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Research on the Development of University English Teaching-Research Teams' Information Literacy in the Regional Context: A Case Study of the Inner Mongolia Autonomous Region

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Abstract

Taking the Inner Mongolia Autonomous Region as an example, this study focuses on developing university English teaching-research teams' information literacy. Using a mixed-method approach of questionnaires and interviews, this study systematically assesses the current status of the teams' information literacy in the region. This study also proposes a three-level structural model of regional context, team mechanisms, and teachers' information literacy, along with a development path and targeted optimization strategies for enhancing information literacy. This study thus provides theoretical and practical support for promoting the informatization of education in regional universities.

Keywords

Development Path, Information Literacy, Inner Mongolia Autonomous Region, Three-Level Structural Model, University English

1. Introduction

With the rapid development of information technology, informatization has deeply permeated various fields, with education being particularly notable. Education informatization is not only a demand of the times but also an effective way to enhance the quality and efficiency of education. The rapid development of digital technology and artificial intelligence tools has positioned education informatization as a key driver for the high-quality development of higher education. In the context of universities' digital transformation, teachers' information literacy di-

rectly affects the quality of classroom teaching, the efficiency of resource integration, and students' learning outcomes.

University English, as a public basic course in universities, has broad coverage, involves heavy teaching tasks, and relies heavily on technology. Consequently, the development of its teaching-research teams' information literacy is particularly crucial. As an important minority region in China, the Inner Mongolia Autonomous Region has certain particularities in terms of the distribution of educational resources, training support mechanisms, and regional cultural environments compared to other eastern regions in China. Moreover, there is relatively little research on information literacy for university teachers in this region, especially for university English teaching-research teams. Thus, it is necessary to conduct targeted research.

In light of the above background, this study aims to achieve the following goals:

1) To assess the current status of university English teaching-research teams' information literacy in the Inner Mongolia Autonomous Region, and identify the main problems and needs.

2) To propose a development path and optimization strategies for enhancing information literacy, thereby promoting the improvement of university English teaching quality in the Inner Mongolia Autonomous Region.

2. Literature Review

2.1. Information Literacy

Information literacy is a broad concept that encompasses not only knowledge spanning humanities, technology, economics, and law (Xinhuanet, 2025) but is also defined as a set of skills that enable one to recognize when information is needed and to effectively locate, evaluate, and use it. Its core elements include information retrieval, evaluation, utilization, and ethics (Association of College & Research Libraries, 2000). Additionally, information literacy also includes the ability to find, evaluate, and use the required information, which involves information technology operational competence, information resource management and utilization skills, information ethics and legal awareness, among others (Eisenberg, 2008; Jia, 2006). It also covers critical reflection on the nature of information, technical infrastructure, and its social, cultural, and philosophical background and impact (Nataraj, 2016). In the field of education, information literacy can drive the transformation of traditional educational concepts, models, and methods, thereby promoting changes in learning approaches and forms (Li, 2017). The above discussion on information literacy indicates that it should include multiple dimensions such as information acquisition, evaluation, integration, and ethical awareness. Therefore, in teaching scenarios, teachers' information literacy can be further expanded to the following five competencies: technical operational competence, information resource integration competence, digital pedagogical design competence, teaching evaluation and data analysis competence, and information ethics and compliance awareness.

2.2. Impact of Information Literacy on Teaching Effectiveness

Numerous studies have shown that teachers' information literacy directly affects teaching quality and students' learning outcomes. Suphannachart (2018) argues that teachers with a higher level of information literacy can use information technology more effectively in the classroom, thereby enhancing students' engagement and learning outcomes, and ultimately improving teaching quality and students' academic achievements (Zhou & Xiang, 2020). Teachers' information literacy often directly influences all aspects of teaching activities, thus having a significant impact on students' learning outcomes and teaching quality (Yu, 2020). In addition, English teaching in universities should capitalize on the opportunities brought by informatization to continuously innovate teaching methods, deepen teaching content, expand teaching spaces, and achieve high-quality development (Dong, 2023). Furthermore, teachers' self-efficacy in information literacy teaching is significantly associated with information evaluation, self-perceived information quantity, selective information exposure, and learning opportunities focused on information evaluation (Trixa & Kaspar, 2024).

