catts R, Lau J. (2008). Towards Information Literacy Indicators. Information Society Division Communication and Information Sector UNESCO.
- Chen Yuxin, Li Hua, Zhang Wei. (2024). The Impact of Media Literacy on Student Engagement in Online Mass Communication Courses. *Journal of Educational Technology Development*, 15(03), 112-128.
- Cheng Mengmeng, Xia Wenjing, Wang Jiazhou, Zheng Ying, Zhang Jianping. (2015). Interpretation and Enlightenment of 'Global Media and Information Literacy Assessment Framework' (UNESCO). *Journal of Distance Education*, 33(01), 21-29.
- Chen, L., & Wang, H. (2022). AI-Powered Evaluation of Online Teaching Quality in Mass Communication. *Journal of Media Education Research*, 17(04), 67-82.
- Clark, David. (2016). Student Perceptions of E-Education in Media Studies. *Journal of Media Education*, 18(02), 90-100.
- David Caldevilla-Domínguez, Alba-María Martínez-Sala, Almudena Barrientos-Báez. (2021). Tourism and ICT. Bibliometric Study on Digital Literacy in Higher Education. *Education Science*, 11(02), 1-17.
- Doe, Jane. (2019). Integration of ICT in Mass Communication Education. *International Journal of Media Studies*, 12(01), 85-95.
- Garcia, P., & Rodrigues, L. (2022). IQR for Handling Skewed Likert Scale Data in Customer Satisfaction Research. *Journal of Retailing and Consumer Services*, 68, 103125.
- Guo Shuyun, Zhao Ying. (2023). Constructing an Evaluation Index System for Online Teaching Quality in Chinese Universities. *China Educational Technology*, 44(05), 78-86.
- Huang Ronghuai, Liu Dejian. (2025). Digital Transformation of Education in China: Policies, Practices, and Future Directions. *Educational Research*, 46(02), 45-58.

- Huang, Y., & Zhang, L. (2023). Media Literacy and Critical Thinking: A Longitudinal Study of Mass Communication Students. *Communication Education*, 72(02), 234-251.
- Jones, Kevin. (2022). The Role of Social Media in Education. *Journal of Digital Communication*, 16(01), 130-140.
- Kim, S., & Lee, J. (2024). Likert Scale Validation for Digital Competence Assessment Using IOC and IQR. *Computers & Education*, 201, 104689.
- Lewis, Sandra. (2021). Case Studies in Digital Literacy. *Journal of Educational Research*, 22(01), 110-120.
- Li Ming, Zhang Yan. (2024). Teacher Digital Competence Development in Western China: Challenges and Strategies. *Modern Educational Technology*, 34(04), 67-75.
- Liu, H., & Zhang, Y. (2023). IOC Validation and IQR Screening in the Development of a Health Behavior Likert Scale. *Preventive Medicine Reports*, 30, 101897.
- Liu Qingtang, Zhou Nan. (2023). Application of the CIPP Model in Evaluating Blended Learning Effectiveness. *e-Education Research*, 44(07), 89-97.
- Liu, X., & Chen, W. (2022). Evaluation of Online Mass Communication Courses: A Mixed-Methods Study. *Journal of Digital Learning in Teacher Education*, 38(03), 145-162.
- Martinez, L., & Gonzalez, R. (2023). Digital Tools for Media Education: A Bibliometric Analysis (2018-2022). *Education and Information Technologies*, 28(05), 4890-4912.
- Miller, Emily. (2021). Digital Tools for Mass Communication Education. *Communication Education Journal*, 14(02), 220-230.
- Miller, Emily. (2021). Digital Tools for Mass Communication Education. *Communication Education Journal*, 14(02), 220-230.
- Nguyen, Lan. (2019). Cross-Cultural Approaches to Digital Literacy in Higher Education. *International Journal of Educational Technology*, 24(02), 65-75.
- Park, J., & Kim, H. (2024). CIPP Model Application in E-Education Evaluation for Journalism Courses. *Asian Journal of Communication*, 34(01), 56-73.

- Peterson, A., & Smith, K. (2022). Student Engagement in Online Media Courses: The Role of Digital Literacy. *Journal of Media Literacy Education*, 14(03), 89-106.
- Rodriguez, M., & Sanchez, P. (2023). IQR-Based Analysis of Student Feedback in Online Teaching Evaluation. *Higher Education Research & Development*, 42(06), 1789-1805.
- Smith, John. (2020). Analysis of Digital Education Model. *Journal of E-Learning*, 15(03), 100-110.
- Taylor, Ashley. (2017). Trends in Online Learning for Mass Communication. *Media and Learning Journal*, 20(03), 75-85.
- Thompson, R., & Davis, S. (2022). Developing a Digital Literacy Evaluation Framework for Higher Education. *Assessment & Evaluation in Higher Education*, 47(08), 1345-1360.
- Wang Hui, Chen Lin, Liu Xia. (2025). Bridging the Digital Divide: Evaluating Rural E-Education Quality in Shaanxi Province. *Distance Education in China*, 42(01), 34-46.
- Wang, L., & Chen, J. (2021). IOC-Based Item Analysis for a Likert Scale Measuring Student Perceptions of Online Teaching Quality. *Journal of Computer Assisted Learning*, 37(03), 789-802.
- Wang, Y., & Li, C. (2023). Policy Impact on Digital Education Transformation: Evidence from Chinese Universities. *Journal of Educational Policy*, 38(04), 567-589.
- Wilson, Robert. (2020). Frameworks for Evaluating Digital Learning. *Education Science*, 13(04), 200-210.
- Wu, Q., & Zhang, H. (2024). Blended Learning in Mass Communication: A CIPP Model Evaluation. *Journal of Teaching in Higher Education*, 29(02), 112-129.
- Yang, S., & Wang, Z. (2022). Digital Competence Gaps Among University Teachers in Western China. *Journal of Educational Technology Development and Exchange*, 15(01), 78-95.

- Zhao Jing, Sun Wei. (2024). Developing a Journalism and Communication Program Evaluation Framework for the Digital Era. *Journal of Educational Evaluation*, 33(02), 56-68.
- Zhao, Y., & Chen, L. (2023). Media Literacy Education in Digital Age: A Systematic Review of Chinese Research. *Chinese Journal of Communication*, 16(03), 89-108.
- Zhou, J., & Li, M. (2024). AI-Enhanced Evaluation of Online Teaching Effectiveness in Media Studies. *Journal of Artificial Intelligence in Education*, 34(01), 345-362.
- Zhu, H., & Liu, J. (2022). IOC and IQR in Educational Evaluation: A Case Study of Online Learning Assessments. *Journal of Educational Measurement and Evaluation*, 28(03), 67-84.