2.3. Strategies for Enhancing Information Literacy

Studies both in China and abroad generally suggest that enhancing teachers' information literacy requires systematic training and support. The IDEA (Interview, Design, Embed, Assess) model proposed by Mullins (2014) can be used to integrate information literacy instruction and resources, thereby improving the ability to apply information technology and enhancing pedagogical design competence. Hu et al. (2019) also argue that the most direct and effective way to enhance teachers' information literacy is to provide training in information technology application competence, thereby improving their pedagogical design competence and the effective use of information resources. In addition, timely online training for teachers, through explanation, demonstration, guidance, and inspiration, can equip teachers with the fundamental ability to conduct teaching by using information technology (Yang, 2021). Some studies have also found that informatization teaching ability is significantly influenced by factors such as the number of multimedia classrooms, campus network bandwidth, and digital resources (Tan, 2024). Therefore, the enhancement of information literacy cannot be separated from the support of digital teaching resources and environments.

The above-mentioned research on information literacy has clearly identified teachers' information literacy as an effective way to improve teaching quality. However, such research has mainly focused on teachers or students in general, and regional investigations remain insufficient. The Inner Mongolia Autonomous Region, as an important ethnic minority region in China, has a unique cultural and social background in its educational environment. Differences in regional educational resources, the multicultural background, and the policy support intensity all affect the development of teachers' information literacy. Additionally, universities in the Inner Mongolia Autonomous Region exhibit stage-specific character-

istics in terms of resource structure and training systems, creating an urgent need to explore a regionally distinctive information literacy development model. Given that most existing research has focused on general educational information literacy development while neglecting the special needs of minority regions, it is necessary to incorporate regional variables into the analytical framework of teachers' information literacy.

3. Research Design

This study focuses on university English teaching-research teams in the Inner Mongolia Autonomous Region and involves five universities. The participants were front-line university English teachers. Convenience sampling was adopted to recruit the participants, and data were collected through questionnaires and semi-structured interviews. The questionnaire was an information literacy assessment instrument covering five dimensions, while the semi-structured interviews were conducted to obtain a deeper understanding of teachers' experiences with information literacy development, pedagogical integration, and practical application.

In terms of research methods, this study employed literature review, questionnaire survey, and semi-structured interviews for data collection, and used both descriptive and inferential analyses to examine the overall status of information literacy among university English teaching-research teams in Inner Mongolia and the factors influencing it. Since the study covered five universities in the Inner Mongolia Autonomous Region, the findings may, to some extent, reflect the information literacy status of university English teaching-research teams in this region. However, given the use of convenience sampling, the generalizability of the findings should still be interpreted with caution.

4. Research Results and Analysis

This study distributed questionnaires to front-line university English teachers and relevant teaching administrators at a university in the Inner Mongolia Autonomous Region. A total of over 80 questionnaires were returned, and all of them were valid, yielding a response rate of 100%. The questionnaire data were further supplemented with interview data for in-depth analysis, based on which the developmental status of information literacy among university English teaching-research teams in this region was examined. A comprehensive analysis is presented below from three perspectives: overall level, structural differences, and influencing factors.

4.1. Overall Level

The questionnaire data show that the overall information literacy of the university English teaching-research teams in the Inner Mongolia Autonomous Region is at a medium to upper level. Most teachers and relevant teaching administrators can skillfully use common teaching platforms and digital tools to conduct classroom

teaching and administrative tasks, and they also demonstrate basic technical operational competence as well as information acquisition and resource management competence, including the ability to search for information, integrate resources, and organize online teaching. However, the questionnaire data also indicate that there are shortcomings in the depth of specific information application among teachers and relevant teaching administrators. Most applications of information technology in teaching still remain at the "tool" level and have not yet been fully integrated into teaching goals, pedagogical design, and learning evaluation. In the interviews, some teachers indicated that although they can use digital tools, they still have difficulties in optimizing classroom organization structure, analyzing learning data, and using feedback to inform teaching adjustments. This reflects the current stage-specific characteristics of information literacy among the university English teaching-research teams in this region, namely, that while technical operational competence and information acquisition and resource management competence are generally in place, pedagogical integration competence and data application competence still require further strengthening.

4.2. Structural Differences

According to the questionnaire structure, the data from the five dimensions reveal significant differences among various competencies. Specifically, the five dimensions refer to technical operational competence, information acquisition and resource management competence, pedagogical integration competence, data application competence, and information ethics and legal awareness. Technical operational competence refers to the ability to use digital platforms, software, and online tools to support teaching and administrative tasks. Information acquisition and resource management competence refers to the ability to search for, evaluate, select, integrate, and organize digital information and teaching resources. Pedagogical integration competence refers to the ability to align technology use with teaching objectives, instructional design, classroom organization, and learning assessment. Data application competence refers to the ability to interpret and use learning data, platform feedback, and other forms of educational data to improve instruction and support decision-making. Information ethics and legal awareness refer to the awareness and practice of ethical and lawful technology use, including proper citation of resources, protection of data privacy, and compliance with relevant regulations.

In the dimension of technical operational competence, the majority of teachers and relevant teaching administrators are proficient in using learning platforms, courseware production tools, and online interaction tools. This indicates that the technical operational competence of the university English teaching-research teams is generally satisfactory, and their information acquisition and resource management competence is relatively stable. In the dimension of pedagogical integration competence, some teachers and relevant teaching administrators still lack awareness of digital pedagogical design. During the interviews, some teachers

indicated that they are willing to use technological tools in the classroom but lack the ideas and willingness to conduct an overall design around learning objectives, thus failing to achieve an organic unity between technology application and teaching goals. In the dimension of data application competence, low scores are quite evident. This suggests that most teachers and relevant teaching administrators have not yet developed the habit of adjusting the classroom instruction and improving teaching based on learning platform data; consequently, their use of data analysis tools remains infrequent. In the dimension of information ethics and legal awareness, teachers and relevant teaching administrators have shown a basic understanding, but there remains room for improvement in specific operational aspects, such as resource citation standards and data privacy protection. Based on the above findings, the information literacy of the university English teaching-research teams in the Inner Mongolia Autonomous Region presents the characteristics of relatively strong technical operational competence, relatively stable information acquisition and resource management competence, insufficient pedagogical integration competence, and inadequate data application competence, which indicates that their overall information literacy still leans toward a tool-oriented approach rather than a deep teaching-oriented one.

4.3. Analysis of Influencing Factors

Based on the interview data, it is found that information literacy is closely related to training experience, team support, and institutional guarantee. Teachers and relevant teaching administrators indicated that some teachers who have received systematic information technology training are more confident and proficient in pedagogical integration and data application, while those who have not received systematic training perform poorly in this regard. This suggests that the standardized training system has a significant promoting effect on information literacy. In addition, the collaborative atmosphere within the teaching-research team also has an impact on the depth of information application. The interview data show that teachers and relevant teaching administrators generally believe that if there is a resource-sharing mechanism and a platform for exchanging teaching experience within the team, they are more likely to form a behavioral intention of continuous application and improvement; otherwise, their individual applications often remain fragmented. Furthermore, the improvement of the institutional incentive and evaluation mechanisms also affects the application motivation of teachers and relevant teaching administrators. The interview data show that most teachers and relevant teaching administrators often regard the application of technology as an additional burden rather than a necessary path for teaching development, because the outcomes of informatization teaching are not included in the performance evaluation system. These facts suggest that the improvement of information literacy depends not only on individual ability, but also on organizational mechanisms and the broader institutional environment. The allocation of regional educational resources plays a role through the team mechanism, and the collaborative mech-

anism and institutional guarantee at the team level are conducive to the improvement of information literacy.