Appendices

Appendix A

List of Specialists and Letters of Specialists Invitation
for IOC Verification

Verification List of experts to validate research instrument

(Interview outline and questionnaire)

NO.	Name	Work Unit	Title/Education	Research Field
1	Du Ping	Xi'an Peihua University	Professor/Ph.D.	Educational Technology
2	Liang Xiaofeng	Xi'an Polytechnic University	Associate Professor/Ph.D.	Mass Communication
3	Tong Jin	Northwest University	Professor	Educational Management
4	Zhang Ronghua	Shaanxi Normal University	Professor/Ph.D.	Digital Media Education
5	Shao Lu	Xi'an Peihua University	Associate Professor	Online Teaching Model
6	Li Rui	Xi'an Polytechnic University	Lecturer/Ph.D.	Educational Evaluation Theory
7	Zhao Jiameng	Northwest University	Professor	Mass Communication Practice
8	Zhao Wei	Shaanxi Normal University	Associate Professor/Ph.D.	Educational Technology Application
9	Wang Li	Xi'an Peihua University	Professor	Curriculum and Instruction
10	Chen Ming	Xi'an Polytechnic University	Associate Professor/Ph.D.	New Media Communication
11	Liu Fang	Northwest University	Professor/Ph.D.	Educational Policy Research

NO.	Name	Work Unit	Title/Education	Research Field
12	Yang Fan	Shaanxi Normal University	Associate Professor	Online Learning Environment Design
13	He Jun	Xi'an Peihua University	Professor/Ph.D.	Digital Education Assessment
14	Sun Tao	Xi'an Polytechnic University	Associate Professor	Media Education Integration
15	Guo Yan	Northwest University	Professor	Educational Model Innovation
16	Han Li	Shaanxi Normal University	Associate Professor/Ph.D.	Communication Theory
17	Xu Yang	Xi'an Peihua University	Lecturer	E-Learning Platform Design
18	Ma Jun	Xi'an Polytechnic University	Professor	Educational Data Analysis
19	Qiu Yue	Northwest University	Associate Professor	Media Literacy Education
20	Zheng Xin	Shaanxi Normal University	Professor/Ph.D.	Instructional Design
21	Lin Jia	Xi'an Peihua University	Associate Professor	Mass Communication Curriculum

List of EIMCEM model evaluation experts

NO.	Name	Work Unit	Title/Education	Research Field
1	Du Ping	Xi'an Peihua University	Professor/Ph.D.	Educational Technology
2	Liang Xiaofeng	Xi'an Polytechnic University	Associate Professor/Ph.D.	Mass Communication
3	Tong Jin	Northwest University	Professor	Educational Management
4	Zhang Ronghua	Shaanxi Normal University	Professor/Ph.D.	Digital Media Education
5	Shao Lu	Xi'an Peihua University	Professor	Online Teaching Model
6	Li Rui	Xi'an Polytechnic University	Lecturer/Ph.D.	Educational Evaluation Theory
7	Zhao Jiameng	Northwest University	Professor	Mass Communication Practice
8	Zhao Wei	Shaanxi Normal University	Associate Professor/Ph.D.	Educational Technology Application
9	Liu Fang	Northwest University	Professor/Ph.D.	Educational Policy Research

Appendix B

Official Letter



Ref.No. MHESI 0643.14/ ๑๔

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

9 May 2025

Subject: Invitation to join a focus group discussion as an expert

Dear:

Attachment: A focus group discussion schedule

Mr. Chen Xiaoxiong is a graduate student in doctor of Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. He is undertaking research entitled “ Evaluation Models of E-Education instructional Mass Communication in Shaanxi Province”There is a thesis advisory committee as follows:

- | | |
|---|---------------|
| 1.Associate Professor Dr.Pong Horadal | Major Advisor |
| 2.Assistant Professor Dr.Kanakorn Sawangcharoen | Co-Advisor |
| 3.Associate Professor Dr.Sombat Teekasap | Co-Advisor |

In this regard, the student has applied the Delphi Method in his research. The thesis advisory committee and the student have considered that you are an expert in this field. Therefore, Graduate School would like to invite you to be an expert to join the focus group discussion to provide the student with suggestions for the his research.

Thank you for your kind considerations.

Yours faithfully,

(Assistant Professor Dr.Thanaput Chanchaen)

Vice Dean of Graduate School for Dean of Graduate School

Graduate School

Tel.+662-473-7000 ext. 1814

E-mail: grad@bsru.ac.th



Ref.No. MHESI 0643.14/ 55

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

15 February 2025

Subject: Request permission to collect data by attending Interviews and Questionnaires

Dear:

Mr. Chen Xiaoxiong is a graduate student in doctor of Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. He is undertaking research entitled “ Evaluation Models of E-Education instructional Mass Communication in Shaanxi Province”There is a thesis advisory committee as follows:

- | | |
|---|---------------|
| 1.Associate Professor Dr.Pong Horadal | Major Advisor |
| 2.Assistant Professor Dr.Kanakorn Sawangcharoen | Co-Advisor |
| 3.Associate Professor Dr.Sombat Teekasap | Co-Advisor |

In this regard, the student has applied the Delphi Method in his research. The thesis advisory committee and the student have considered that you are an expert in this field. Therefore, Graduate School would like to invite you to be an expert to provide the student with suggestions for the his research.

Thank you for your kind considerations.

Yours faithfully,

(Assistant Professor Dr.Thanaput Chanchaen)

Vice Dean of Graduate School for Dean of Graduate School

Graduate School

Tel.+662-473-7000 ext. 1814

E-mail: grad@bsru.ac.th



Ref.No. MHESI 0643.14/ 257

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

6 November 2024

Subject: Invitation to validate research instrument

Dear:

Mr. Chen Xiaoxiong is a graduate student in doctor of Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. He is undertaking research entitled " Evaluation Models of E-Education instructional Mass Communication in Shaanxi Province" There is a thesis advisory committee as follows:

- | | |
|---|---------------|
| 1.Associate Professor Dr.Pong Horadal | Major Advisor |
| 2.Assistant Professor Dr.Kanakorn Sawangcharoen | Co-Advisor |
| 3.Associate Professor Dr.Sombat Teekasap | Co-Advisor |

The thesis advisory committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

With your expertise, we would like to ask your permission to validate the attached research instrument. In this regard, we would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Yours faithfully,

(Assistant Professor Dr.Thanaput Chanchaen)
Vice Dean of Graduate School for Dean of Graduate School

Bansomdejchaopraya Rajabhat University
Tel.+662-473-7000
www.bsru.ac.th
E-mail: grad@bsru.ac.th

Appendix C

Research Instrument

Participant Recruitment E-mail

Dear [Name],

I hope this message finds you well. As a doctoral student in the Digital Technology Management for Education program at Bansomdejchaopraya Rajabhat University, I am conducting research entitled "Evaluation Model of E-Education Instructional Mass Communication in Shaanxi Province." Given your profound expertise and rich experience in E-Education, mass communication, educational management, or related fields, I sincerely invite you to participate in this study as an expert.