Based on the above analysis, the current status of information literacy among university English teaching-research teams in the Inner Mongolia Autonomous Region can be summarized as follows: First, a disconnection exists between technology application and pedagogical integration. Technology use mostly remains at the superficial level of tool application and has not yet developed into a systematic model of teaching innovation. Second, the teams' collaborative mechanism is underdeveloped. Resource sharing and the experience exchange lack institutional support, and obstacles exist in transforming individual capabilities into collective strengths. Third, the institutional guarantee system remains inadequate. Performance evaluation and professional development systems have not yet incorporated informatization teaching into their assessment frameworks, resulting in a lack of sustained motivational support. The current status indicates that merely increasing the frequency of technical training is insufficient to enhance the information literacy development among the university English teaching-research teams. Achieving a structural transformation from a focus on technical operation and basic resource use to stronger pedagogical integration competence, and data application competence is the key to addressing this challenge.

5. Development of a Structural Model and Path Analysis

This chapter seeks to construct a structural model to explain the current state of university English teaching-research teams' information literacy in the Inner Mongolia Autonomous Region. This structural model can provide a new interpretive framework for research on teachers' information literacy in the regional educational context. Based on this model, the chapter also proposes a path for enhancing the information literacy of university English teaching-research teams in the region.

5.1. Development of a Structural Model

The data analysis reveals that the information literacy of university English teaching-research teams in the Inner Mongolia Autonomous Region is not a simple accumulation of single competence dimensions, but a structural competence shaped by the interplay of multiple dimensions. There are hierarchical differences among technical competence, pedagogical integration competence, and data application competence, and organizational and institutional support have an impact on competence development. Therefore, this study develops a three-level structural model of regional context, team mechanisms, and teachers' information literacy to reveal the underlying logic of how university English teaching-research teams' information literacy develops in the Inner Mongolia Autonomous Region (as shown in Figure 1).

This model is structured from the outer to the inner layer in a progressive manner. The first layer is the regional context, which constitutes the macro-level foun-

dation for the development of information literacy. The educational resource structure, the policy support intensity, and the regional level of digital development provide the necessary hardware and institutional guarantees for teachers to engage in informatization teaching. Meanwhile, a multicultural educational context imposes specific requirements on the organization of teaching content and the application of technology. The second layer is the teaching-research team support mechanism, which plays a transformational role in the model at the meso level. Institutionalized training systems, collaborative teaching-research mechanisms, and incentive and evaluation systems at the team level can transform the macro-level resource and policy advantages into practical development opportunities and concrete actions for teachers. The third layer is teachers' information literacy, which can gradually form a stable competence structure under organizational support. Teachers can enhance their capabilities in technical operation, pedagogical integration, data application, and information ethics, developing a relatively systematic informatization teaching ability. Finally, at the output layer, the improvement of teachers' information literacy is transformed into enhanced teaching quality through classroom practice, evident in enhanced classroom interaction, increased student engagement, improved instructional efficiency, and optimized learning feedback mechanisms. The development of information literacy follows a hierarchical logic that moves from the macro level to the meso level and then to the micro level. Regional support exerts an indirect influence through the team mechanism, while team collaboration and institutional guarantees constitute the key driving forces for improving information literacy.