This research aims to develop a comprehensive and operable evaluation model for E-Education instructional mass communication in Shaanxi Province, focusing on solving practical problems such as inconsistent teaching quality and lack of targeted evaluation systems in current regional E-Education. The research will adopt the Delphi method, involving three rounds of expert consultation and a focus group discussion. Your participation will require completing three rounds of questionnaires (each taking approximately 30-40 minutes) and optionally participating in a 60-minute focus group discussion, totaling about 2.5-3.5 hours of your time.

Rest assured, all your responses and opinions will be treated with strict confidentiality. Pseudonyms or aggregated data will be used in the research results, and no individual information will be disclosed without your permission. There are no potential risks associated with participation other than the time commitment.

If you are willing to support this research, please reply to this email at your convenience. I will then send you a formal consent form and detailed research materials. If you have any questions or concerns about the research, please feel free to contact me, and I will respond promptly. You can also reach out to my major advisor, Associate Professor Dr. Pong Horadal, for additional information.

Thank you very much for your attention and support!

Sincerely Yours, Chen Xiaoxiong
Candidate for Doctor of Philosophy in Digital
Technology Management for Education
Bansomdejchaopraya Rajabhat University

Round One Interview Questions

Subject

Evaluation Model of E-Education Instructional Mass Communication in
Shaanxi Province

Research Objective

To analyze the current problems, targeted countermeasures, and key influencing factors of E-Education instructional mass communication in Shaanxi Province.

Explanation

This round of interview questions is part of a doctoral dissertation research. The information obtained will help identify the core pain points of E-Education in the field of mass communication in Shaanxi Province, and lay a foundation for the subsequent design of an evaluation model. All collected information will be kept strictly confidential, and only aggregated analysis will be conducted in the research report, which will not cause any adverse impact on your work or institution. Please answer the questions truthfully and in detail based on your professional experience and research insights. The interview is divided into 8 parts, and the definition of related terms is attached at the end of the form.

Part 1: General Information of the Interviewee

Name: _____

Age: _____ years

Highest educational qualification: _____

Work experience: _____ years

Current job position: _____

Professional technical title: _____

Research field/specialty: _____

Part 2: Teaching Input

In your opinion, how does instructors' digital literacy affect the quality of E-Education instructional mass communication? Please give specific examples.

Your Answer: _____

What core competencies should instructors engaged in E-Education of mass communication possess besides professional knowledge? How to cultivate these competencies?

Your Answer: _____

How effective is the current teacher training related to E-Education in Shaanxi Province? What improvements do you think are needed?

Your Answer: _____

Part 3: Learner Characteristics

What are the main manifestations of uneven digital literacy among mass communication students in E-Education? How to address this issue?

Your Answer: _____

What factors affect students' learning motivation and engagement in E-Education of mass communication? How to effectively improve them?

Your Answer: _____

How to cultivate students' media literacy and critical thinking ability in E-Education environments? Please share your practical experience or suggestions.

Your Answer: _____

Part 4: Instructional Content

In what ways do you think the relevance of instructional content to the mass communication industry affects the effectiveness of E-Education? How to ensure this relevance?

Your Answer: _____

What are the advantages and challenges of integrating multimedia resources (such as videos, animations, and interactive cases) into E-Education content of mass communication?

Your Answer: _____

How to enhance the practicality of E-Education content in mass communication? For example, how to better connect with industry practices and practical operations?

Your Answer: _____

Part 5: Teaching Environment

How does the functionality of online learning platforms impact the teaching and learning experience of E-Education instructional mass communication? What key functions are lacking in current platforms?

Your Answer: _____

What are the main obstacles to effective interaction between teachers and students, and among students in E-Education of mass communication? How to overcome them?

Your Answer: _____

What problems exist in the accessibility of E-Education resources in rural areas of Shaanxi Province? How to improve the adaptability of E-Education to rural areas?

Your Answer: _____

Part 6: Teaching Process

What innovative teaching methods are suitable for E-Education of mass communication? Please evaluate their application effects and promotion conditions.

Your Answer: _____

How to design scientific and reasonable assessment and feedback mechanisms in E-Education to accurately reflect students' learning effects?

Your Answer: _____

How to organize effective collaborative learning activities in E-Education of mass communication? What factors need to be paid attention to?

Your Answer: _____

Part 7: Support System & Policy & Evaluation

What deficiencies exist in the current resource allocation and technical support for E-Education instructional mass communication in Shaanxi Province?

Your Answer: _____

How do policies and regulations affect the standardized development of E-Education in mass communication? What policy adjustments or supplements are needed?

Your Answer: _____

What core indicators should be included in the evaluation system of E-Education instructional mass communication? How to ensure the comprehensiveness and operability of the evaluation?

Your Answer: _____

Part 8: Overall Cognition

What are the most prominent problems in the current E-Education instructional mass communication in Shaanxi Province? Please rank them in order of importance.

Your Answer: _____

What targeted countermeasures do you think should be taken to solve these problems?

Your Answer: _____

Are there any other factors or content not covered above that you think are crucial to the development of E-Education instructional mass communication in Shaanxi Province? Please supplement.

Your Answer: _____

Definition of Terms

E-Education: The delivery of educational content and instruction through digital platforms, utilizing internet technologies to facilitate learning outside traditional classroom settings.

Mass Communication: The process of delivering information and messages to a large audience through various media channels, such as television, radio, and the internet.

Teaching Input: Factors related to teaching personnel and their preparation, including instructors' digital literacy, professional expertise, and training experience.

Learner Characteristics: The attributes and abilities of students that affect their learning in E-Education, such as digital literacy, learning motivation, and media literacy.

Instructional Content: The digital materials used in E-Education, including text, video, audio, and interactive resources, with a focus on relevance, multimedia integration, and practicality.

Teaching Environment: The physical and virtual settings for E-Education, covering platform functionality, interaction level, and resource accessibility.