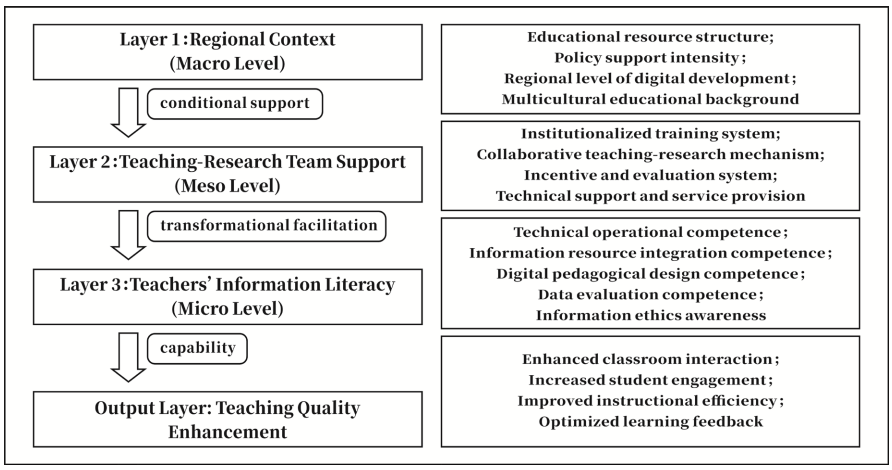

Figure 1. A three-level structural model of regional context, team mechanisms, and teachers' information literacy.

5.2. Path Development

Based on the structural model, to address practical needs for improvement, this study further develops a path to enhance the information literacy of university English teaching-research teams (as shown in Figure 2).

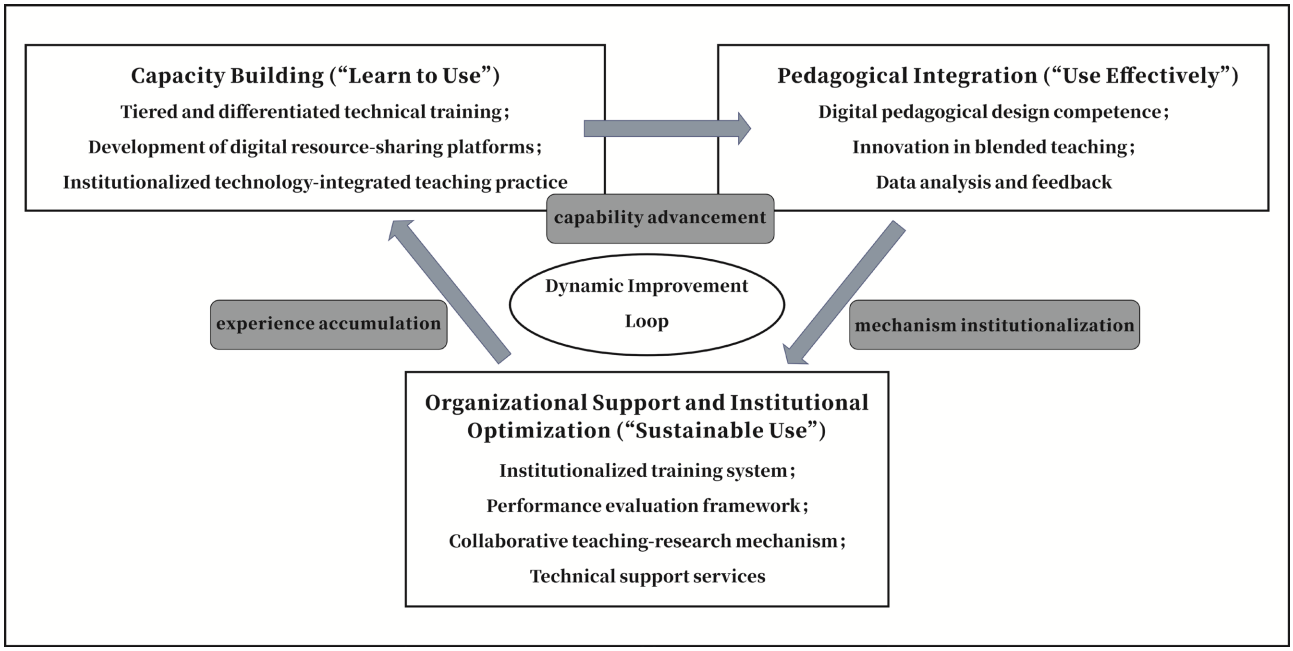

Figure 2. Development path for enhancing information literacy of university English teaching-research teams in the Inner Mongolia autonomous region.