Teaching Process: The methods and activities employed during E-Education, such as innovative teaching methods, assessment and feedback, and collaborative learning.

Support System: The resources and technical support for E-Education, including resource allocation, technical maintenance, and institutional guarantees.

Policy & Evaluation: The policy framework and evaluation mechanisms governing E-Education, including relevant policies and regulations, quality supervision, and stakeholder participation.

Evaluation of Guidelines Form

Subject

Evaluation Model of E-Education Instructional Mass Communication in Shaanxi Province

Research Objective

To verify the suitability and consistency of the core elements in the Evaluation Model of E-Education instructional Mass Communication for Teacher in Shaanxi Province.

Explanation

This form is designed to collect expert opinions on the core elements of the research. Please evaluate whether each item is consistent with the research theme and practical situation of E-Education instructional mass communication in Shaanxi

Province, and mark the corresponding score. At the same time, please provide specific suggestions and reasons for items that need adjustment to help improve the completeness and scientificity of the evaluation model.

Category	Description	Suggestions and Reasons (if any)	Opinion Level of Compliance (+1=Consistent, 0=Unsure, -1=Not Consistent)
Teaching Input	<p>C1a: Instructors' digital literacy is crucial for the quality of E-Education instructional mass communication.</p> <p>C1b: Instructors' mass communication expertise is essential for the effectiveness of E-Education.</p> <p>C1c: Systematic teacher training is important for advancing E-Education instructional mass communication.</p>		
Learner Characteristics	<p>C2a: Students' digital literacy is a prerequisite for effective participation in E-Education of mass communication.</p> <p>C2b: Students' learning motivation significantly affects their learning outcomes in E-Education.</p> <p>C2c: Students' media literacy is core to the success of mass communication E-Education.</p>		

Category	Description	Suggestions and Reasons (if any)	Opinion Level of Compliance (+1=Consistent, 0=Unsure, -1=Not Consistent)
Instructional Content	<p>C3a: The relevance of instructional content to the mass communication industry is crucial for E-Education effectiveness.</p> <p>C3b: Multimedia integration in instructional content enhances the learning experience of E-Education.</p> <p>C3c: The practicality of instructional content (combining industry cases and operations) is vital for E-Education.</p>		
Teaching Environment	<p>C4a: The functionality of online learning platforms is critical for supporting E-Education instructional mass communication.</p> <p>C4b: Effective interaction between teachers and students promotes the sustainability of E-Education.</p> <p>C4c: The accessibility of E-Education resources in rural areas is important for regional educational equity.</p>		
Teaching Process	C5a: Innovative teaching methods (such as flipped classrooms, project-based learning) improve E-Education		

Category	Description	Suggestions and Reasons (if any)	Opinion Level of Compliance (+1=Consistent, 0=Unsure, -1=Not Consistent)
	<p>effectiveness.</p> <p>C5b: Scientific assessment and feedback mechanisms are crucial for optimizing E-Education teaching.</p> <p>C5c: Collaborative learning activities enhance students' comprehensive abilities in E-Education.</p>		
Learning Outcomes	<p>C6a: Knowledge acquisition of mass communication theories is a basic outcome of E-Education.</p>		
	<p>C6b: The development of practical skills (such as digital content creation) is a key goal of E-Education.</p>		
	<p>C6c: The cultivation of critical thinking ability is an important outcome of mass communication E-Education.</p>		
Support System	<p>C7a: Reasonable resource allocation guarantees the smooth operation of E-Education.</p> <p>C7b: Timely technical support is essential for solving E-Education platform and tool problems.</p> <p>C7c: Strong institutional support</p>		

Category	Description	Suggestions and Reasons (if any)	Opinion Level of Compliance (+1=Consistent, 0=Unsure, -1=Not Consistent)
Policy & Evaluation	<p>(policies, funding) promotes the development of E-Education.</p> <p>C8a: Sound policies and regulations standardize the development of E-Education instructional mass communication.</p> <p>C8b: Strict quality supervision mechanisms ensure the quality of E-Education.</p> <p>C8c: Multi-stakeholder participation (teachers, students, industry experts) improves the comprehensiveness of E-Education evaluation.</p>		

Additional Comments or Suggestions

Round Two Evaluation of Elements Form

Subject

Evaluation Model of E-Education Instructional Mass Communication in Shaanxi Province

Research Objective

To optimize the core elements of the E-Education Instructional Mass Communication Evaluation Model (EIMCEM) and collect expert opinions on the consistency and operability of each element.

Explanation

This form is designed to collect your in-depth opinions as an expert. Please evaluate the consistency of each core element with the actual situation of E-Education instructional mass communication in Shaanxi Province and its operability in practice, and score according to the following standards: 5=Most consistent, 4=Very consistent, 3=Moderately consistent, 2=Less consistent, 1=Least consistent. For items with low scores, please provide specific suggestions and reasons to help further refine the model. At the end of the form, you can add other comments or supplementary content related to the model.

General Information of the Interviewee

Name: _____

Age: _____ years

Highest educational qualification: _____

Work experience: _____ years

Current job position: _____

Professional technical title: _____

NO	Category	Description	Suggestions and Reasons (if any)	Level of Com pliance (1-5)
C1	Teaching Input	<p>C1a: Instructors' digital literacy (proficiency in digital tools and platform operation) is crucial for E-Education quality.</p> <p>C1b: Instructors' mass communication expertise (mastery of industry theories and practices) ensures instructional content accuracy.</p> <p>C1c: Regular and targeted teacher training (E-Education methods, industry updates) enhances teaching competence.</p>		
C2	Learner Characteristics	<p>C2a: Students' digital literacy (ability to use digital devices and online resources) supports effective e-learning.</p> <p>C2b: Students' learning motivation (interest in mass communication and E-Education) promotes active participation.</p> <p>C2c: Students' media literacy (critical analysis of media information) is core to mass communication learning.</p>		

NO	Category	Description	Suggestions and Reasons (if any)	Level of Com pliance (1-5)
C3	Instructional Content	<p>C3a: Instructional content aligns with mass communication industry needs and student learning objectives.</p> <p>C3b: Instructional content integrates diverse multimedia resources (videos, animations, interactive cases) to enhance comprehension.</p> <p>C3c: Instructional content includes practical training and real-world industry cases to bridge theory and practice.</p>		
C4	Teaching Envi ronment	<p>C4a: Online learning platforms have complete functions (resources sharing, interaction, assessment) to support E-Education.</p> <p>C4b: There are sufficient interaction channels (online discussions, video conferences) between teachers and students/among students.</p> <p>C4c: E-Education resources are accessible to students in both urban and rural areas (solving network and device problems).</p>		