This path is divided into three levels. The first level is capacity building, focusing on the basic capabilities of technology and resources. Research results show that technical competence is a relatively strong dimension in current information literacy; therefore, the focus of this level is not merely on tool operation. As the starting point for improving information literacy, this level emphasizes enhancing teachers' technical operation and resource application competencies. This includes conducting tiered and differentiated technical training, developing primary, intermediate, and advanced training modules tailored to teachers' varying proficiency levels, and improving targeted training, among others. The second level is pedagogical integration, focusing on the deep integration of technology and teaching. Research results show that pedagogical integration and data application competence are areas of relative weakness in the current information literacy status of university English teaching-research teams in the Inner Mongolia Autonomous Region. Therefore, the path should focus on enhancing digital pedagogical design competence and data-driven improvement capabilities. As a key link in the development of information literacy, this level involves activities such as strengthening digital pedagogical design, conducting teaching and research based on real classroom cases, guiding teachers to embed technology into teaching goals, content, and evaluation, and ultimately facilitating the transformation of technological tools into teaching ability. The third level is institutional optimization, which is the key to ensuring the sustained enhancement of information literacy. This level transforms information application into organizational routines through institutionalized training systems (incorporating information literacy training into the annual teaching and research plan), performance evaluation

frameworks (incorporating information teaching ability into the teacher assessment system), and collaborative teaching-research mechanisms (collective lesson preparation, case sharing, cross-school exchanges, etc.). Without institutional support, information application is likely to remain at the individual level, making long-term stable development difficult to achieve. The three levels form a progressive sequence: basic competence, integration competence, and institutional guarantee. By strengthening the capacity foundation through technical training and resource development, promoting deep integration through pedagogical design and data application, and finally achieving long-term stable development through organizational and institutional support, the three-level path operates in coordination and ultimately forms a closed-loop system.

6. Conclusion and Implications

This study focused on the development of university English teaching-research teams' information literacy in the Inner Mongolia Autonomous Region. By employing a mixed-method approach of questionnaires and interviews, the study assessed the current status of these teams' information literacy in regional universities. On this basis, this study proposed a three-level structural model of regional context, team mechanisms, and teachers' information literacy, along with a development path and targeted optimization strategies for enhancing the information literacy of university English teaching-research teams in the region. The findings suggest that the development of information literacy should shift from a focus on teachers' individual skills to organizational mechanisms and institutional guarantees. By forming a closed-loop mechanism for continuous improvement, the overall quality of university English teaching in the Inner Mongolia Autonomous Region can be enhanced.

The innovations of this study are reflected in the following three aspects. In terms of academic thought, it combines the development of information literacy with regional educational characteristics, proposing a model of information literacy development tailored to the context of the Inner Mongolia Autonomous Region. The research not only focuses on the application of information technology but also considers the impact of cultural background on the development of information literacy, thereby presenting a theoretical framework and practical path with regional characteristics. From an academic perspective, this empirical study identifies the specific information literacy needs and challenges faced by university English teaching-research teams in the Inner Mongolia Autonomous Region and proposes targeted strategies to address them. The research emphasizes that information literacy is not only about the improvement of technical skills but also includes the cultivation of information ethics and legal awareness. In terms of research methods, the use of a mixed research method (combining questionnaires and interviews) ensures the scientific rigor and reliability of the research results, comprehensively assessing the current status of university English teaching-research teams' information literacy in the Inner Mongolia Autonomous Region,

and proposing a data-driven development path and strategies.

This study still has some limitations, such as a limited sample size and a relatively short time span. Future research could conduct longitudinal follow-up studies to further verify the long-term effects of the structural model and the development path. Overall, this study provides theoretical and practical support for promoting the development of education informatization in regional universities.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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