NO	Category	Description	Suggestions and Reasons (if any)	Level of Com pliance (1-5)
C5	Teaching Pro cess	<p>C5a: Adopting innovative teaching methods (flipped classrooms, project-based learning) to improve learning engagement.</p> <p>C5b: Establishing diversified assessment and timely feedback mechanisms to monitor learning progress.</p> <p>C5c: Organizing collaborative learning activities (group projects, cross-school cooperation) to cultivate teamwork ability.</p>		
C6	Learning Outc omes	<p>C6a: Students master core theories and concepts of mass communication through E-Education.</p> <p>C6b: Students develop practical skills such as digital content creation, media analysis, and communication planning.</p> <p>C6c: Students form independent critical thinking ability to analyze and evaluate mass communication phenomena.</p>		

NO	Category	Description	Suggestions and Reasons (if any)	Level of Com pliance (1-5)
C7	Support System	<p>C7a: Sufficient educational resources (teaching materials, tools, funding) are allocated to E-Education.</p> <p>C7b: Professional technical support teams provide timely maintenance for online platforms and digital tools.</p> <p>C7c: Educational institutions provide policy support and organizational guarantees for E-Education implementation.</p>		
C8	Policy & Evaluation	<p>C8a: Relevant policies and regulations guide the standardized development of E-Education instructional mass communication.</p> <p>C8b: Specialized quality supervision mechanisms conduct regular inspections and evaluations of E-Education quality.</p> <p>C8c: Teachers, students, industry experts, and other stakeholders participate in the E-Education evaluation process.</p>		

Additional Comments or Suggestions

Round Three Evaluation of Elements Form

Subject

Evaluation Model of E-Education Instructional Mass Communication in Shaanxi Province

Research Objective

To finalize the core elements and indicators of the EIMCEM model and confirm its scientificity, operability, and regional adaptability.

Explanation

Based on the previous two rounds of expert feedback, the core elements of the model have been optimized. Please continue to evaluate the consistency and operability of each element, and score according to the following standards: 5=Most consistent, 4=Very consistent, 3=Moderately consistent, 2=Less consistent, 1=Least consistent. For items that still need adjustment, please provide detailed modification suggestions. You can also supplement new elements or indicators that you think are necessary to ensure the model fully covers the key aspects of E-Education instructional mass communication in Shaanxi Province.

General Information of the Interviewee

Name: _____

Age: _____ years

Highest educational qualification: _____

Work experience: _____ years

Current job position: _____

Professional technical title: _____

NO	Category	Description	Suggestions and Reasons (if any)	Level of Com pliance (1-5)
C1	Teaching Input	<p>C1a: Instructors' digital literacy includes proficiency in E-Education platforms, multimedia production, and online interaction tools.</p> <p>C1b: Instructors' mass communication expertise covers industry trends, media technology applications, and practical project operation.</p> <p>C1c: Teacher training includes E-Education teaching methods, mass communication industry updates, and digital skill enhancement.</p>		
C2	Learner Characteristics	<p>C2a: Students' digital literacy includes basic digital tool operation, online resource retrieval, and information discrimination ability.</p> <p>C2b: Students' learning motivation is stimulated through interesting teaching content, practical project participation, and achievement recognition.</p> <p>C2c: Students' media literacy includes the ability to analyze media content, identify</p>		

NO	Category	Description	Suggestions and Reasons (if any)	Level of Com pliance (1-5)
		misinformation, and use media for communication.		
C3	Instructional Content	<p>C3a: Instructional content is updated annually according to mass communication industry developments and job market demands.</p> <p>C3b: Instructional content integrates real-time industry cases (such as new media marketing, short video creation) and interactive simulation resources.</p> <p>C3c: Instructional content includes practical training modules (digital content creation, media planning, data analysis) with clear operation guidelines.</p>		
C4	Teaching Environment	<p>C4a: Online learning platforms support resource sharing, real-time interaction, assignment submission, and automatic grading functions.</p> <p>C4b: Teachers conduct regular online tutoring and group discussions to ensure effective interaction with students.</p> <p>C4c: Rural students have access to subsidized e-learning devices</p>		

NO	Category	Description	Suggestions and Reasons (if any)	Level of Com pliance (1-5)
		and improved network infrastructure to ensure resource accessibility.		
C5	Teaching Process	<p>C5a: Teaching methods combine flipped classrooms (pre-class online learning + in-class interactive discussion) and project-based learning.</p> <p>C5b: Assessment includes formative evaluation (online quizzes, project progress) and summative evaluation (final exams, practical works), with detailed feedback.</p> <p>C5c: Collaborative learning is organized through online groups, with clear division of labor and mutual evaluation mechanisms.</p>		
C6	Learning Outcomes	<p>C6a: Students master core theories such as mass communication principles, media effects, and communication ethics.</p> <p>C6b: Students proficiently use digital content creation tools (video editing, graphic design) and media analysis software.</p>		

NO	Category	Description	Suggestions and Reasons (if any)	Level of Com pliance (1-5)
C7	Support System	<p>C6c: Students can independently analyze media events, put forward critical viewpoints, and design communication plans.</p> <p>C7a: Educational institutions allocate special funds for E-Education resource development, platform maintenance, and teacher training.</p> <p>C7b: Technical support teams respond to platform failures and technical questions within 24 hours to ensure smooth teaching.</p> <p>C7c: Institutions establish E-Education management teams to formulate implementation plans and coordinate resource allocation.</p>		
C8	Policy & Evaluation	<p>C8a: Local educational departments formulate policies to support E-Education development, including funding subsidies and teacher incentives.</p> <p>C8b: Quality supervision committees conduct quarterly inspections on E-Education content, teaching process, and learning outcomes.</p>		

NO	Category	Description	Suggestions and Reasons (if any)	Level of Com pliance (1-5)
		C8c: Evaluation involves teachers (teaching self-evaluation), students (learning experience feedback), and industry experts (practical effect evaluation).		

Additional Comments or Suggestions

Focus Group Form

Title: Optimization of the E-Education Instructional Mass Communication Evaluation Model (EIMCEM)

Explanation

This form is used for focus group discussions to further confirm and optimize the EIMCEM model. We have invited 9 experts with rich experience in E-Education, mass communication, and educational management to participate. Please review each core element and indicator of the model, and put forward opinions on whether to "Pass," "Modify," "Add," or "Delete" based on the actual situation of E-Education instructional mass communication in Shaanxi Province. The discussion results will be used as the final basis for model improvement. Thank you for your valuable contributions!

Expert Information

Name: _____

Work Unit: _____

Professional Title: _____

Research Field: _____

NO	Category	Core Elements	Evaluation	Specific	Add	Delete
			Result (Tick ✓)	Sugges tions		
			Pass	Modify		
C1	Teaching Input	C1a: Instructors' digital literacy indicators C1b: Instructors' mass communication expertise indicators C1c: Teacher training related indicators				
C2	Learner Characterist ics	C2a: Students' digital literacy indicators C2b: Students' learning motivation indicators C2c: Students' media literacy indicators				
C3	Instructiona l Content	C3a: Content relevance indicators C3b: Multimedia integration indicators C3c: Practicality indicators				

NO	Category	Core Elements	Evaluation	Specific	Add	Delete
			Result (Tick ✓)	Sugges tions		
			Pass	Modify		
C4	Teaching Environ ment	C4a: Platform functionality indicators C4b: Interaction level indicators C4c: Rural accessibility indicators				
C5	Teaching Process	C5a: Teaching method innovation indicators C5b: Assessment and feedback indicators C5c: Collaborative learning indicators				
C6	Learning Outcomes	C6a: Knowledge acquisition indicators C6b: Practical skill indicators C6c: Critical thinking indicators				
C7	Support System	C7a: Resource allocation indicators C7b: Technical support indicators C7c: Institutional support indicators				
C8	Policy & Evaluation	C8a: Policy support indicators C8b: Quality supervision indicators				

NO	Category	Core Elements	Evaluation	Specific	Add	Delete
			Result (Tick ✓)	Sugges tions		
			Pass	Modify		
		C8c: Stakeholder participation indicators				

Focus Group Discussion Questions

For the 8 core categories of the EIMCEM model, are there any categories that need to be merged, split, or added to better adapt to the characteristics of E-Education instructional mass communication in Shaanxi Province?

For each specific indicator under the core categories, are there any content that is not operable or inconsistent with the actual situation? How to modify it?

Are there any key indicators missing in the model that are crucial for evaluating E-Education instructional mass communication? Please list them.

How to improve the model's adaptability to urban-rural differences in Shaanxi Province? Are there any special indicators that need to be added?

What suggestions do you have for the application and promotion of the EIMCEM model in practical work?

Additional Comments or Suggestions

The Results of the Quality Analysis of Research Instruments

Subject

Evaluation Model of E-Education Instructional Mass Communication in Shaanxi Province

Explanation

This part presents the quality analysis results of the research instruments (interview questions, evaluation forms), including the Index of Objective Congruence (IOC) to verify the consistency of expert opinions and the validity of the instruments. All indicators with $IOC \geq 0.8$ are considered valid, which provides a scientific basis for the subsequent research.

NO	Category	Description	Experts' Opinions (1=Consistent, 0=Unsure, -1=Not Consistent)					IOC	Validity
			Expert	Expert	Expert	Expert	Expert		
			1	2	3	4	5		
C1	Teaching Input	C1a: Instructors' digital literacy is crucial for E-Education quality.	1	1	1	1	1	1.0	Valid
		C1b: Instructors' mass communication expertise is essential for E-Education effectiveness.	1	1	1	1	1	1.0	Valid
		C1c: Systematic teacher training is important for advancing E-Education.	1	1	0	1	1	0.8	Valid
C2	Learner Characteristics	C2a: Students' digital literacy is a prerequisite for e-	1	1	1	1	1	1.0	Valid

NO	Category	Description	Experts' Opinions (1=Consistent, 0=Unsure, -1=Not Consistent)					IOC	Validity
			Expert	Expert	Expert	Expert	Expert		
			1	2	3	4	5		
		learning participation.							
		C2b: Students' learning motivation affects E-Education outcomes.	1	1	1	0	1	0.8	Valid
		C2c: Students' media literacy is core to mass communication E-Education.	1	1	1	1	1	1.0	Valid
C3	Instructional Content	C3a: Content relevance to the industry is crucial for E-Education.	1	1	1	1	1	1.0	Valid
		C3b: Multimedia integration enhances E-Education learning experience.	1	0	1	1	1	0.8	Valid
		C3c: Content practicality is vital for E-Education.	1	1	1	1	1	1.0	Valid
C4	Teaching Environment	C4a: Platform functionality supports E-Education	1	1	1	1	0	0.8	Valid

NO	Category	Description	Experts' Opinions (1=Consistent, 0=Unsure, -1=Not Consistent)					IOC	Validity
			Expert	Expert	Expert	Expert	Expert		
			1	2	3	4	5		
		implementation.							
		C4b: Teacher-student interaction promotes E-Education sustainability.	1	1	1	1	1	1.0	Valid
		C4c: Rural resource accessibility ensures educational equity.	1	1	0	1	1	0.8	Valid
C5	Teaching Process	C5a: Innovative teaching methods improve E-Education effectiveness.	1	1	1	1	1	1.0	Valid
		C5b: Scientific assessment and feedback optimize teaching.	1	1	1	0	1	0.8	Valid
		C5c: Collaborative learning enhances students' comprehensive abilities.	1	1	1	1	1	1.0	Valid
C6	Learning Outcomes	C6a: Knowledge acquisition is a basic E-Education outcome.	1	1	1	1	1	1.0	Valid

NO	Category	Description	Experts' Opinions (1=Consistent, 0=Unsure, -1=Not Consistent)					IOC	Validity
			Expert	Expert	Expert	Expert	Expert		
			1	2	3	4	5		
		C6b: Practical skill development is a key E-Education goal.	1	1	1	1	0	0.8	Valid
		C6c: Critical thinking cultivation is an important E-Education outcome.	1	1	1	1	1	1.0	Valid
C7	Support System	C7a: Reasonable resource allocation guarantees E-Education operation.	1	1	1	1	1	1.0	Valid
		C7b: Timely technical support solves E-Education problems.	1	0	1	1	1	0.8	Valid
		C7c: Institutional support promotes E-Education development.	1	1	1	1	1	1.0	Valid
C8	Policy & Evaluation	C8a: Sound policies standardize E-Education development.	1	1	1	0	1	0.8	Valid
		C8b: Quality supervision ensures	1	1	1	1	1	1.0	Valid

NO	Category	Description	Experts' Opinions (1=Consistent, 0=Unsure, -1=Not Consistent)					IOC	Validity
			Expert	Expert	Expert	Expert	Expert		
			1	2	3	4	5		
		E-Education quality. C8c: Multi-stakeholder participation improves evaluation comprehensiveness.	1	1	1	1	0	0.8	Valid

Appendix D

The Results of the Quality Analysis of Research Instruments

Evaluation Results of IOC for the Questionnaire

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
General Information of the Respondent	Directions: Please select the appropriate option according to your actual situation.								
1	Your Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	1	1	1	1	1	5	1	Valid
2	Your Position: <input type="checkbox"/> E-Education Researcher <input type="checkbox"/> Mass Communication Teacher <input type="checkbox"/> Educational Management Professional	1	1	1	1	1	5	1	Valid
3	Length of Relevant Work Experience: <input type="checkbox"/> 10-15 years <input type="checkbox"/> More than 16 years	1	1	1	1	1	5	1	Valid
4	Your Educational Background: <input type="checkbox"/> Master's Degree <input type="checkbox"/> Ph.D.	1	1	1	1	1	5	1	Valid
5	Your Professional Title: <input type="checkbox"/>	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
	Professor <input type="checkbox"/> Associate Professor								
Current Problems in E-Education Instructional Mass Communication									
1	Teaching methods are outdated and lack innovation	1	1	1	1	1	5	1	Valid
2	Teachers' digital literacy is insufficient	1	1	1	1	1	5	1	Valid
3	Students' digital literacy is uneven	1	1	1	1	1	5	1	Valid
4	Quality of E-Education materials is low	1	1	1	1	1	5	1	Valid
5	Learning environment is not conducive to interaction	1	1	1	1	1	5	1	Valid
6	Assessment and feedback mechanisms are imperfect	1	1	1	1	1	5	1	Valid
7	Students' motivation and engagement are low	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
8	Instructors' competence in E-Education is lacking	1	1	1	1	1	5	1	Valid
9	Resource allocation and support are inadequate	1	1	1	1	1	5	1	Valid
10	Policy and regulatory framework is incomplete	1	1	1	1	1	5	1	Valid
11	Evaluation model efficacy is unsatisfactory	1	1	1	1	1	5	1	Valid
12	Lack of integration of multimedia tools in teaching	1	1	1	1	1	5	1	Valid
13	Online collaboration platforms are underutilized	1	1	1	1	1	5	1	Valid
14	Students' critical thinking ability is underdeveloped	1	1	1	1	1	5	1	Valid
15	Media literacy education is insufficient	1	1	1	1	1	5	1	Valid
16	Course design does not meet	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
	mass communication industry needs								
17	Lack of practical training in digital content creation	1	1	1	1	1	5	1	Valid
18	Teacher training in E-Education is inadequate	1	1	1	1	1	5	1	Valid
19	E-Education has poor adaptability in rural areas	1	1	1	1	1	5	1	Valid
20	Lack of effective supervision of E-Education quality	1	1	1	1	1	5	1	Valid
Effective Strategies for Improvement									
1	Promote flipped classroom teaching mode	1	1	1	1	1	5	1	Valid
2	Introduce project-based learning	1	1	1	1	1	5	1	Valid
3	Adopt case teaching combined with mass communication cases	1	1	1	1	1	5	1	Valid
4	Integrate interactive teaching	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
	software								
5	Develop educational games related to mass communication	1	1	1	1	1	5	1	Valid
6	Implement online-offline blended teaching	1	1	1	1	1	5	1	Valid
7	Organize regular digital literacy training for teachers	1	1	1	1	1	5	1	Valid
8	Invite experts to give lectures on digital technology applications	1	1	1	1	1	5	1	Valid
9	Establish teacher digital learning communities	1	1	1	1	1	5	1	Valid
10	Develop online digital skill learning resources for teachers	1	1	1	1	1	5	1	Valid
11	Conduct peer mentoring on digital technology	1	1	1	1	1	5	1	Valid
12	Encourage teachers to participate in digital education research projects	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
13	Implement stratified digital literacy teaching for students	1	1	1	1	1	5	1	Valid
14	Develop personalized digital learning plans for students	1	1	1	1	1	5	1	Valid
15	Establish an online student digital literacy assessment system	1	1	1	1	1	5	1	Valid
16	Provide after-school digital skill counseling	1	1	1	1	1	5	1	Valid
17	Organize digital skill competitions among students	1	1	1	1	1	5	1	Valid
18	Create digital learning partner groups	1	1	1	1	1	5	1	Valid
19	Establish a content review committee for E-Education materials	1	1	1	1	1	5	1	Valid
20	Invite industry experts to	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
	participate in material development								
21	Regularly update E-Education materials based on industry developments	1	1	1	1	1	5	1	Valid
22	Integrate real-time mass communication cases into materials	1	1	1	1	1	5	1	Valid
23	Develop multimedia E-Education materials (video, audio, animation)	1	1	1	1	1	5	1	Valid
24	Collect feedback from teachers and students on materials	1	1	1	1	1	5	1	Valid
25	Optimize online learning platforms to enhance interaction functions	1	1	1	1	1	5	1	Valid
26	Design interactive learning activities (discussions, debates,	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
	etc.)								
27	Arrange regular online tutoring sessions	1	1	1	1	1	5	1	Valid
28	Establish learning groups to promote collaboration	1	1	1	1	1	5	1	Valid
29	Use video conferencing tools for real-time interaction	1	1	1	1	1	5	1	Valid
30	Encourage teachers to respond to students' questions in a timely manner	1	1	1	1	1	5	1	Valid

Evaluation Results of IOC for the Interview Outline

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
General Information of the Respondent	Directions: Please provide the following information as required.								
1	Your Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	1	1	1	1	1	5	1	Valid
2	Your Position: <input type="checkbox"/> E-Education	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
	Researcher <input type="checkbox"/> Mass Communicatio Teacher <input type="checkbox"/> Educational Manageme Professional								
3	Length of Relevant Work Experience: <input type="checkbox"/> 10-15 years <input type="checkbox"/> More than 16 years	1	1	1	1	1	5	1	Valid
4	Your Educational Background: <input type="checkbox"/> Master's Degree <input type="checkbox"/> Ph.D.	1	1	1	1	1	5	1	Valid
5	Your Professional Title: <input type="checkbox"/> Professor <input type="checkbox"/> Associate Professor	1	1	1	1	1	5	1	Valid

Part 1: Strategies to Improve E-Education

Instructional Mass Communication

1	What suggestions do you have for improving outdated teaching methods in mass communication E-Education?	1	1	1	1	1	5	1	Valid
2	How can teachers' digital literacy be effectively enhanced	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
	in the context of mass communication education?								
3	What measures can address the uneven digital literacy among mass communication students?	1	1	1	1	1	5	1	Valid
4	How to improve the quality of E-Education materials for mass communication courses?	1	1	1	1	1	5	1	Valid
5	What strategies can optimize the online interaction environment for mass communication E-Education?	1	1	1	1	1	5	1	Valid
6	How to improve assessment and feedback mechanisms in mass communication E-Education?	1	1	1	1	1	5	1	Valid
7	What methods can enhance students' motivation and	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
	engagement in online mass communication courses?								
8	How to strengthen instructors' competence in E-Education for mass communication?	1	1	1	1	1	5	1	Valid
9	What recommendations do you have for optimizing resource allocation in mass communication E-Education?	1	1	1	1	1	5	1	Valid
10	How can policy and regulatory frameworks be improved to support mass communication E-Education?	1	1	1	1	1	5	1	Valid

Part 2: Influencing Factors of E-Education

Instructional Mass Communication

11	Based on your experience, what teaching-related factors most influence the effectiveness of	1	1	1	1	1	5	1	Valid
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No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
12	mass communication E-Education? How do learner characteristics (e.g., digital literacy, motivation) affect mass communication E-Education outcomes?	1	1	1	1	1	5	1	Valid
13	What content-related factors are critical for the success of mass communication E-Education?	1	1	1	1	1	5	1	Valid
14	How does the teaching environment (e.g., platform functionality, accessibility) impact mass communication E-Education?	1	1	1	1	1	5	1	Valid
15	What process-related factors (e.g., teaching methods, collaboration) influence mass	1	1	1	1	1	5	1	Valid

No.	Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
	communication E-Education?								
16	How do support systems (e.g., resources, technical support) affect mass communication E- Education?	1	1	1	1	1	5	1	Valid
17	What policy and evaluation factors are key to the development of mass communication E-Education?	1	1	1	1	1	5	1	Valid

Evaluation Results of IOC for the CIPP Expert Evaluate Form

CIPP Evaluation	Evaluation Indicators	Specific Evaluation Contents	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
Context Evaluation	Background and Purpose	Do you agree that the EIMCEM model has a clear background and purpose, and accurately reflects the actual situation of mass communication E-Education in Shaanxi Province?	1	1	1	1	1	5	1	Valid
		Do you agree that the model design can effectively evaluate the quality of mass communication E-Education?	1	1	1	1	1	5	1	Valid
		Do you agree that the model fully considers the characteristics of mass communication and E-Education?	1	1	1	1	1	5	1	Valid
		Stakeholder Needs	Do you agree that the model addresses the needs and	1	1	1	1	1	5	1

CIPP Evaluation	Evaluation Indicators	Specific Evaluation Contents	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
		expectations of teachers, students, and industry in mass communication E-Education?								
Input Evaluation	Problem Analysis	Do you agree that the model fully considers the core problems in mass communication E-Education identified in the study?	1	1	1	1	1	5	1	Valid
		Do you agree that these problems reflect diverse perspectives (researchers, teachers, managers)?	1	1	1	1	1	5	1	Valid
	Influencing Factors	Do you agree that the model comprehensively covers the influencing factors of mass communication E-Education?	1	1	1	1	1	5	1	Valid
		Do you agree that the factors reflect the complexity and	1	1	1	1	1	5	1	Valid

CIPP Evaluation	Evaluation Indicators	Specific Evaluation Contents	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
Process Evaluation	Evaluation Mechanism	diversity of mass communication E-Education? Do you agree that the model's evaluation mechanism can comprehensively assess all aspects of mass communication E-Education?	1	1	1	1	1	5	1	Valid
		Do you agree that the mechanism provides timely and effective feedback for improvement?	1	1	1	1	1	5	1	Valid
	Model Implementation	Do you agree that the evaluation methods cover diverse cognitive levels (remembering, understanding, applying, etc.)?	1	1	1	1	1	5	1	Valid
		Do you agree that the relationships between model elements are logically designed?	1	1	1	1	1	5	1	Valid

CIPP Evaluation	Evaluation Indicators	Specific Evaluation Contents	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
		Do you agree that the model is operable in practical applications?	1	1	1	1	1	5	1	Valid
Product Evaluation	Feedback and Improvement	Do you agree that the model can be flexibly adjusted to adapt to different teaching contexts and student needs?	1	1	1	1	1	5	1	Valid
		Do you agree that the model's adjustment mechanisms enhance its applicability?	1	1	1	1	1	5	1	Valid
		Do you agree that expert interview results are consistent with the model's evaluation conclusions, increasing confidence in its effectiveness?	1	1	1	1	1	5	1	Valid
	Model Effectiveness	Do you agree that the model can effectively improve the quality of mass communication E-Education?	1	1	1	1	1	5	1	Valid

CIPP Evaluation	Evaluation Indicators	Specific Evaluation Contents	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total	IOC	Result
		Do you agree that the model can better integrate industry practices to enhance evaluation effectiveness?	1	1	1	1	1	5	1	Valid

Appendix E
Certificate of English

BSRU BANSOMDIKULOPRAYA
RAJABHAT SURINACHULALONGKORNSIRISIT

This is to certify that

Mr. Chen Xiaoxiong

Achieved BSRU English Proficiency Test (BSRU-TEP) level

C2

Given on 15th August 2025o



(Assistant Professor Dr Kulsirin Aphiratvoradej)

Director

Appendix F

The Document for Acceptance Research



Open Access Publisher

African Educational Research Journal

www.netjournals.org

Date: February 17, 2026

Ref: AERJ-2026-009

Title: *Evaluation Models of E-Education instructional Mass Communication in Shaanxi Province*

Xiaoxiong Chen
Bansomdejchaopraya Rajabhat University
Bangkok
Thailand

Acceptance Letter

Dear Xiaoxiong Chen,

We are pleased to inform you that your manuscript, titled "*Evaluation Models of E-Education instructional Mass Communication in Shaanxi Province*," by authors "**Xiaoxiong Chen, Pong Horadal, Kanakorn Sawangcharoen and Sombat Teekasap**," has been accepted for publication in the *African Educational Research Journal*.

The manuscript will be published in Volume 14, Issue 1, February 2026.

The final Galley Proof will be sent to you via email as an Acrobat PDF (Portable Document Format) file. Please note that at this stage, only essential corrections to errors in the text or figures will be permitted. Any other alterations will not be acceptable.

We congratulate you on this achievement and thank you for choosing the *African Educational Research Journal* as the platform for your research. Should you have any questions or require further assistance, please do not hesitate to contact us.



Open Access Publisher

Best regards,



Ejofodomi Triumphant
Manager
Net Journals



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